

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

### INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C AND INDUSTRY CANADA RSS-210 REQUIREMENT

*OF*

**Product Name:** Do it yourself Car Alarm

**Brand Name:** SCOSCHE

**Model Name:** DIYALM1

**Model Different:** N/A

**FCC ID:** IKQDIYALM1

**IC:** 6955A-DIYALM1

**Report No.:** ER/2008/B0041~42

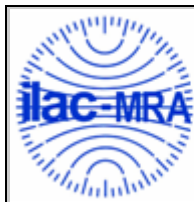
**Issue Date:** Dec. 05, 2008

**FCC Rule Part:** §15.231

**IC Rule Part:** RSS-210 issue 7:2007, Annex 1

**Prepared by:** Scosche Industries  
1550 Pacific Avenue Oxnard, CA 93033

**Prepared by:** SGS Taiwan Ltd.  
Electronics & Communication Laboratory  
No. 134, Wu Kung Rd., Wuku Industrial  
Zone, Taipei County, Taiwan.



*Note: This report shall not be reproduced except in full, without the written approval of SGS Taiwan Ltd. This document may be altered or revised by SGS Taiwan Ltd. personnel only, and shall be noted in the revision section of the document.*

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## VERIFICATION OF COMPLIANCE

**Applicant:** Scosche Industries  
1550 Pacific Avenue Oxnard, CA 93033

**Product Name:** Do it yourself Car Alarm

**Brand Name:** SCOSCHE

**Model No.:** DIYALM1

**Model Difference:** N/A

**FCC ID:** IKQDIYALM1

**IC:** 6955A-DIYALM1

**File Number:** ER/2008/B0041~42

**Date of test:** Nov. 26, 2008 ~ Dec. 05, 2008

**Date of EUT Received:** Nov. 26, 2008

### We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.231 and RSS-210 issue 7:2007, Annex 1.

The test results of this report relate only to the tested sample identified in this report.

<b>Test By:</b>		<b>Date:</b>	Dec. 05, 2008
	_____ <i>Jason Wu / Asst. Supervisor</i>		_____
<b>Prepared By:</b>		<b>Date:</b>	Dec. 05, 2008
	_____ <i>Eva Kao / Asst. Supervisor</i>		_____
<b>Approved By:</b>		<b>Date:</b>	Dec. 05, 2008
	_____ <i>Vincent Su / Manager</i>		_____

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## Version

Version No.	Date	Description
00	Dec. 05, 2008	Initial creation of document

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## Table of Contents

<b>1.</b>	<b>GENERAL INFORMATION.....</b>	<b>6</b>
1.1	PRODUCT DESCRIPTION .....	6
1.2	RELATED SUBMITTAL(S) / GRANT (S) .....	6
1.3	TEST METHODOLOGY.....	6
1.4	TEST FACILITY .....	6
1.5	SPECIAL ACCESSORIES.....	6
1.6	EQUIPMENT MODIFICATIONS .....	6
<b>2.</b>	<b>SYSTEM TEST CONFIGURATION .....</b>	<b>7</b>
2.1	EUT CONFIGURATION.....	7
2.2	EUT EXERCISE.....	7
2.3	TEST PROCEDURE.....	7
2.4	LIMITATION.....	8
2.5	CONFIGURATION OF TESTED SYSTEM.....	9
<b>3.</b>	<b>SUMMARY OF TEST RESULTS .....</b>	<b>10</b>
<b>4.</b>	<b>DESCRIPTION OF TEST MODES .....</b>	<b>10</b>
<b>5.</b>	<b>CONDUCTED EMISSIONS TEST .....</b>	<b>11</b>
5.1	MEASUREMENT PROCEDURE: .....	11
5.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	11
5.3	MEASUREMENT EQUIPMENT USED: .....	11
5.4	MEASUREMENT RESULT: .....	11
<b>6.</b>	<b>RADIATED EMISSION TEST .....</b>	<b>12</b>
6.1	MEASUREMENT PROCEDURE.....	12
6.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	12
6.3	MEASUREMENT EQUIPMENT USED: .....	13
6.4	FIELD STRENGTH CALCULATION .....	13
6.5	MEASUREMENT RESULT .....	14
<b>7.</b>	<b>20DB, 99% OCCUPIED BANDWIDTH .....</b>	<b>18</b>
7.1	MEASUREMENT PROCEDURE.....	18
7.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	18
7.3	MEASUREMENT EQUIPMENT USED: .....	18
7.4	MEASUREMENT RESULTS.....	18

