



# FCC 47 CFR PART 15 SUBPART C

## TEST REPORT

For

**Applicant :** GTSYS Limited

**Address :** 23/F, Heng Shan Centre, 145 Queen's Road East, Wan Chai, Hong Kong

**Product Name :** GTSYS - RFID UHF Desktop

**Model Name :** DR-U-USB, DRUUSB-R1-D001, DRUUSB-R1-D002, DRUUSB-R1-D003, DRUUSB-R1-D004, DRUUSB-R1-D004

**Brand Name :**

GTSYS LTD

**FCC ID :** A2BDRUUSB-R1-22DB

**Report No. :** STS111123F2

**Date of Issue :** November. 24, 2011

**Issued by :** Shenzhen Super Test Service Technology Co., Ltd.

**Address :** No.5, Langshan 2nd Rd., North Hi-Tech Industrial Park, Nanshan Shenzhen, China

**Tel :** 86-755-2795 8522

**Fax :** 86-755-2795 8022

*The report consists 46 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by STS. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver.*

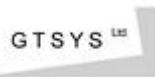
## TABLE OF CONTENTS

<b>1. VERIFICATION OF CONFORMITY.....</b>	<b>3</b>
<b>2. GENERAL INFORMATION.....</b>	<b>4</b>
2.1 Product Information.....	4
2.2 Objective.....	5
2.3 Test Standards and Results.....	5
2.4 Environmental Conditions.....	5
<b>3. TEST FACILITY.....</b>	<b>6</b>
3.1 TEST FACILITY.....	6
3.2 GENERAL TEST PROCEDURES.....	6
3.3 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS.....	7
<b>4. TEST EQUIPMENT LIST.....</b>	<b>8</b>
<b>5. 47 CFR Part 15 C 15.247 Requirements.....</b>	<b>9</b>
5.1 Number of Hopping Frequency.....	9
5.2 20dB Bandwidth.....	11
5.3 Peak Output Power.....	13
5.4 Carried Frequency Separation.....	15
5.5 Time of Occupancy (Dwell time).....	15
5.6 Conducted Spurious Emission.....	20
5.7 Band Edge.....	22
5.8 Conducted Emission.....	25
5.9 Radiated Emission.....	28
<b>APPENDIX 1.....</b>	<b>37</b>
<b>PHOTOGRAPHS OF TEST SETUP.....</b>	<b>37</b>
<b>APPENDIX 2.....</b>	<b>40</b>
<b>PHOTOGRAPHS OF EUT.....</b>	<b>40</b>

## 1. VERIFICATION OF CONFORMITY

**Equipment Under Test:** GTSYS - RFID UHF Desktop

**Brand Name:**



**Model Number:** DR-U-USB

**Series Model Name:** DR-U-USB, DRUUSB-R1-D001, DRUUSB-R1-D002, DRUUSB-R1-D003, DRUUSB-R1-D004, DRUUSB-R1-D004

**Difference description:** Only the appearance and model name are different.

**FCC ID:** A2BDRUUSB-R1-22DB

**Applicant:** GTSYS Limited

23/F, Heng Shan Centre, 145 Queen's Road East, Wan Chai, Hong Kong  
CWLINUX

**Manufacturer:** Unit 138, 13/F Weswick Cermercial Bld. 147-151 Queen's Road East , Wan Chai, Hong Kong

**Technical Standards:** 47 CFR Part 15 Subpart C

**File Number:** STS11123F2

**Date of test:** November 09, 2011 ~ November 24, 2011

**Deviation:** None

**Condition of Test Sample:** Normal

**Test Result:** PASS

The above equipment was tested by STS for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

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

Tested by (+ signature):

A handwritten signature in black ink, appearing to read "Zhang Ling".

Zhang Ling November. 24, 2011

Review by (+ signature):

A handwritten signature in black ink, appearing to read "July Wen".

July Wen November. 24, 2011

Approved by (+ signature):

A handwritten signature in black ink, appearing to read "Terry Yang".

Terry Yang November. 24, 2011

## 2. GENERAL INFORMATION

### 2.1 Product Information

EUT Description	
Description:	GTSYS - RFID UHF Desktop
Brand Name:	
Model Name:	DR-U-USB
Series Number:	DR-U-USB, DRUUSB-R1-D001, DRUUSB-R1-D002, DRUUSB-R1-D003, DRUUSB-R1-D004, DRUUSB-R1-D004
Model Difference description:	Only the appearance and model name are different.
Power Supply:	This device is powered by USB
Frequency Range:	902.75MHz-927.25MHz(Low:902.75MHz, Middle:914.75MHz, High:927.25MHz)
Number of Channels:	50
Transmit Power	22dBm
Modulation Technique:	DSB-ASK
Antenna Type:	Internal
Antenna Gain:	2 dBi
Temperature Range:	-20°C ~ +55°C

**NOTE:**

1. For a more detailed features description about the EUT, please refer to User's Manual.

## 2.2 Objective

The objective of the report is to perform tests according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15(10-1-05 Edition)	Radio Frequency Devices

## 2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Section	Description	Result	Date of Test
1	15.247(a)	Number of Hopping Frequency	PASS	2011-11-17
2	15.247(a)	20dB Bandwidth	PASS	2011-11-17
3	15.247(b)	Peak Output Power	PASS	2011-11-17
4	15.247(a)	Carrier Frequency Separation	PASS	2011-11-17
5	15.247(a)	Time of Occupancy (Dwell time)	PASS	2011-11-24
6	15.247(d)	Conducted Spurious Emission	PASS	2011-11-17
7	15.247(d)	Band Edge	PASS	2011-11-23
8	15.207	Conducted Emission	PASS	2011-11-15
9	15.247(d) 15.205 15.209	Radiated Emission	PASS	2011-11-15

*Note:* 1. The test result judgment is decided by the limit of measurement standard  
 2. The information of measurement uncertainty is available upon the customer's request.

## 2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

### 3. TEST FACILITY

#### 3.1 TEST FACILITY

Test Site: Compliance Certification Services Inc. (Kun shan) Laboratory

Location: No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China

Description: There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2009 and CISPR 16 requirements.

The FCC Registration Number is **424105**.

Site Filing: The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.

Instrument Tolerance: All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

#### 3.2 GENERAL TEST PROCEDURES

##### **EUT Function and Test Mode**

The EUT has been tested under normal operating (TX) and standby (RX) condition.

The field strength of radiation emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis).

The following data show only with the worst case setup.

The worst case of Y axis was reported.

Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is recorded by this report.

### Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4:2009, Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

### Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable 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 maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4:2009.

### **3.3 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS**

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 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	2655 - 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	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## 4. TEST EQUIPMENT LIST

**Instrumentation:** The following list contains equipment used at MOST for testing. The equipment conforms to the CISPR 16-1/ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calculator due date
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2012/03/14
2	Spectrum Analyzer	Agilent	E7405A	US44210471	2012/03/14
3	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2012/03/14
4	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2012/03/14
5	Terminator	Hubersuhner	50Ω	No.1	2012/03/14
6	RF Cable	SchwarzBeck	N/A	No.1	2012/03/14
7	Test Receiver	Rohde & Schwarz	ESPI	101202	2012/03/14
8	Bilog Antenna	Sunol	JB3	A121206	2012/03/14
9	Horn Antenna	TRC	N/A	N/A	2012/03/14
10	Cable	Resenberger	N/A	NO.1	2012/03/14
11	Cable	SchwarzBeck	N/A	NO.2	2012/03/14
12	Cable	SchwarzBeck	N/A	NO.3	2012/03/14
13	DC Power Filter	DuoJi	DL2×30B	N/A	2012/03/14
14	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2012/03/14
15	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2012/03/14
16	Test Receiver	Rohde & Schwarz	ESCI	100492	2012/03/14
17	Absorbing Clamp	Luthi	MDS21	3635	2012/03/14
18	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2012/03/14
19	AC Power Source	Kikusui	AC40MA	LM003232	2012/03/14
20	Test Analyzer	Kikusui	KHA1000	LM003720	2012/03/14
21	Line Impedance Network	Kikusui	LIN40MA-PCR-L	LM002352	2012/03/14
22	ESD Tester	Kikusui	KES4021	LM003537	2012/03/14
23	EMCPRO System	EM Test	UCS-500-M4	V0648102026	2012/03/14
24	Signal Generator	IFR	2032	203002/100	2012/03/14
25	Amplifier	A&R	150W1000	301584	2012/03/14
26	CDN	FCC	FCC-801-M2-25	47	2012/03/14
27	CDN	FCC	FCC-801-M3-25	107	2012/03/14
28	EM Injection Clamp	FCC	F-203I-23mm	403	2012/03/14
29	RF Cable	MIYAZAKI	N/A	No.1/No.2	2012/03/14
30	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2012/03/14
31	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2012/03/14

**NOTE:** Equipments listed above have been calibrated and are in the period of validation.

## 5. 47 CFR Part 15 C 15.247 Requirements

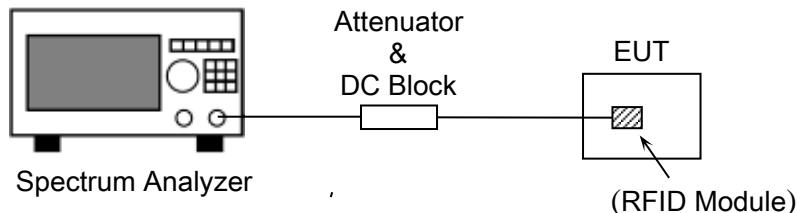
### 5.1 Number of Hopping Frequency

#### 5.1.1 Definition

According to FCC section 15.247(a)(1)(i). For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

#### 5.1.2 Test Description

The EUT is powered by the USB cable, is coupled to the Spectrum Analyzer (SA) through the Attenuator/DC Block. The path loss as the factor is calibrated to correct the reading. During the measurement, the EUT is activated and is set to operate at maximum power. The RF load attached to the EUT antenna terminal is 50Ohm.



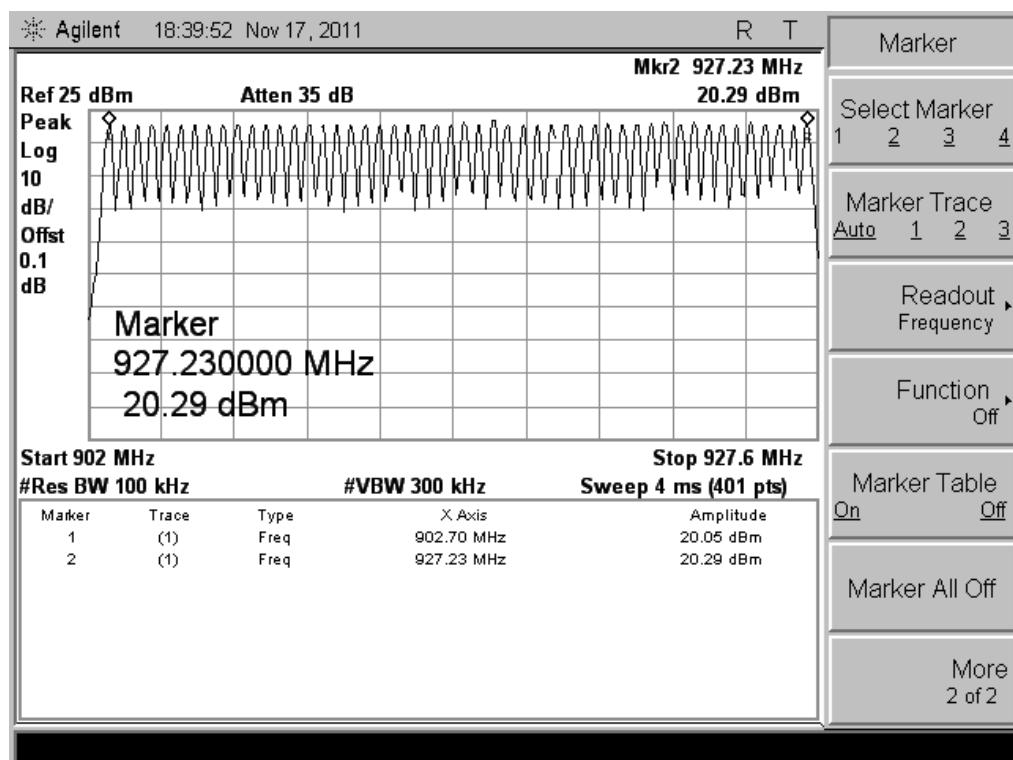
#### 5.1.3 Test Result

The Module operates at hopping-on test mode; the frequencies number employed is counted to verify the Module's using the number of hopping frequency.