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

<b>8.</b>	<b>DUTY CYCLE MEASUREMENT .....</b>	<b>20</b>
8.1	MEASUREMENT PROCEDURE.....	20
8.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	20
8.3	MEASUREMENT EQUIPMENT USED: .....	20
8.4	MEASUREMENT RESULTS:.....	20
<b>9.</b>	<b>RELEASE TIME MEASUREMENT: .....</b>	<b>21</b>
9.1	MEASUREMENT PROCEDURE.....	21
9.2	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	21
9.3	MEASUREMENT EQUIPMENT USED: .....	21
9.4	MEASUREMENT RESULTS.....	21

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. °

## 1. GENERAL INFORMATION

### 1.1 Product Description

The Scosche Industries, Model: DIYALM1 (referred to as the EUT in this report) is a Car Alarm remoter.

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 433.92 MHz
- B). Modulation: ASK Modulation
- C). Antenna Designation: Non-User Replaceable (Fixed)
- D). Power Supply: 12 Vdc from mercury Battery\*2.
- E). Transmitting Time: Periodic  $\leq 5$  seconds by automotive.

### 1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **IKQDIYALM1** filing to comply with Section 15.231 of the FCC Part 15, Subpart C Rules and IC: **6955A-DIYALM1** filing to comply with Industry Canada RSS-210 issue 7: 2007 Annex 1.

### 1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003) and RSS-Gen: 2007. Radiated testing was performed at an antenna to EUT distance 3 meters.

### 1.4 Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-1

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 & 10 meters) and FCC Registration Number: 94644.

### 1.5 Special Accessories

Not available for this EUT intended for grant.

### 1.6 Equipment Modifications

Not available for this EUT intended for grant.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. °

## 2. SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003 and RSS-Gen: 2007. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna. according to the requirements in Section 8 and 13 and of ANSI C63.4-2003 and RSS-Gen: 2007.

## 2.4 Limitation

### (1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	Limits dB (uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note

- 1.The lower limit shall apply at the transition frequencies
- 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### (2) Radiated Emission

According to 15.231(b), the field strength of emissions from Intentional Radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental		Field Strength of Spurious	
	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)
40.66 - 40.70	67.04	2,250	47.04	225
70 - 130	61.94	1,250	41.94	125
130 - 174	* 61.94 - 71.48	* 1,250 - 3,750	* 41.94 - 51.48	* 125 - 375
174 - 260	71.48	3,750	51.48	375
260 - 470	* 71.48 - 81.94	* 3,750 - 12,500	* 51.48 - 61.94	* 375 - 150
above 470	81.94	12,500	61.94	1,250

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



- Remark:
1. Emission level in dBuV/m=20 log (uV/m)
  2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
  3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205
  4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of §15.205, then the general radiated emission limits in § 15.209 apply.
  5. For the band 130-174MHz, uV/m at 3meters = 56.81818(F) – 6136.3636;  
For the band 260-470MHz uV/m at 3meters = 41.6667(F) – 7083.3333;  
Where F is the frequency in MHz.
  6. 433.92MHz limit = 41.6667 \* 433.92 – 7083.33333= 10996.681 uV/m  
= 80.8dBuV/m

## 2.5 Configuration of Tested System

**Fig. 2-1 Configuration of Tested System**

**EUT  
(TX)**

**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	N/A					

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§ 15.207 RSS-Gen §7.2.2	Conducted Emission	N/A
§ 15.231 RSS-210 issue 7,§A1	Radiated Emission	Compliant
§ 15.231(c) RSS-210 issue 7,§A1.1 RSS-Gen §4.6.1	20dB Bandwidth / 99% Bandwidth	Compliant
	Duty Cycle Test (Pulse Modulation)	N/A
§ 15.231(a)(1) RSS-210 issue 7,§A1.1.3	Release Time Measurement	Compliant

### 4. Description of test modes

The EUT has been tested under engineering test mode condition. and the EUT staying in continuous transmitting mode. The Frequency 433.92 MHz is chosen for testing.