#### A. Test Verdict

Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Refer to Plot	Verdict
902 - 928	50	25	Plot A	PASS

## B. Test Plots



(Plot A: 902MHz to 928MHz)

## 5.2 20dB Bandwidth

### 5.2.1 Definition

According to FCC section 15.247(a)(1)(i), For frequency hopping systems operating in the 902–928 MHz band: The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

### 5.2.2 Test Description

See section 5.1.2 of this report.

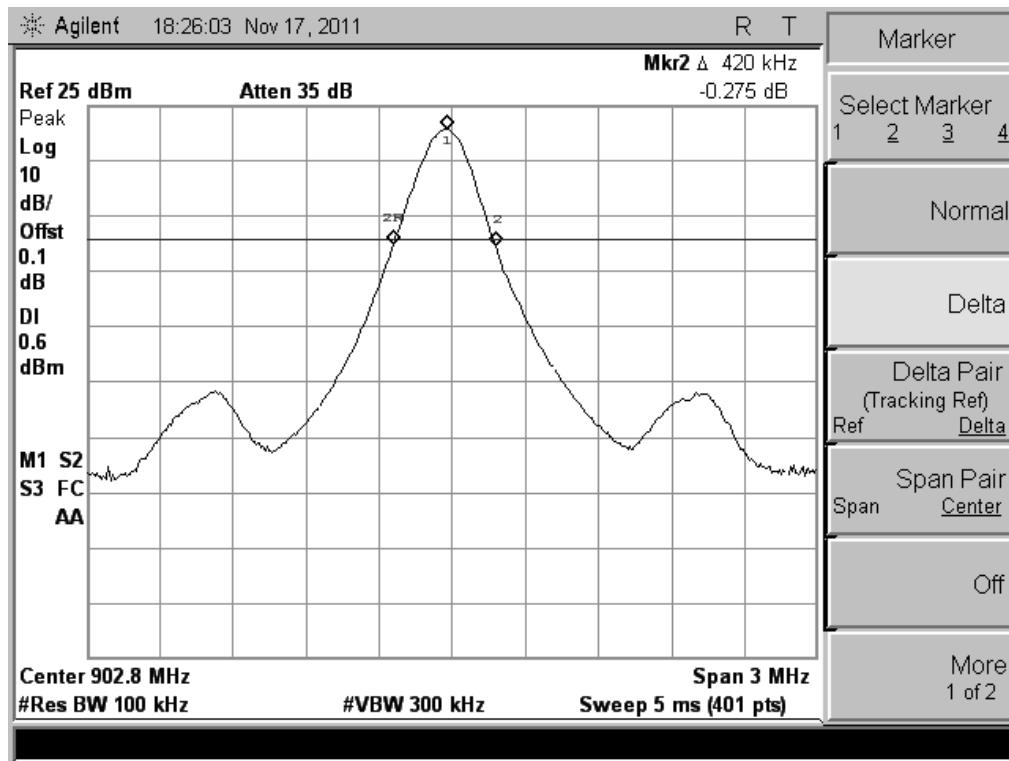
### 5.2.3 Test Result

The lowest, middle and highest channels are selected to perform testing to record the 20 dB bandwidth of the Module.

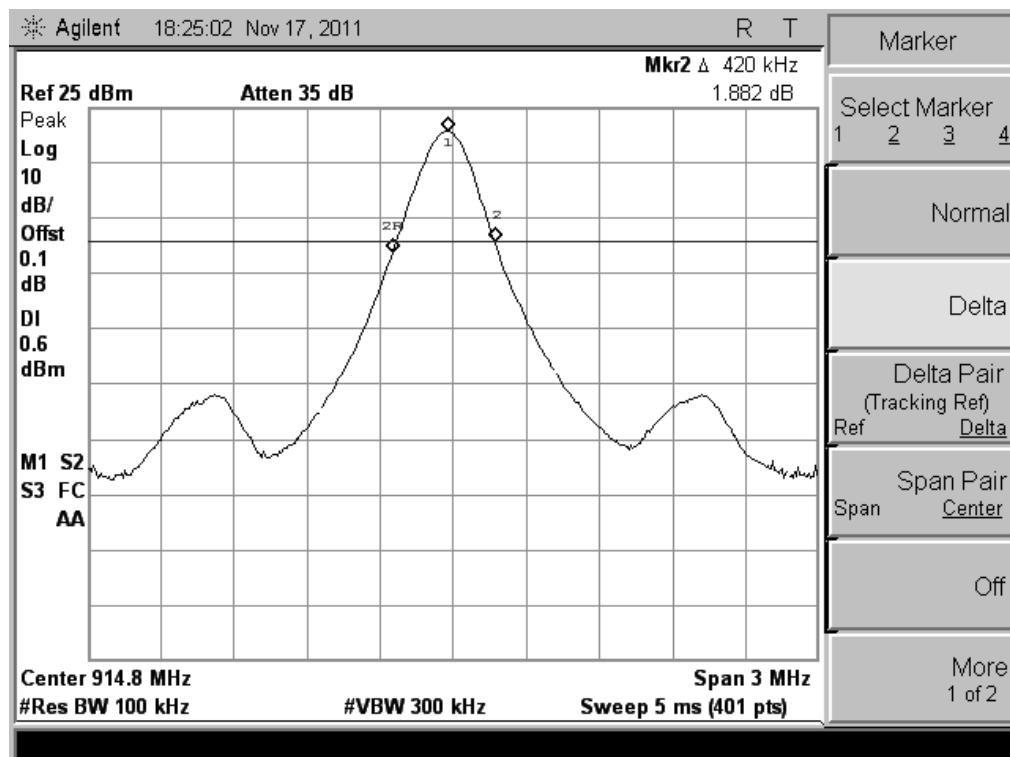
#### A. Test Verdict:

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)	Refer to Plot
Low	902.75	420	<500kHz	Plot A
Middle	914.75	420		Plot B
High	927.25	420		Plot C

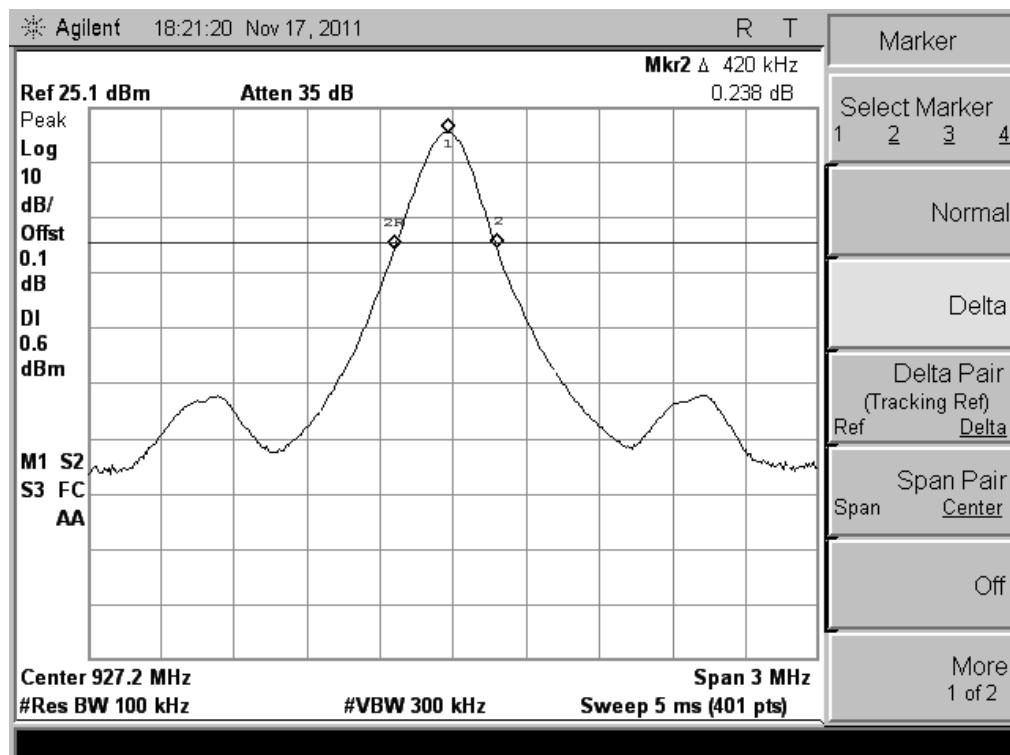
#### B. Test Plot:



(Plot A: CH Low)



(Plot B: CH Mid)



(Plot C: CH High)

## 5.3 Peak Output Power

### 5.3.1 Definition

According to FCC section 15.247(b)(2), for frequency hopping systems operating in the 902–928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

### 5.3.2 Test Description

See section 5.1.2 of this report.

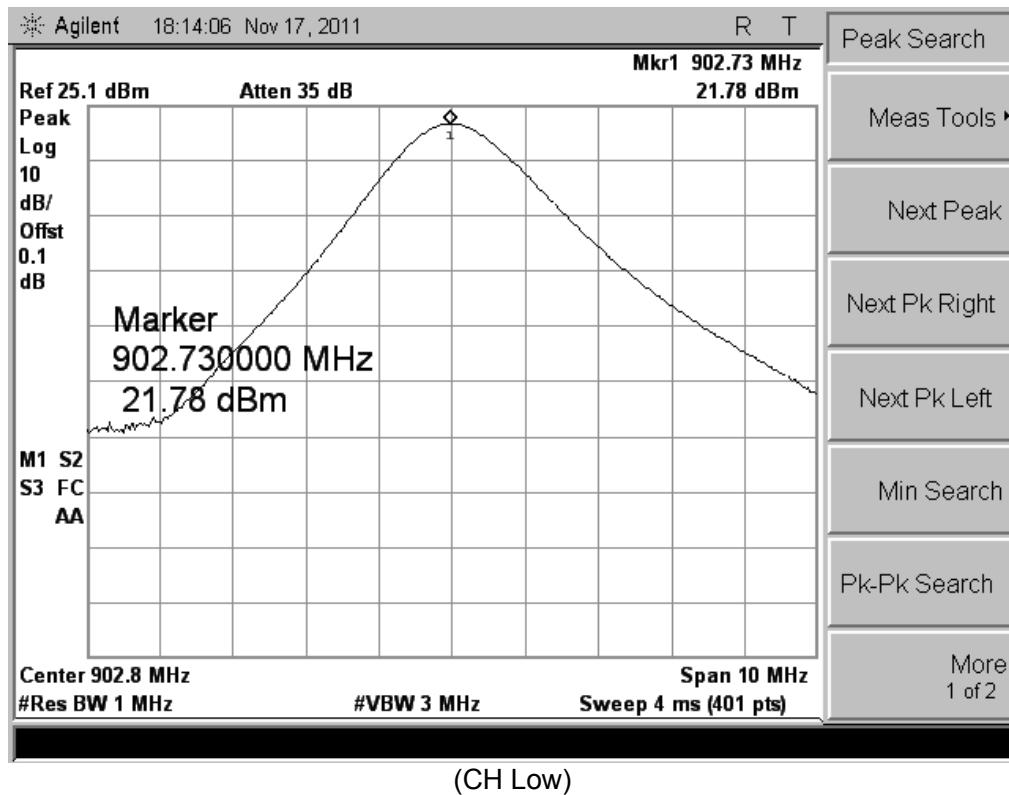
### 5.3.3 Test Result

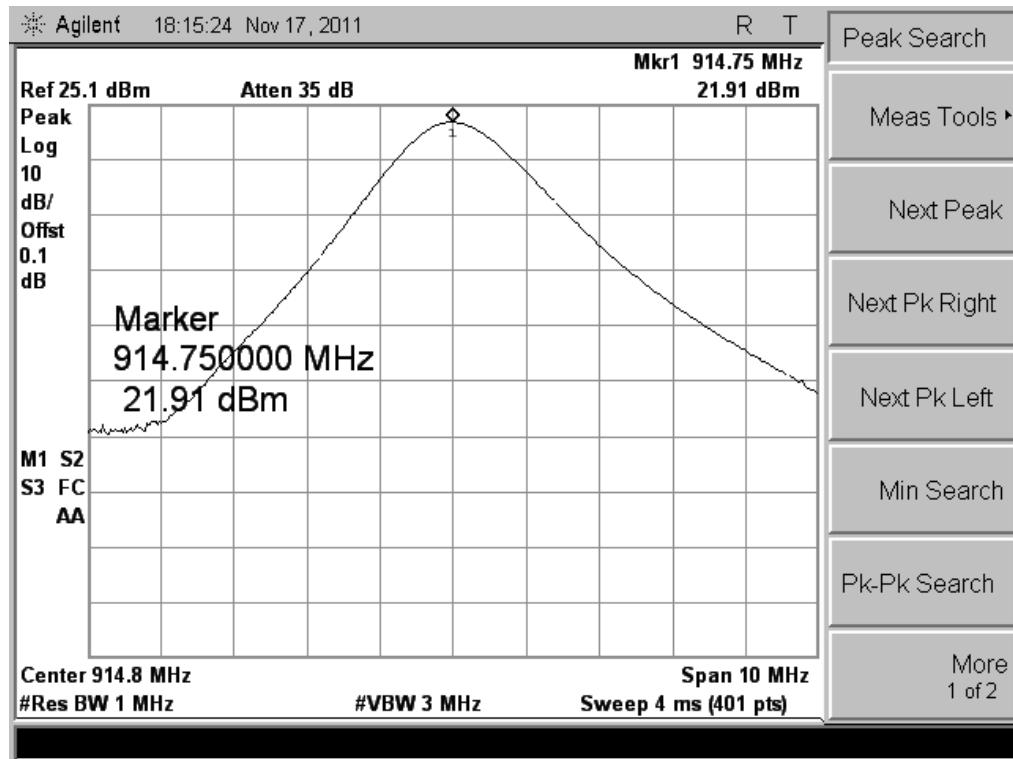
The EUT operates at maximum output power mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module. The maximum output power for the fundamental frequency 2442MHz is 17.39dBm. This power complies with the FCC requirement.

#### A. Test Verdict:

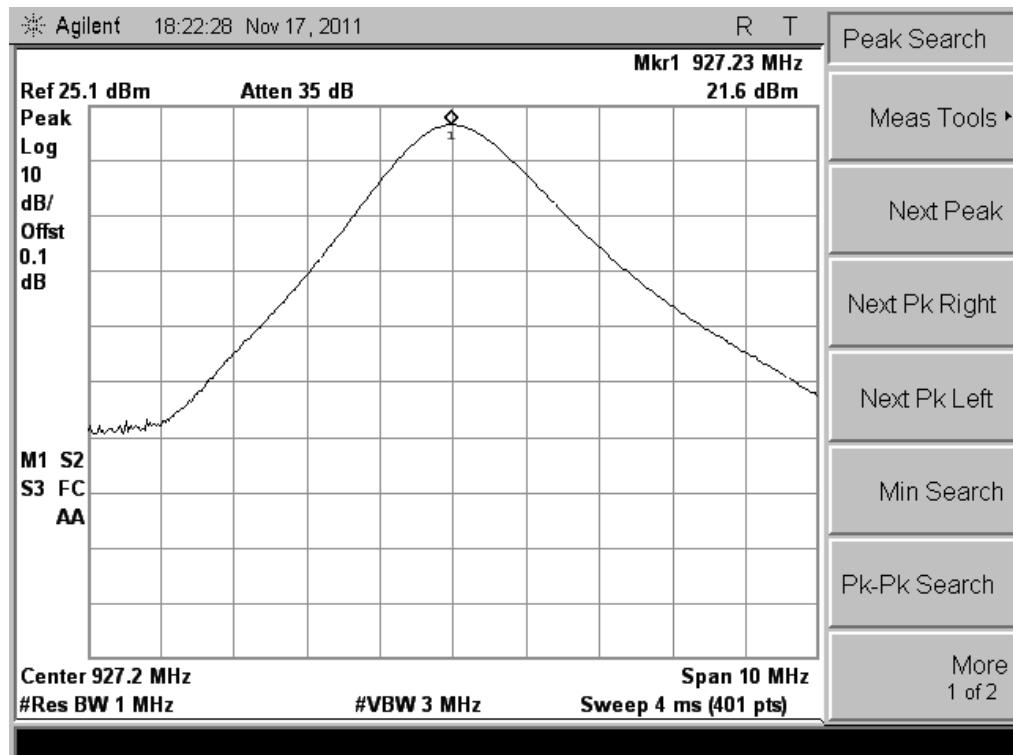
Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
Low	902.75	21.78	0.15	24	0.25	PASS
Middle	914.75	21.91	0.16			PASS
High	927.25	21.60	0.14			PASS

#### B. Test Plot:





(CH Mid)



(CH High)

## 5.4 Carried Frequency Separation

### 5.4.1 Definition

According to FCC section 15.247(a)(1)(i), For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

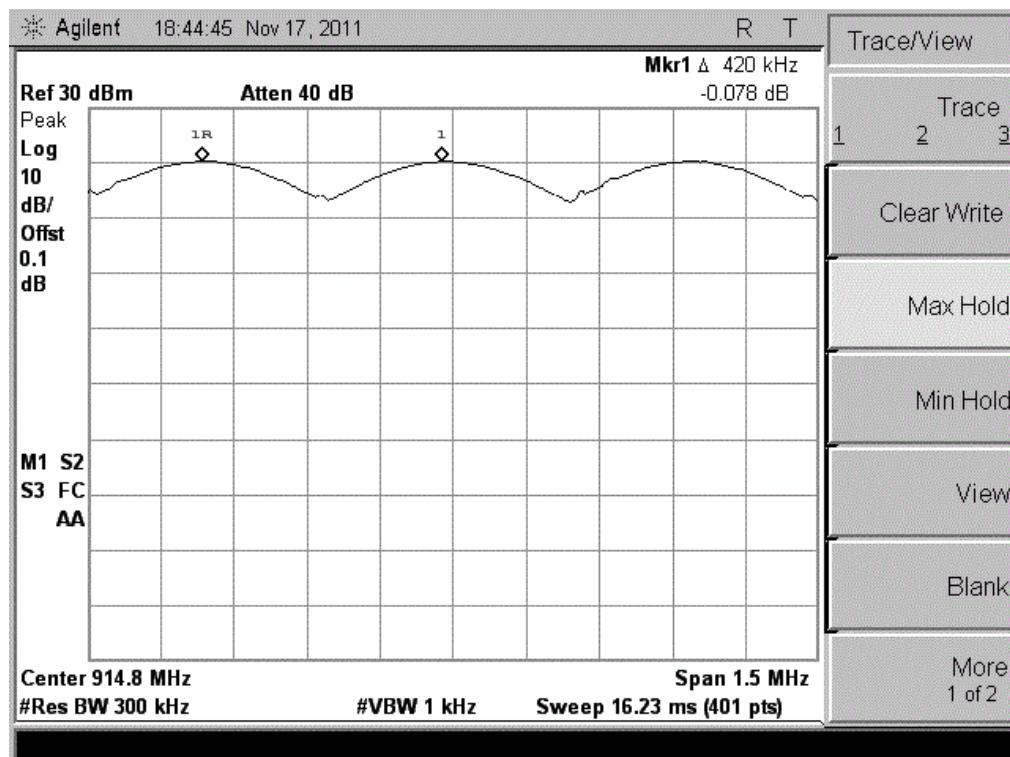
### 5.4.2 Test Description

See section 5.1.2 of this report.

### 5.4.3 Test Result

The EUT operates at hopping-on test mode.

The Module does have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel (420kHz, refer to section 5.1.3), whichever is greater. This Carried Frequency Separation complies with the FCC requirement.



(Carried Frequency Separation)

## 5.5 Time of Occupancy (Dwell time)

### 5.5.1 Definition

According to FCC section 15.247(a)(1)(i), For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping

frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

### 5.5.2 Test Description

See section 5.1.2 of this report.