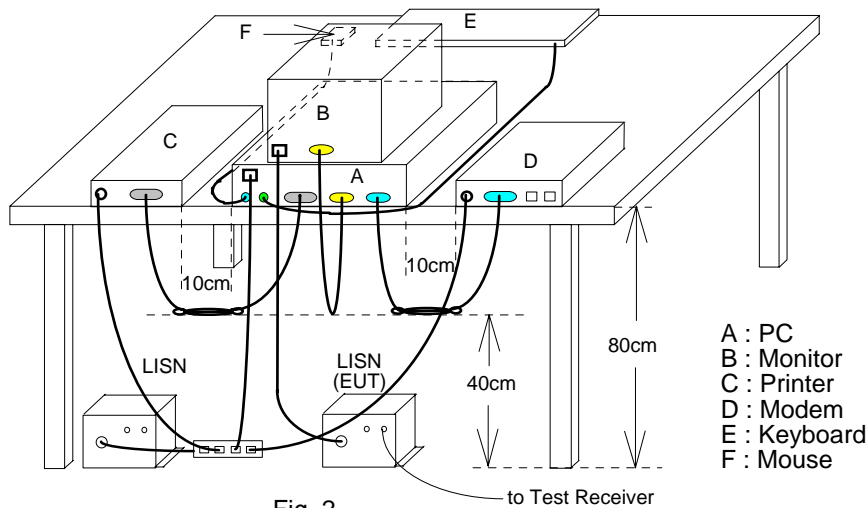
The H, E1 and E2-axis of EUT were pre-test; H and E1 mode were the worse case and report.

## 5. Conducted Emissions Test

### 5.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

### 5.2 Test SET-UP (Block Diagram of Configuration)



### 5.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCS30	828985/004	09/16/2008	09/15/2009
LISN	Rolf-Heine	NNB-2/16Z	99012	02/18/2008	02/17/2009
LISN	FCC	FCC-LISN-50/250-2 5-2-01	04034	02/18/2008	02/17/2009
50Ohms terminator	N/A	EMC-049-1	N/A	06/04/2008	06/03/2009
Coaxial Cables	N/A	WK CE Cable	N/A	11/30/2008	11/29/2009

### 5.4 Measurement Result:

N/A, The device is powered by car battery.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