### 5.5.3 Test Result

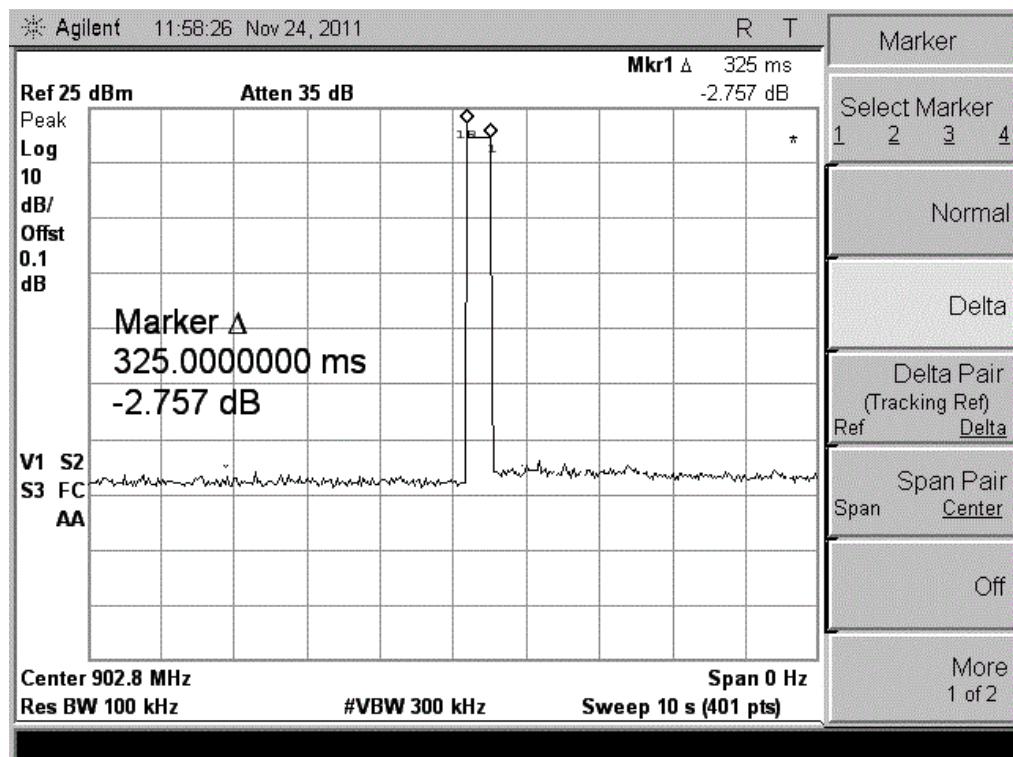
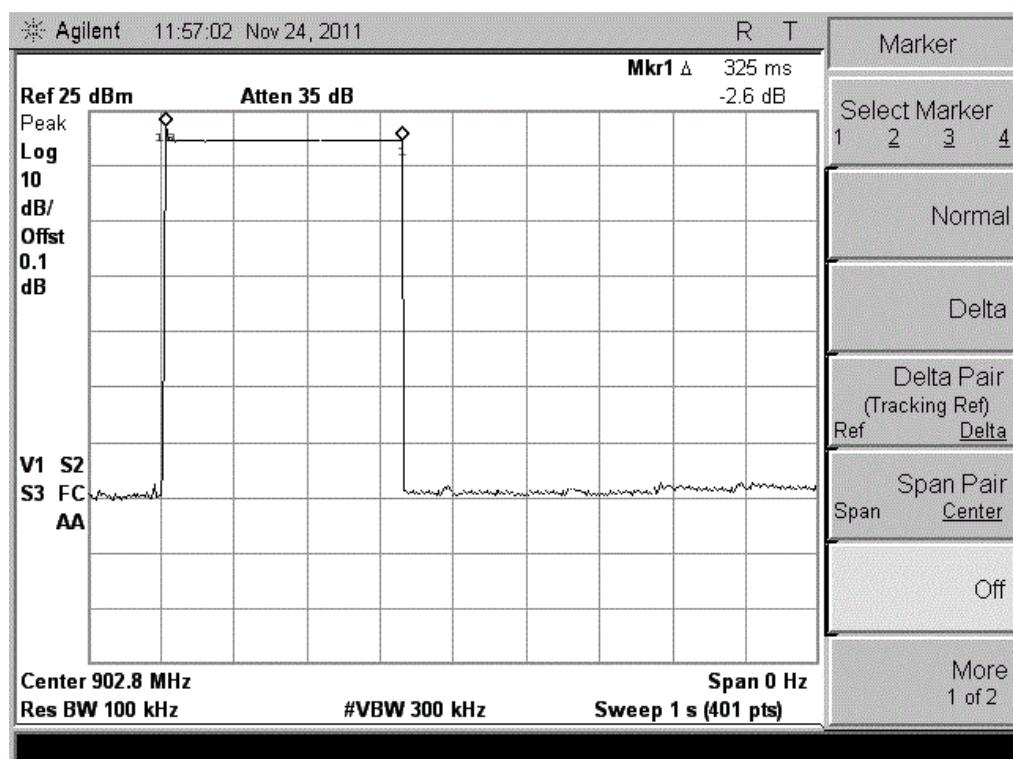
#### A. Test Verdict

Channel	Frequency (MHz)	Pulse Time		Calculated Dwell Time (ms)	Limit (ms)	Verdict
		ms	Refer to Plot			
Low	902.75	325	Plot A	295.70	400	PASS
Middle	914.75	325	Plot B	296.58		PASS
High	927.25	325	Plot C	303.80		PASS

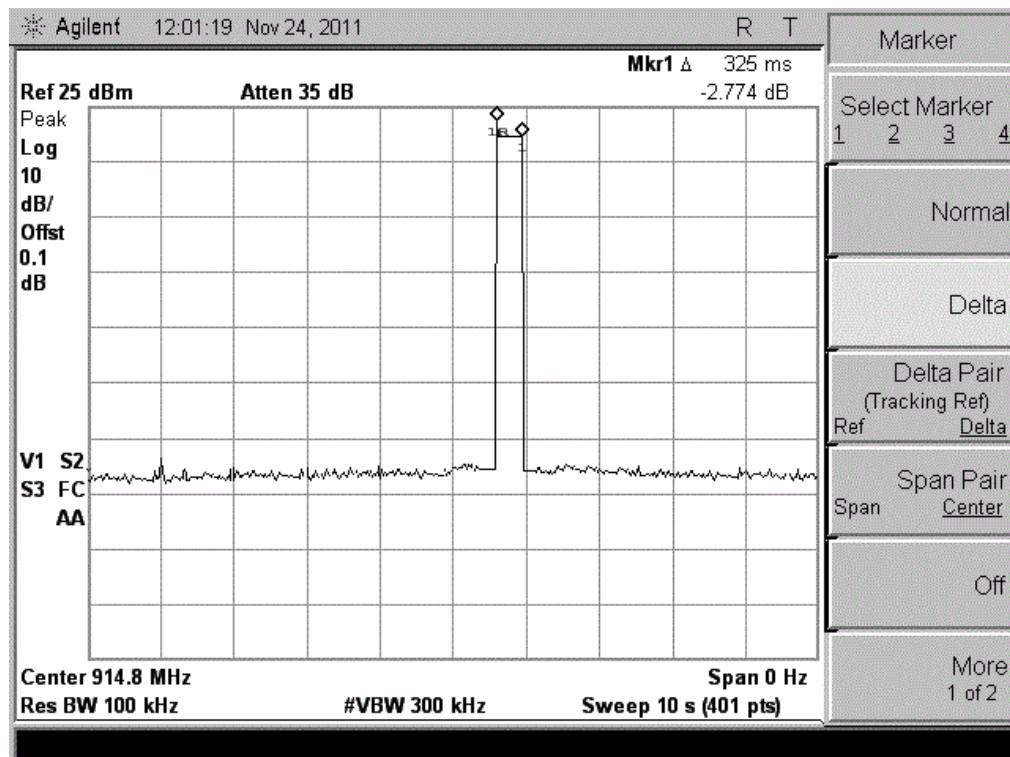
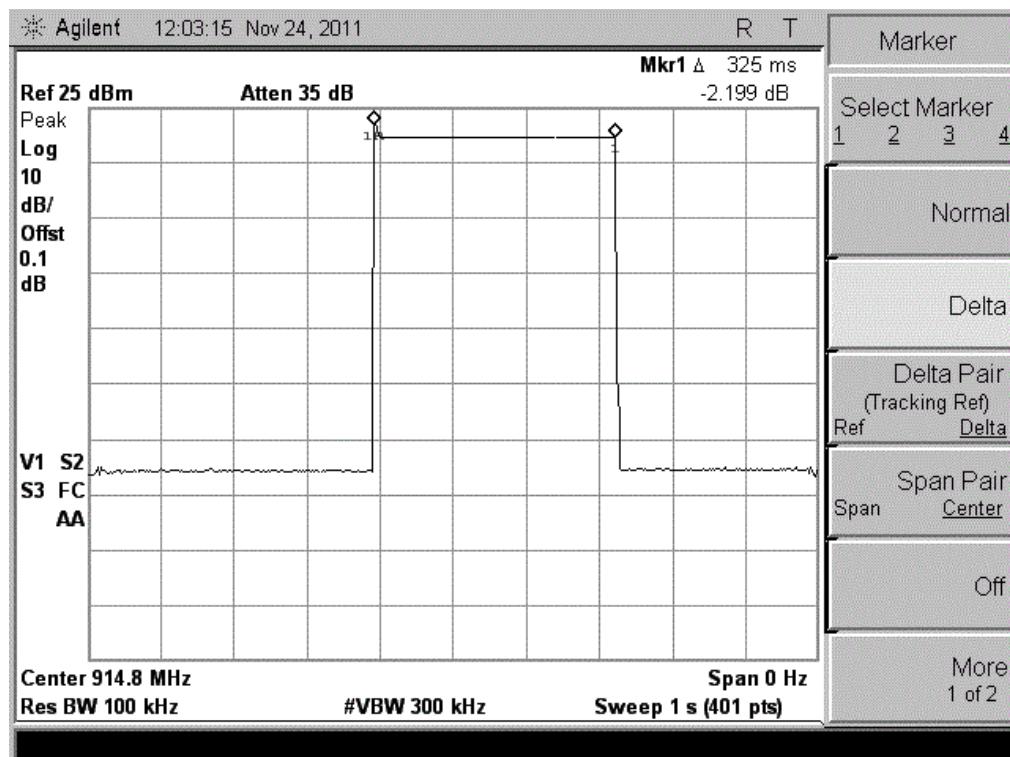
Time of occupancy calculation:  
 The minimum measured repetition of the channel occupancy (repetition) = 1  
 Single occupancy duration (single duration) = 0.325 sec  
 Time of occupancy = (single duration) x (repetition) = 0.325 x 1 = 0.325 sec