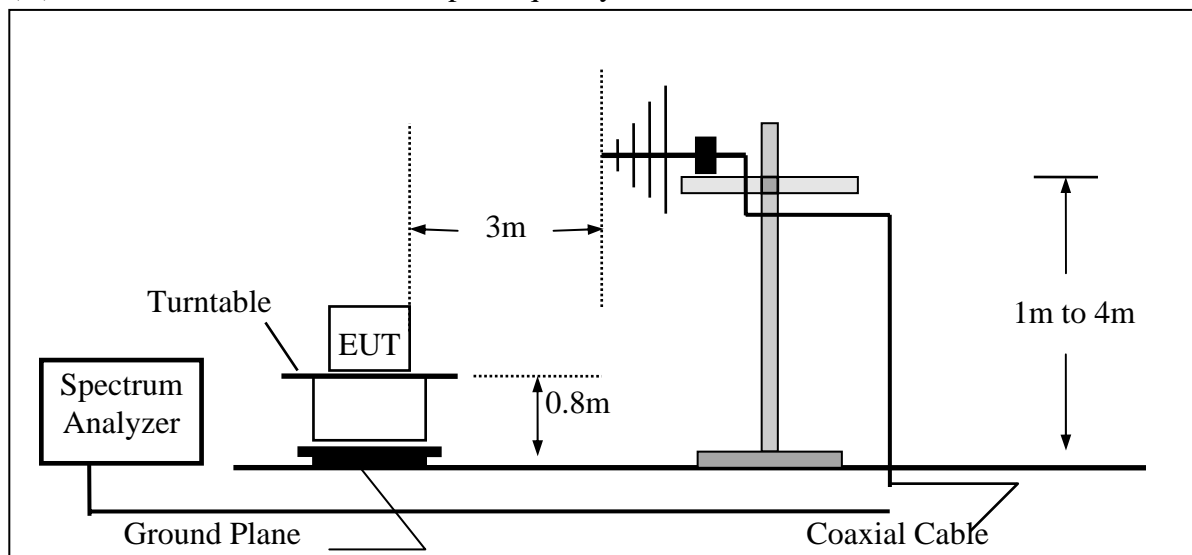
## 6. RADIATED EMISSION TEST

### 6.1 Measurement Procedure

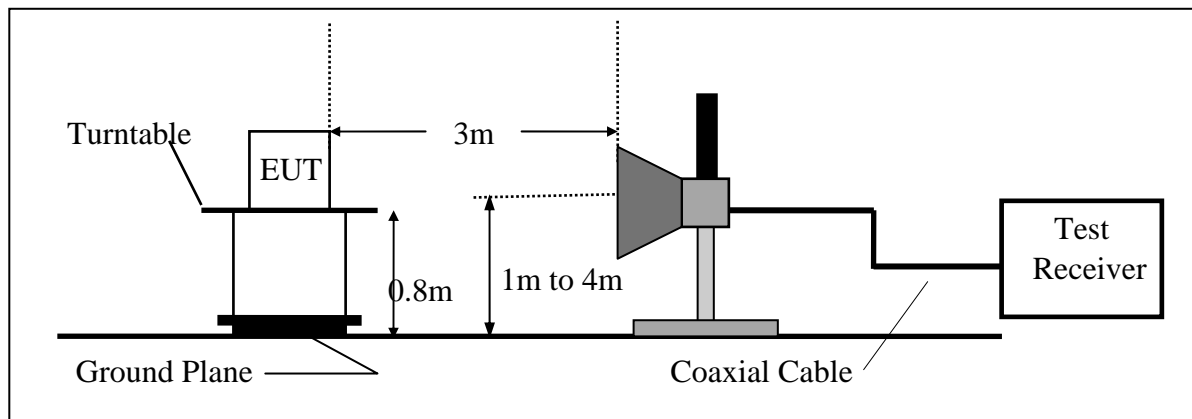
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

### 6.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

### 6.3 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R & S	FSP 40	100034	02/22/2008	02/21/2009
RF-Amplifier	Agilent	8447D	1937A02834	11/30/2007	11/29/2008
RF-Amplifier	EM Electronics	EM30180	6031802	11/30/2007	11/29/2008
Broadband Antenna	SCHWAZBECK	VULB9160	3136	11/15/2007	11/14/2008
Horn Antenna	Agilent	BBHA9120D	320	03/14/2008	03/13/2009
Low Loss Cable	N/A	966 RE Cable	10m	11/30/2007	11/29/2008
Turn Table	HD	DT420	420/542	N/A	N/A
Antenna Master	HD	MA 240	240/515	N/A	N/A
Controller	HD	HD 100	100/589	N/A	N/A
966 3m Site	TDK	N/A	N/A	10/01/2008	09/30/2009

### 6.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Average Value = Peak Value + 20 Log (Ton/Tp) ..... Pulse Modulation

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

## 6.5 Measurement Result

Operation Mode: Transmitting Mode      Test Date: Dec. 04, 2008  
Fundamental Frequency: 433.92 MHz H mode      Test By: Jason  
Temperature : 25 °C      Pol: Vertical  
Humidity : 65 %

Freq. (MHz)	F /S	Ant.Pol. (H/V)	Peak Reading (dBuV)	AV Correct dB	Ant./CL CF(dB)	Peak Level (dBuV/m)	AV Level (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
433.92	F	V	51.47	---	-9.04	42.43	---	100.80	80.80	-38.37	P
30.00	S	V	49.84	---	-14.97	34.87	---	80.80	60.80	-25.93	P
51.34	S	V	42.97	---	-14.19	28.78	---	80.80	60.80	-32.02	P
58.13	S	V	42.23	---	-14.66	27.57	---	80.80	60.80	-33.23	P
92.08	S	V	47.05	---	-17.38	29.67	---	80.80	60.80	-31.13	P
867.84	S	V	43.60	---	-1.63	41.97	---	80.80	60.80	-18.83	P
1301.76	*S	V	44.74	---	-6.81	37.93	---	74.00	54.00	-16.07	P
1735.68	S	V	---	---	---	---	---	80.80	60.80	---	---
2169.60	S	V	---	---	---	---	---	80.80	60.80	---	---
2603.52	S	V	---	---	---	---	---	80.80	60.80	---	---
3037.44	S	V	---	---	---	---	---	80.80	60.80	---	---
3471.36	S	V	---	---	---	---	---	80.80	60.80	---	---
3905.28	*S	V	---	---	---	---	---	74.00	54.00	---	---
4339.20	S	V	---	---	---	---	---	80.80	60.80	---	---

### Remark:

- (1) + F/S    F: denotes Fundamental Frequency; S: denotes Spurious Frequency
- (2) EUT Orthogonal Axes: X denotes Laid on Table; Y denotes Vertical Stand.
- (3) Measuring frequencies from 30 MHz to the 10th harmonic of fundamental frequency of 433.92 MHz.
- (4) Dates of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) \* Denotes spurious frequency, which falls within the Restricted Bands specified in provision of §15.205, then the general radiated emission limits in § 15.209 apply.
- (6) Peak Setting: 30MHz – 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 5GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Operation Mode: Transmitting Mode  
Fundamental Frequency: 433.92MHz H mode  
Temperature : 25 °C  
Humidity : 65 %

Test Date: Dec. 04, 2008  
Test By: Jason  
Pol: Horizontal

Freq. (MHz)	F /S	Ant. Pol. (H/V)	Peak Reading (dBuV)	AV Correct dB	Ant./CL CF(dB)	Peak Level (dBuV/m)	AV Level (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
433.92	F	H	68.17	---	-9.04	59.13	---	100.80	80.80	-21.67	P
30.00	S	H	48.82	---	-14.97	33.85	---	80.80	60.80	-26.95	P
38.73	S	H	42.80	---	-13.84	28.96	---	80.80	60.80	-31.84	P
67.83	S	H	42.69	---	-15.60	27.09	---	80.80	60.80	-33.71	P
92.08	S	H	42.78	---	-17.38	25.40	---	80.80	60.80	-35.40	P
867.84	S	H	50.96	---	-1.63	49.33	---	80.80	60.80	-11.47	P
1301.76	*S	H	46.37	---	-6.81	39.56	---	74.00	54.00	-14.44	P
1735.68	S	H	---	---	---	---	---	80.80	60.80	---	---
2169.60	S	H	---	---	---	---	---	80.80	60.80	---	---
2603.52	S	H	---	---	---	---	---	80.80	60.80	---	---
3037.44	S	H	---	---	---	---	---	80.80	60.80	---	---
3471.36	S	H	---	---	---	---	---	80.80	60.80	---	---
3905.28	*S	H	---	---	---	---	---	74.00	54.00	---	---
4339.20	S	H	---	---	---	---	---	80.80	60.80	---	---

Remark:

- (1) + F/S F: denotes Fundamental Frequency; S: denotes Spurious Frequency
- (2) EUT Orthogonal Axes: X denotes Laid on Table; Y denotes Vertical Stand.
- (3) Measuring frequencies from 30 MHz to the 10th harmonic of fundamental frequency of 433.92 MHz.
- (4) Dates of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) \* Denotes spurious frequency, which falls within the Restricted Bands specified in provision of §15.205, then the general radiated emission limits in § 15.209 apply.
- (6) Peak Setting: 30MHz – 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 5GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Operation Mode: Transmitting Mode  
Fundamental Frequency: 433.92 MHz E1 mode  
Temperature : 25 °C  
Humidity : 65 %

Test Date: Dec. 04, 2008  
Test By: Jason  
Pol: Vertical

Freq. (MHz)	F /S	Ant. Pol. (H/V)	Peak Reading (dBuV)	AV Correct dB	Ant./CL CF(dB)	Peak Level (dBuV/m)	AV Level (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
433.92	F	V	68.58	---	-9.04	59.54	---	100.80	80.80	-21.26	P
30.00	S	V	49.55	---	-14.97	34.58	---	80.80	60.80	-26.22	P
92.08	S	V	47.37	---	-17.38	29.99	---	80.80	60.80	-30.81	P
104.69	S	V	43.31	---	-16.63	26.68	---	80.80	60.80	-34.12	P
523.73	S	V	34.18	---	-8.08	26.10	---	80.80	60.80	-34.70	P
867.84	S	V	49.51	---	-1.63	47.88	---	80.80	60.80	-12.92	P
1301.76	*S	V	46.56	---	-6.81	39.75	---	74.00	54.00	-14.25	P
1735.68	S	V	---	---	---	---	---	80.80	60.80	---	---
2169.60	S	V	---	---	---	---	---	80.80	60.80	---	---
2603.52	S	V	---	---	---	---	---	80.80	60.80	---	---
3037.44	S	V	---	---	---	---	---	80.80	60.80	---	---
3471.36	S	V	---	---	---	---	---	80.80	60.80	---	---
3905.28	*S	V	---	---	---	---	---	74.00	54.00	---	---
4339.20	S	V	---	---	---	---	---	80.80	60.80	---	---

Remark:

- (1) + F/S F: denotes Fundamental Frequency; S: denotes Spurious Frequency
- (2) EUT Orthogonal Axes: X denotes Laid on Table; Y denotes Vertical Stand.
- (3) Measuring frequencies from 30 MHz to the 10th harmonic of fundamental frequency of 433.92 MHz.
- (4) Dates of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) \* Denotes spurious frequency, which falls within the Restricted Bands specified in provision of §15.205, then the general radiated emission limits in § 15.209 apply.
- (6) Peak Setting: 30MHz – 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 5GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Operation Mode: Transmitting Mode  
Fundamental Frequency: 433.92MHz E1 mode  
Temperature : 25 °C  
Humidity : 65 %