## B. Test Plots

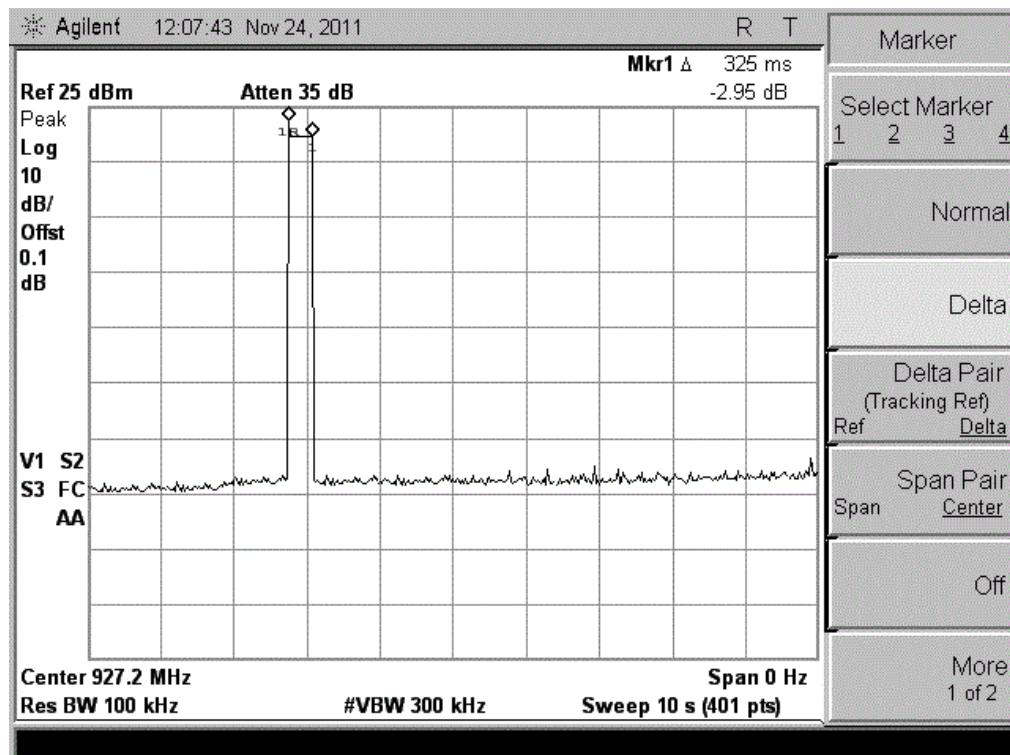
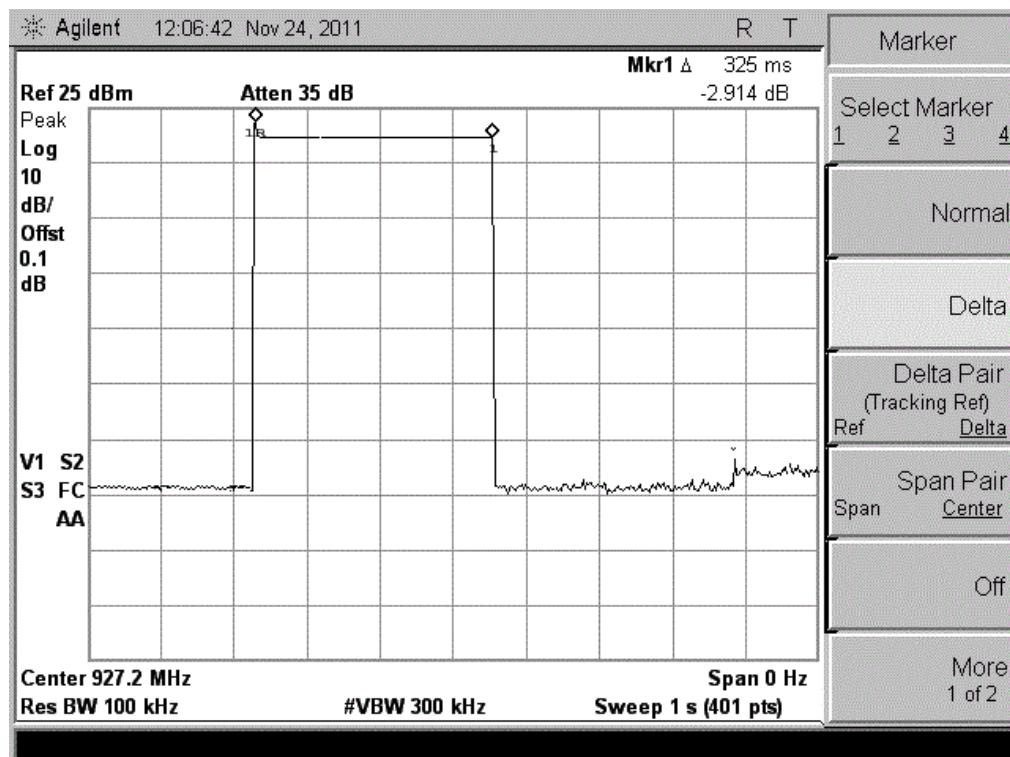
Note: the following plots record the Pulse Time of the Module carrier.



(Plot A: CH Low)



(Plot B: CH Mid)



(Plot C: CH High)

## 5.6 Conducted Spurious Emission

### 5.6.1 Definition

According to FCC section 15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

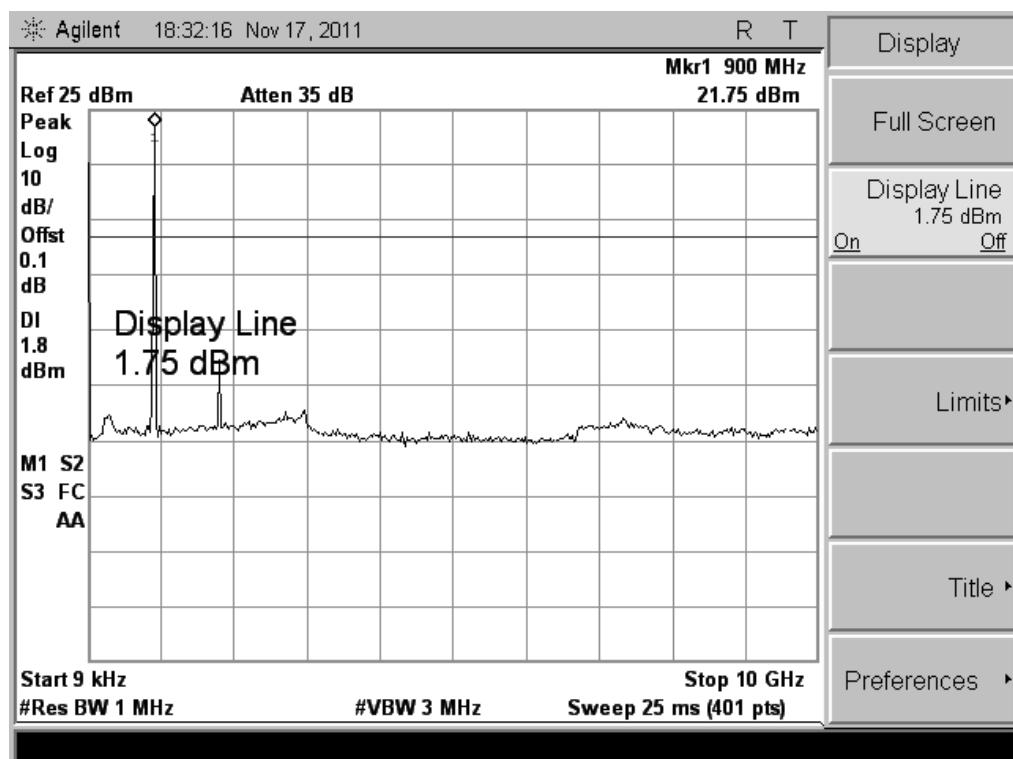
### 5.6.2 Test Description

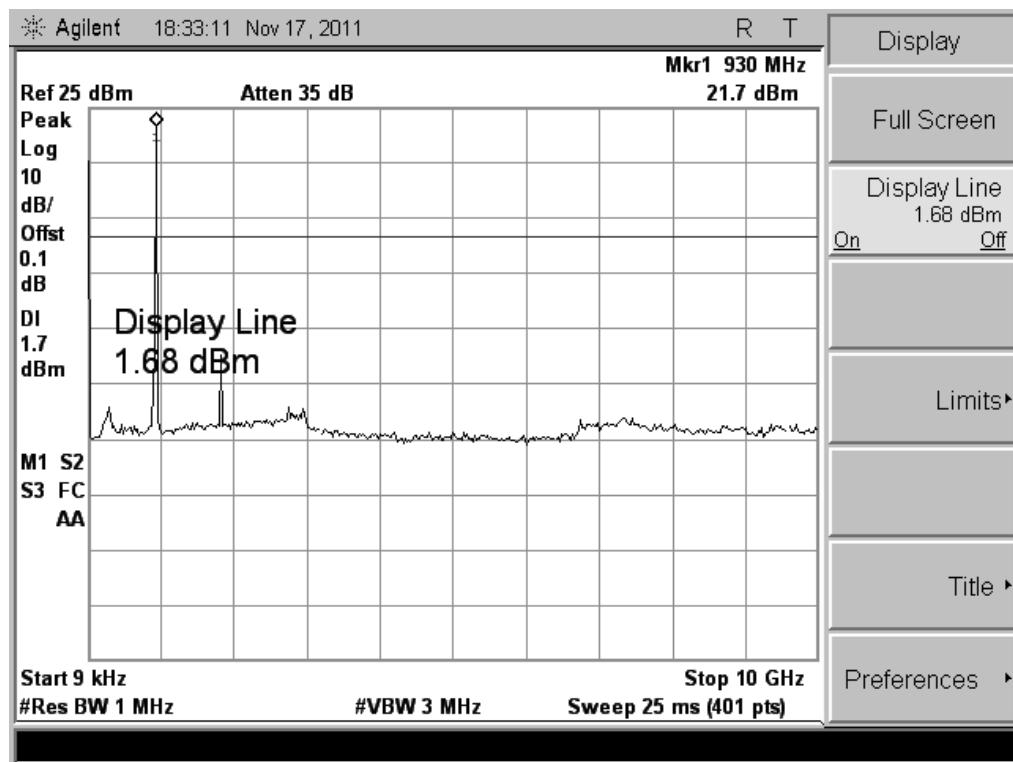
See section 5.1.2 of this report.

### 5.6.3 Test Result

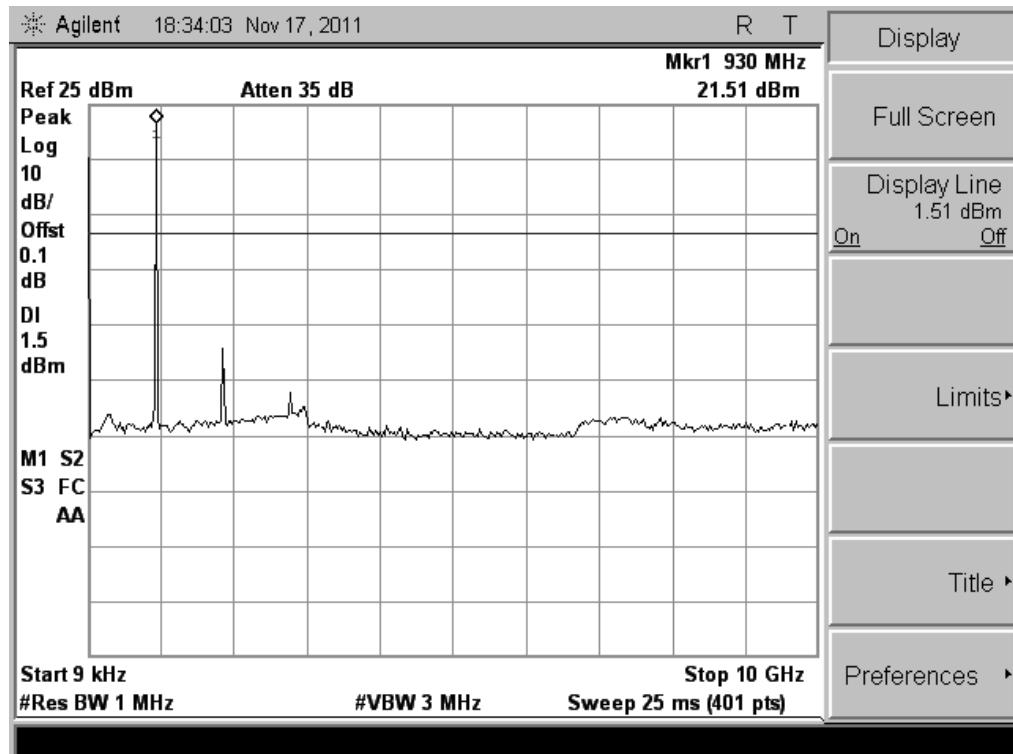
The EUT operates at hopping-off test mode. The measurement frequency range is from 9 KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

**Test Plot:**





(CH Mid, 9kHz to 10GHz)