Test Date: Dec. 04, 2008  
Test By: Jason  
Pol: Horizontal

Freq. (MHz)	F /S	Ant. Pol. (H/V)	Peak Reading (dBuV)	AV Correct dB	Ant./CL CF(dB)	Peak Level (dBuV/m)	AV Level (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	
433.92	F	H	57.97	---	-9.04	48.93	---	100.80	80.80	-31.87	P
30.00	S	H	47.71	---	-14.97	32.74	---	80.80	60.80	-28.06	P
65.89	S	H	41.91	---	-17.38	24.53	---	80.80	60.80	-36.27	P
92.08	S	H	43.66	---	-16.63	27.03	---	80.80	60.80	-33.77	P
159.98	S	H	33.57	---	-8.08	25.49	---	80.80	60.80	-35.31	P
867.84	S	H	46.98	---	-1.63	45.35	---	80.80	60.80	-15.45	P
1301.76	*S	H	45.50	---	-6.81	38.69	---	74.00	54.00	-15.31	P
1735.68	S	H	---	---	---	---	---	80.80	60.80	---	---
2169.60	S	H	---	---	---	---	---	80.80	60.80	---	---
2603.52	S	H	---	---	---	---	---	80.80	60.80	---	---
3037.44	S	H	---	---	---	---	---	80.80	60.80	---	---
3471.36	S	H	---	---	---	---	---	80.80	60.80	---	---
3905.28	*S	H	---	---	---	---	---	74.00	54.00	---	---
4339.20	S	H	---	---	---	---	---	80.80	60.80	---	---

Remark:

- (1) + F/S F: denotes Fundamental Frequency; S: denotes Spurious Frequency
- (2) EUT Orthogonal Axes: X denotes Laid on Table; Y denotes Vertical Stand.
- (3) Measuring frequencies from 30 MHz to the 10th harmonic of fundamental frequency of 433.92 MHz.
- (4) Dates of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) \* Denotes spurious frequency, which falls within the Restricted Bands specified in provision of §15.205, then the general radiated emission limits in § 15.209 apply.
- (6) Peak Setting: 30MHz – 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 5GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## 7. 20DB, 99% OCCUPIED BANDWIDTH

### 7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10KHz, Span =100KHz.
4. Set SPA Max hold. Mark peak, -20dB.

### 7.2 Test SET-UP (Block Diagram of Configuration)

Same as 6.3 Radiated Emission Measurement.

### 7.3 Measurement Equipment Used:

Same as 6.3 Radiated Emission Measurement.

### 7.4 Measurement Results

Refer to attached data chart.

The center frequency  $f_c$  is **433.92MHz**, according to the Rules, section 15.231(C), the Bandwidth of Center Frequency at-20dB should be calculated as following:

$$433.92 \times 0.0025 = 1.0848(\text{MHz})$$

So, the Uper/Lower frequencies limit should be specified as:

$$f_{(U)} = f_c + \Delta f/2 = 433.92 + 0.5424 = 434.46(\text{MHz})$$

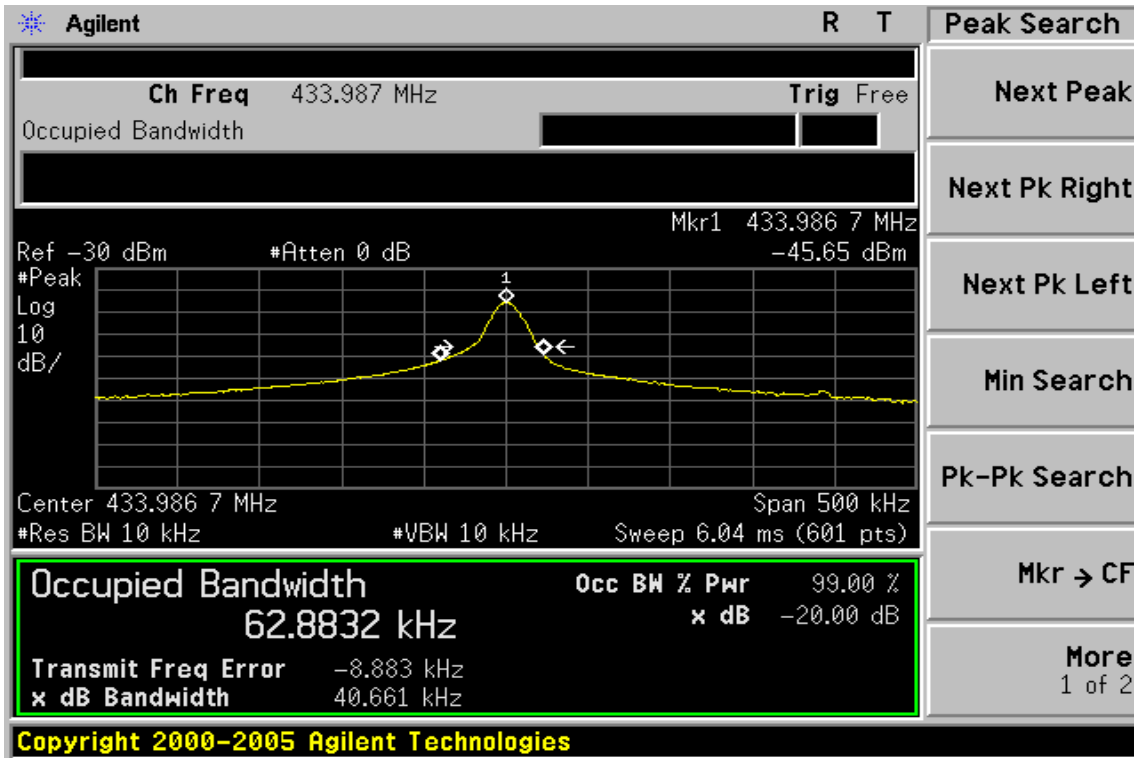
$$f_{(L)} = f_c - \Delta f/2 = 433.92 - 0.5424 = 433.377 (\text{MHz})$$

Measurement Result:

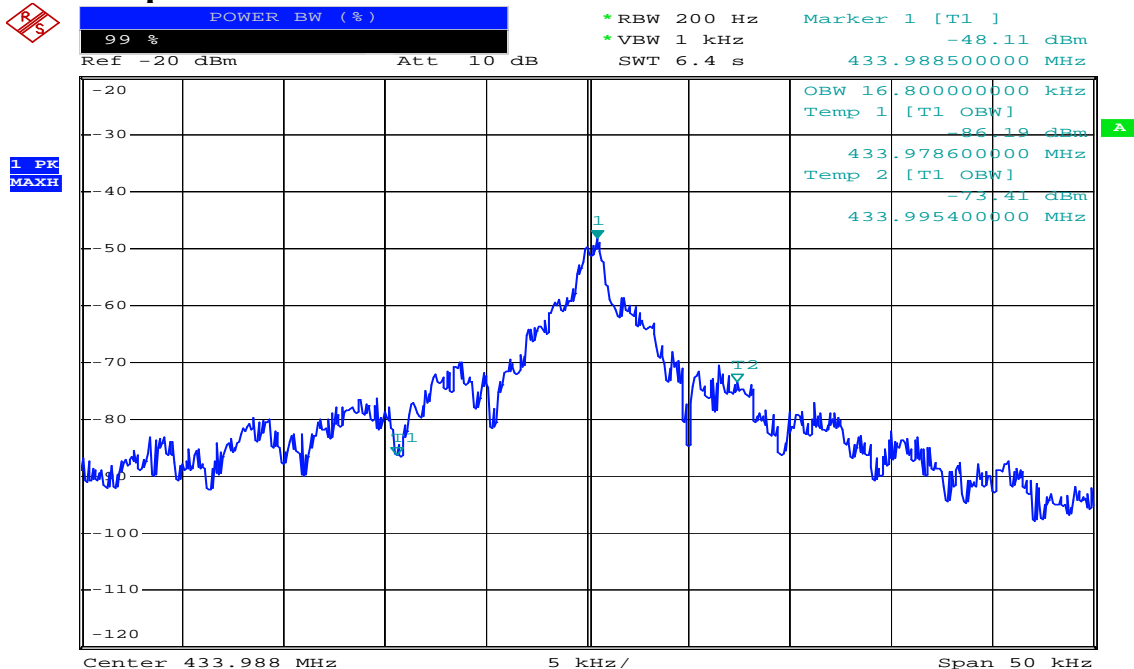
-20dB bandwidth = 40.661 kHz within allowed frequency range.