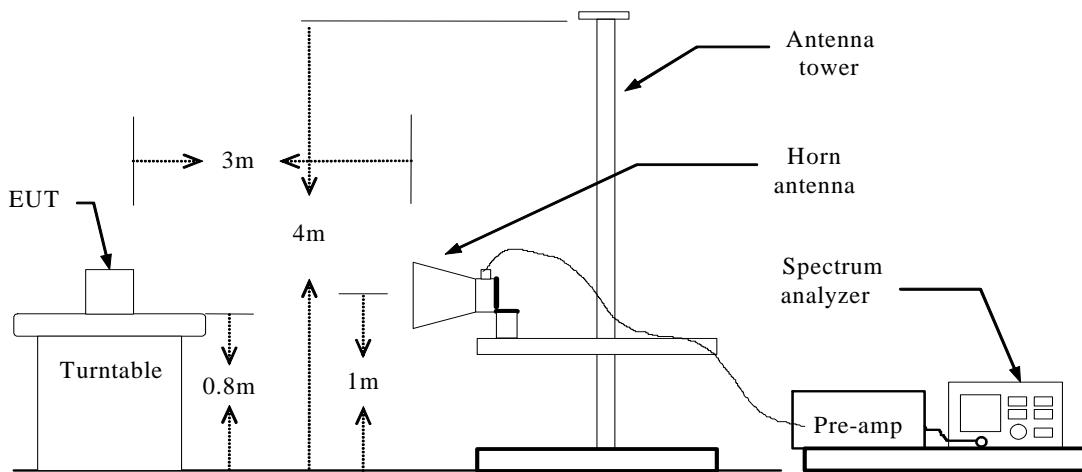
(CH High, 9kHz to 10GHz)

## 5.7 Band Edge

### 5.7.1 Definition

According to FCC section 15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

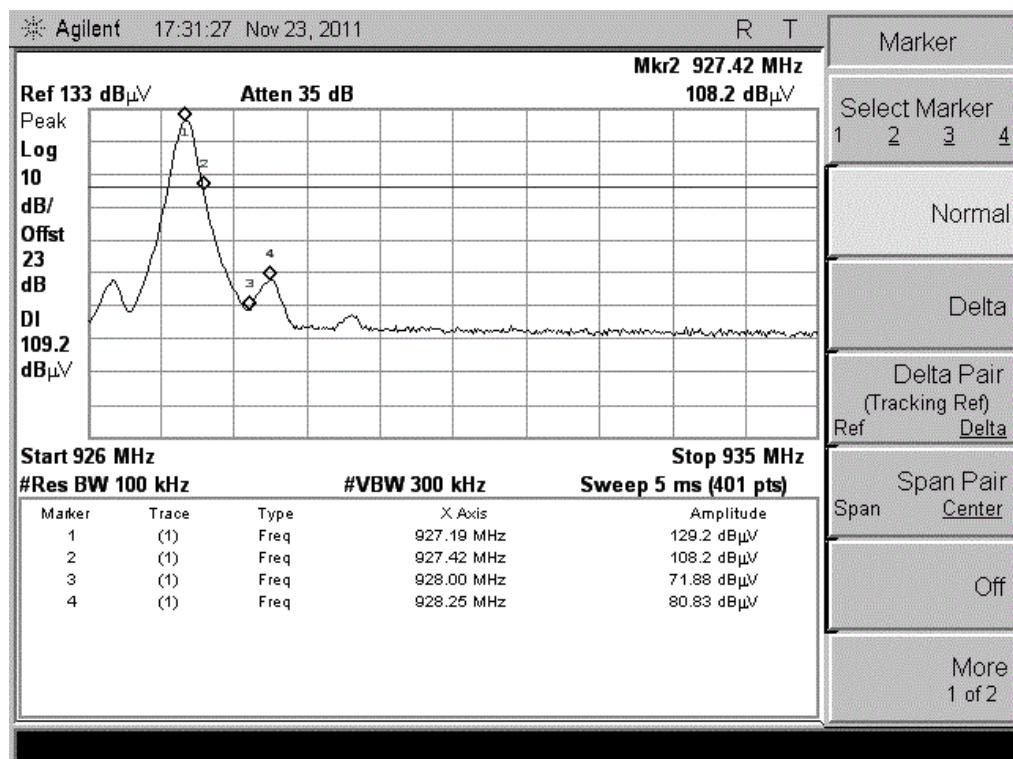
### 5.7.2 Test Description



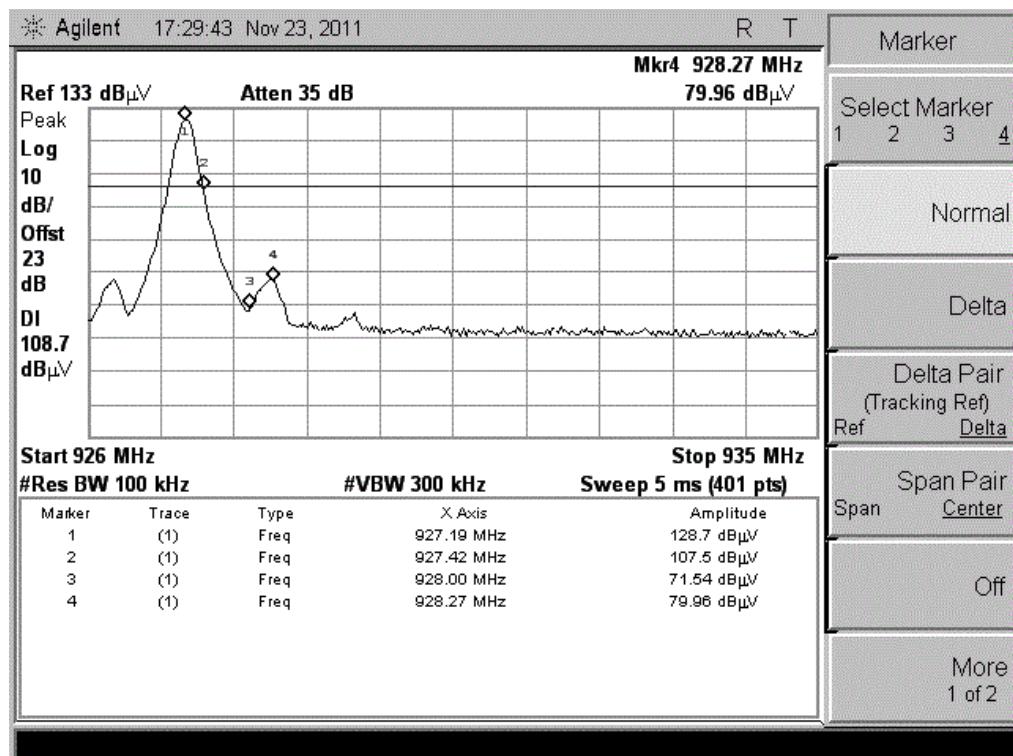
### 5.7.3 Test Result

**The EUT operates at continuous transmit test mode. The lowest and highest channels are tested to verify the band edge emissions.**

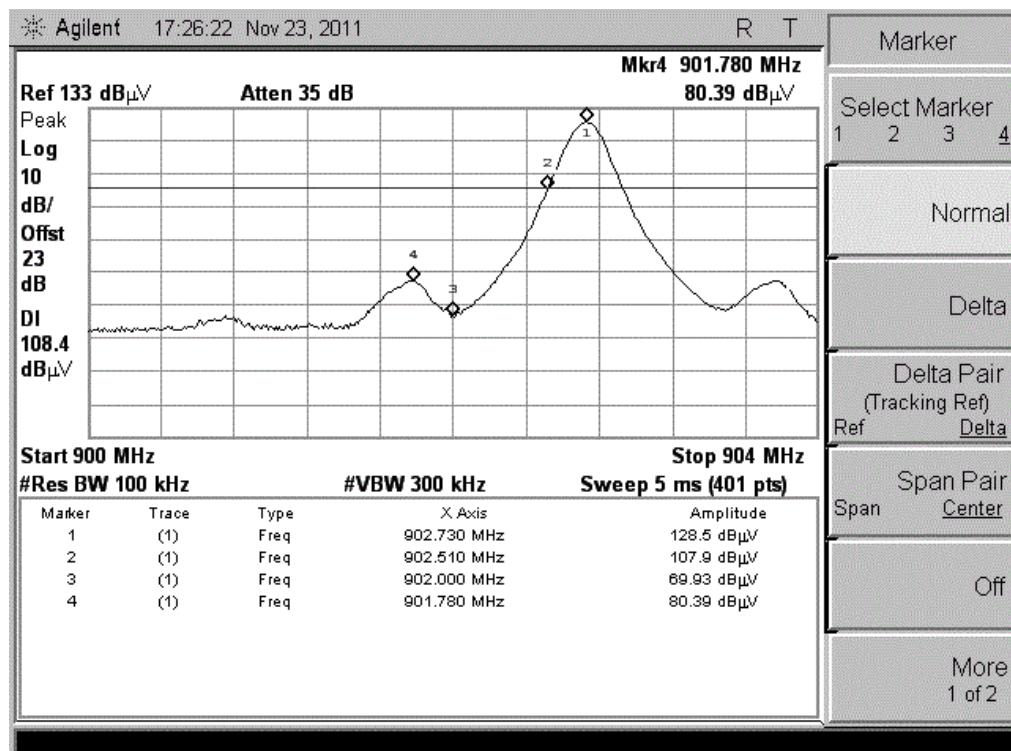
## Test Plot:



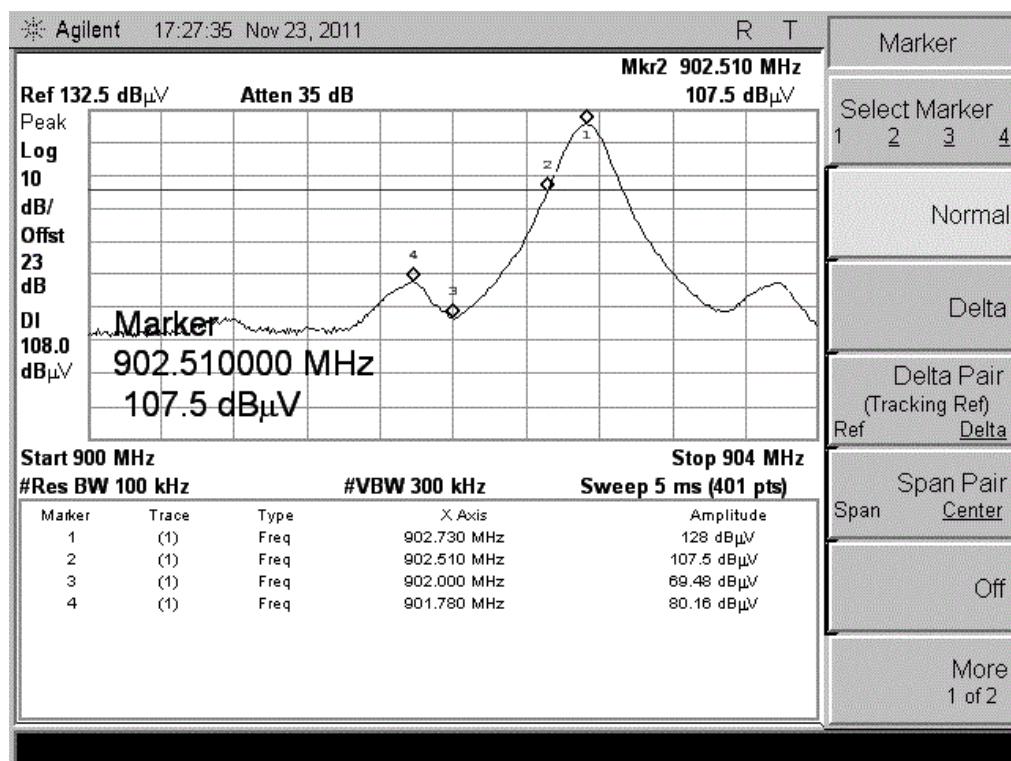
(CH Low, Horizontal)



(CH Low, Vertical)



(CH High, Horizontal)



(CH High, Vertical)

## 5.8 Conducted Emission

### 5.8.1 Definition

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN).

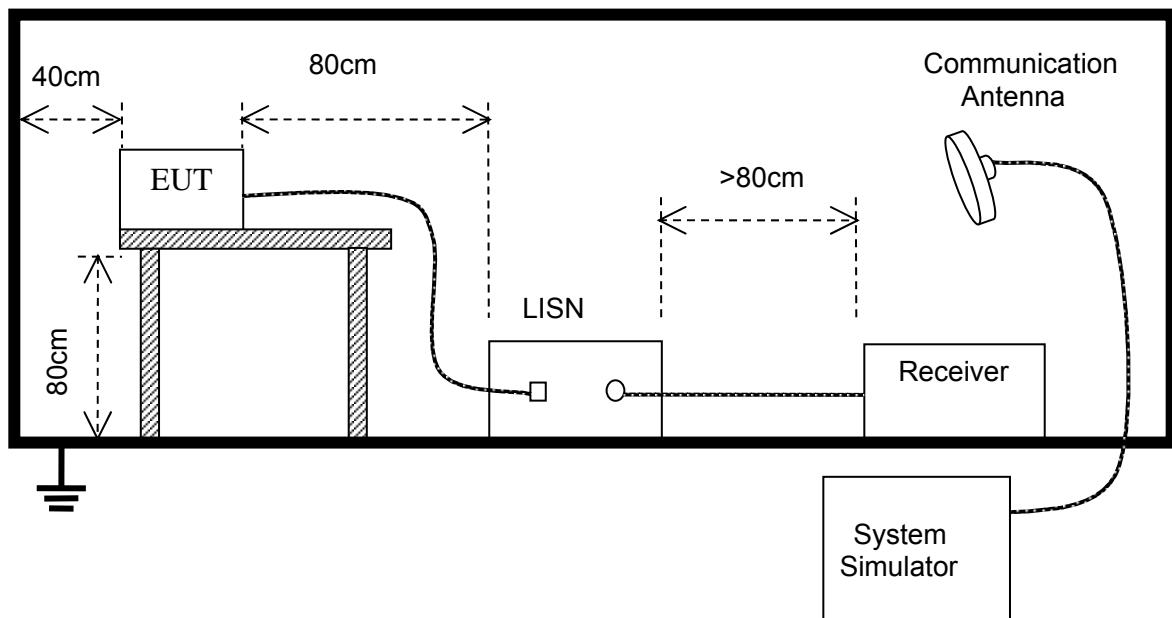
Frequency	Maximum RF Line Voltage	
	Q.P. (dBuV)	Average (dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

**Note:**

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

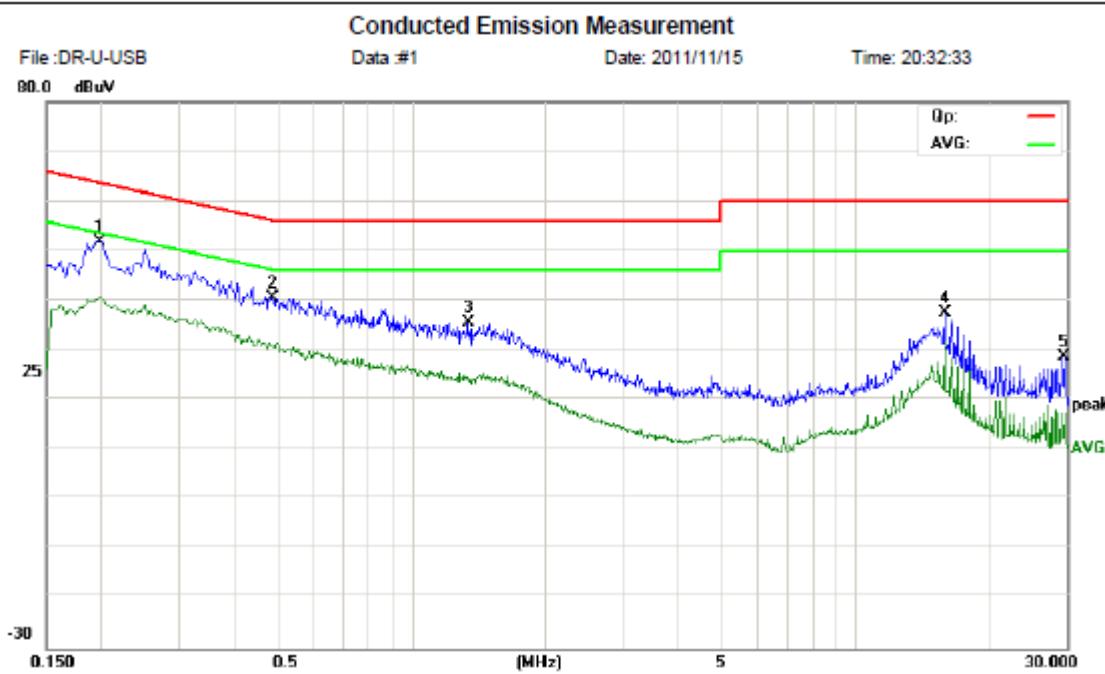
### 5.8.2 Test Description

The EUT is powered by the Battery charged with the AC Adapter which is powered by 120V, 60Hz AC mains supply. The path loss as the factor is calibrated to correct the reading. During the measurement, the EUT is activated and is set to operate at maximum power.



### 5.8.3 Test Result

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.



Site: site #1      Phase: *L1*      Temperature: 26  
 Limit: FCC Part15 B Class B QP      Power: DC 5V From PC Input  
 EUT: GTSYS-RFID UHF Desktop      Ac120V/60Hz      Humidity: 60 %  
 M/N: DR-U-USB  
 Mode: NORMAL WORKING  
 Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1980	40.03	11.88	51.91	63.69	-11.78	peak	
2		0.4860	30.53	10.09	40.62	56.24	-15.62	peak	
3		1.3420	25.87	9.66	35.53	56.00	-20.47	peak	
4		15.9380	28.58	9.00	37.58	60.00	-22.42	peak	
5		29.2500	19.68	9.00	28.68	60.00	-31.32	peak	

## Conducted Emission Measurement

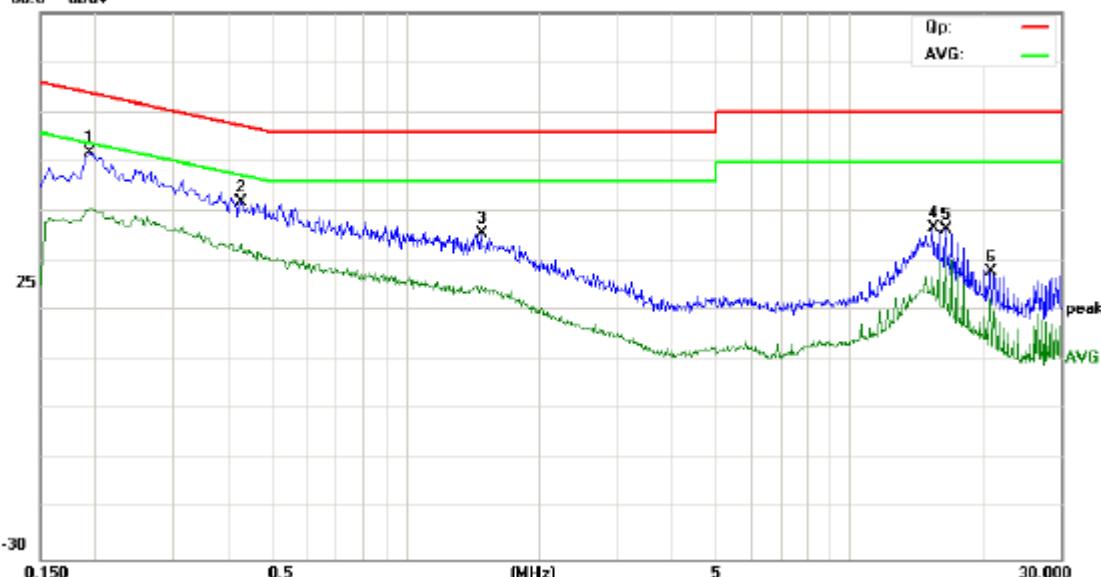
File: DR-U-USB

Data #2

Date: 2011/11/15

Time: 20:34:22

00.0 dBuV



Site: site #1

Phase: *N*

Temperature: 26

Limit: FCC Part15 B Class B QP

Power: DC 5V From PC Input

Humidity: 60 %

EUT: GTSYS-RFID UHF Desktop

M/N: DR-U-USB

Mode: NORMAL WORKING

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dB			
1	*	0.1940	40.26	11.64	51.90	63.86	-11.96	peak	
2		0.4260	31.56	10.49	42.05	57.33	-15.28	peak	
3		1.4740	26.15	9.53	35.68	56.00	-20.32	peak	
4		15.4100	27.72	9.00	36.72	60.00	-23.28	peak	
5		16.4740	27.55	9.00	36.55	60.00	-23.45	peak	
6		20.7180	19.00	9.00	28.00	60.00	-32.00	peak	

## 5.9 Radiated Emission

### 5.9.1 Definition

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

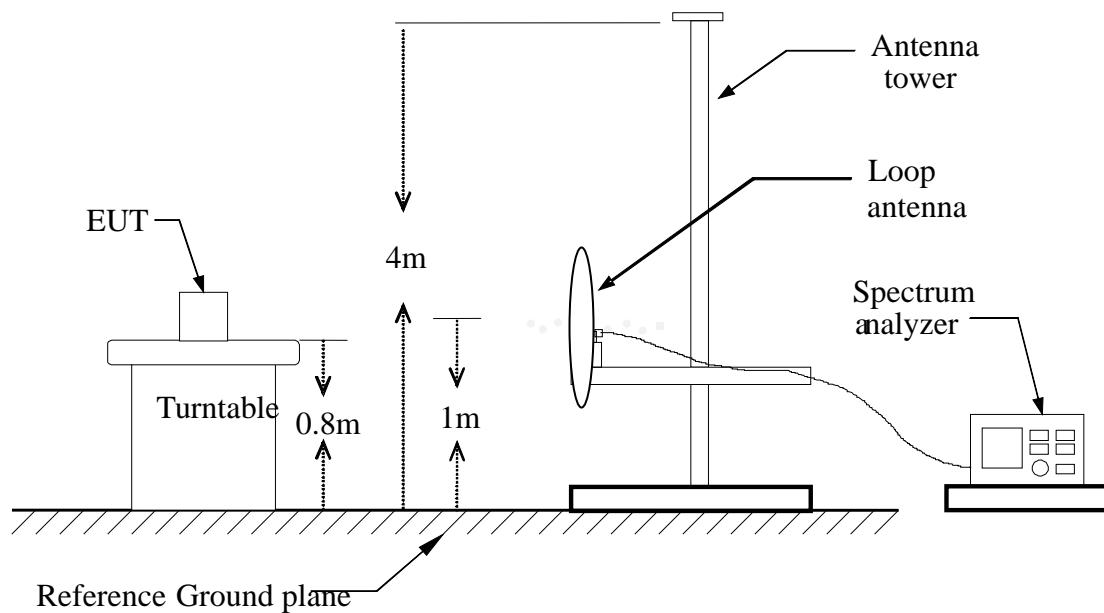
According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ( $\mu$ V/m)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