99% bandwidth = 16.8 kHz within allowed frequency range.

## 20dB Band Width Test Data



## 99% Occupied Band Width Test Data



Comment: 1  
Date: 12.DEC.2008 11:06:00

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## 8. DUTY CYCLE MEASUREMENT

### 8.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set ETU normal operating mode.
3. Set SPA Center Frequency = fundamental frequency, RBW, VBW= 100KHz, Span =0 Hz. Adjacent sweep.
4. Set SPA View. Mark delta.

### 8.2 Test SET-UP (Block Diagram of Configuration)

Same as 6.3 Radiated Emission Measurement.

### 8.3 Measurement Equipment Used:

Same as 6.3 Radiated Emission Measurement.

### 8.4 Measurement Results:

N/A

## 9. RELEASE TIME MEASUREMENT:

FCC 15.231 (a) (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

### 9.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set SPA Center Frequency = fundamental frequency, RBW, VBW= 100 KHz, Span =0Hz. Sweep Time= 5s.
3. Set EUT as normal operation and trigger by the other transmitter,
4. Set SPA Max hold. And Delta Mark.

### 9.2 Test SET-UP (Block Diagram of Configuration)

Same as 6.3 Radiated Emission Measurement.

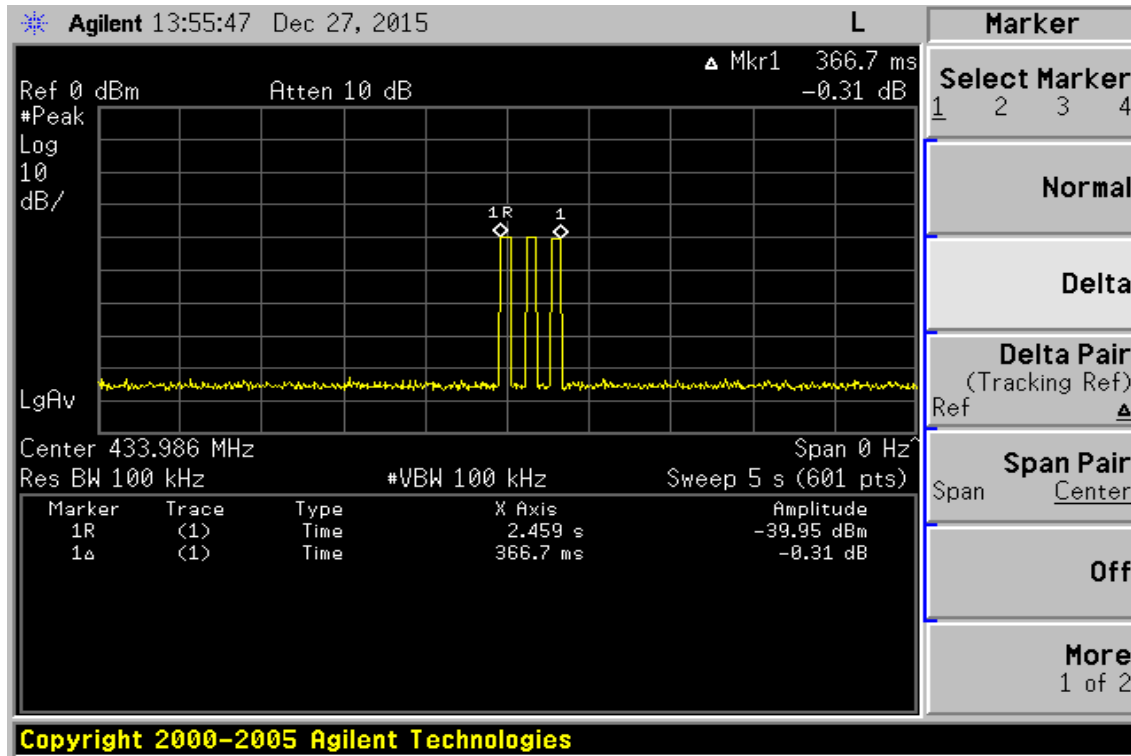
### 9.3 Measurement Equipment Used:

Same as 6.3 Radiated Emission Measurement.

### 9.4 Measurement Results

The release time is less than 5 s.

Refer to attached data chart.



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. 除非另有說明，此報告結果僅對測試之樣品負責。本報告未經本公司書面許可，不可部份複製。  
 This Test Report is issued by the Company under its General Conditions of Service which is available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this Test Report is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.