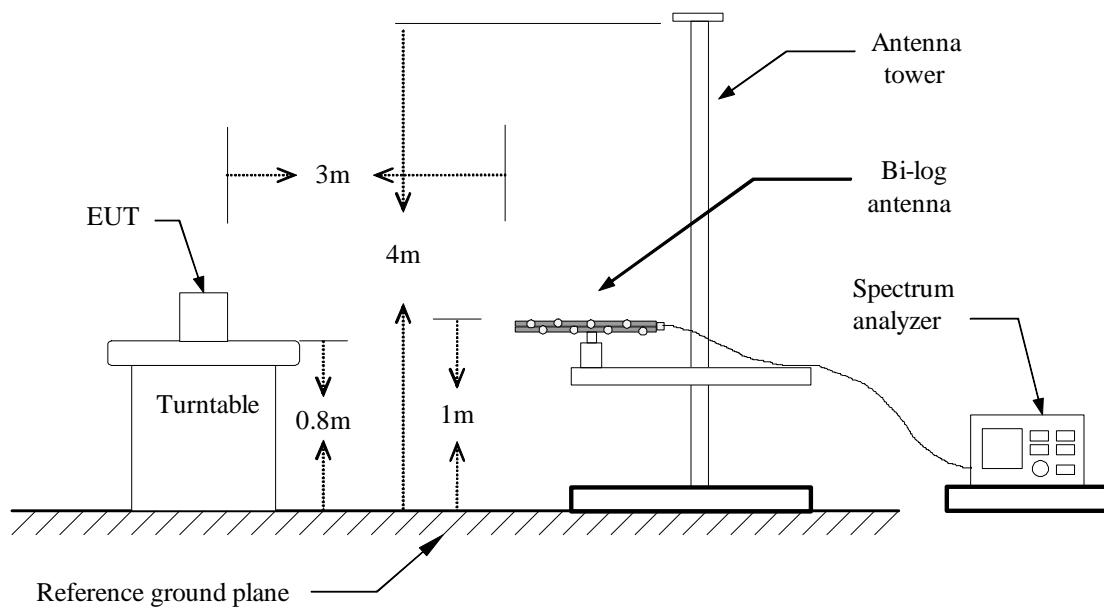
As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

### 5.9.2 Test Description

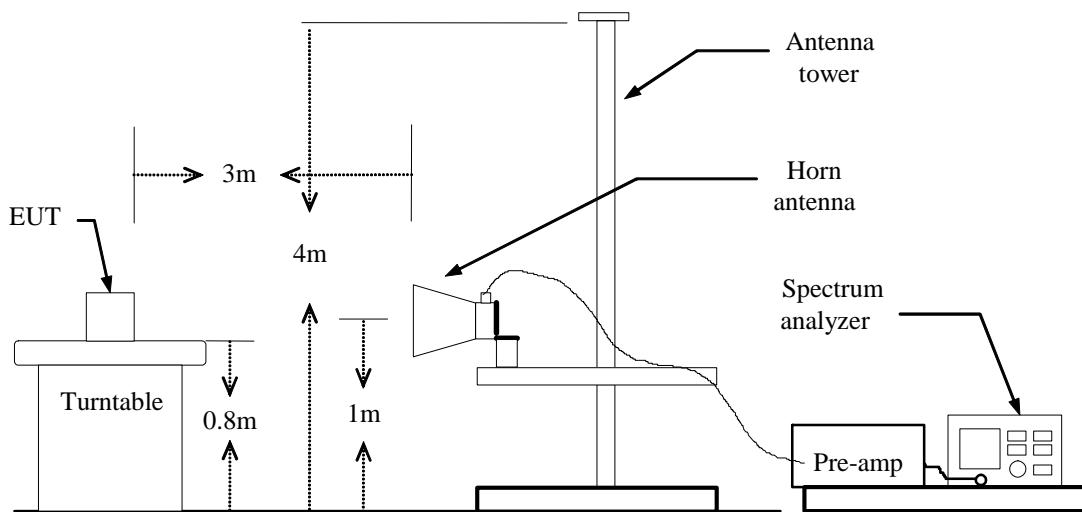
#### A. Test Setup:



#### Below 1GHz:



#### Above 1GHz:



## B. Test procedures

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
  - Below 1GHz: RBW=100 kHz / VBW=300 kHz / Sweep=AUTO
  - Above 1GHz : (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
  - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

### 5.9.3 Test Result

Form 9KHz to 30MHz:

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
N/A	H								>20
<hr/>									
N/A	V								>20

-No detected in below 30MHz.

## Below 1 GHz

## Radiated Emission Measurement

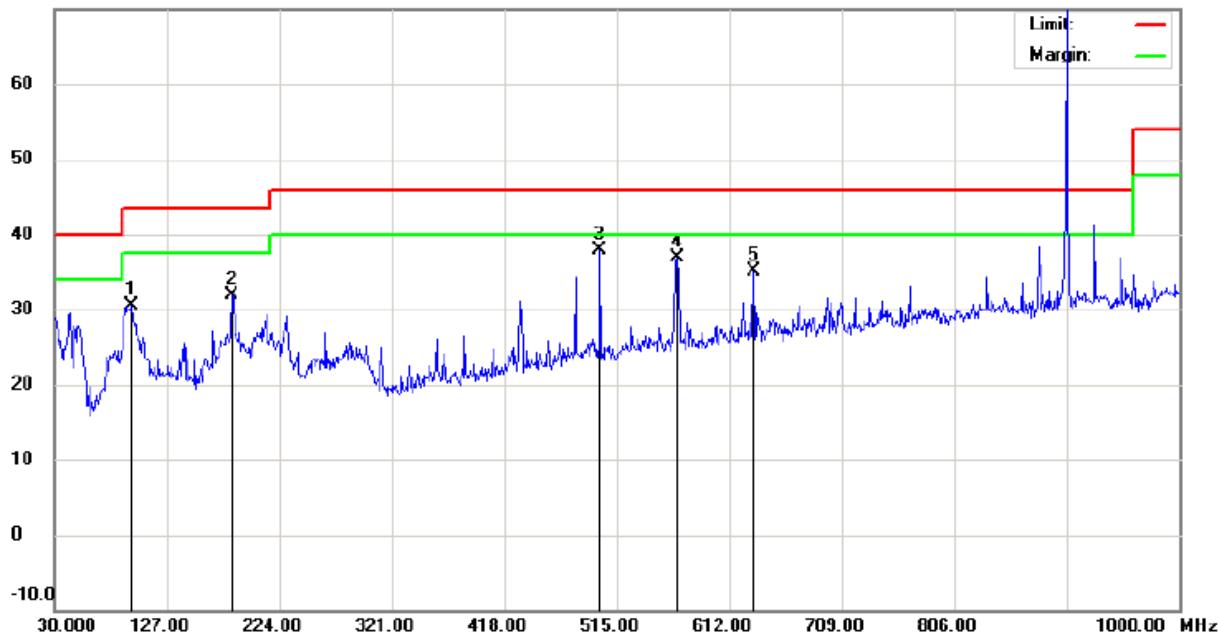
File :DR-U-USB

Data :#1

Date: 2011-11-15

Time: 20:58:03

70.0 dBuV/m



Site site MOST 3M

Polarization: *Vertical*

Temperature: 26

Limit: FCC Part15 B 3M Radiation

Power: DC 5V From PC Input Ac120V/60H

Humidity: 61 %

EUT: GTSYS-RFID UHF Desktop

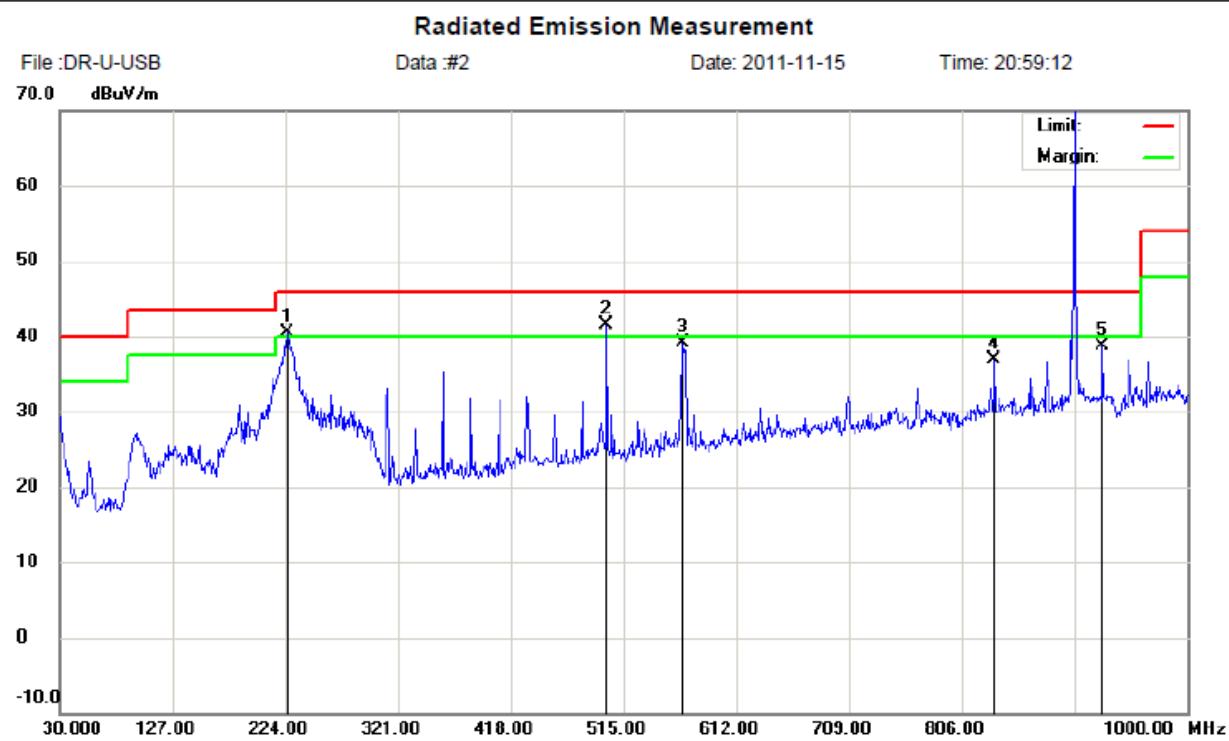
Distance:

M/N: DR-U-USB

Mode: NORMAL WORKING

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
			Level	Factor	ment					Comment
		MHz	dBuV	dB	dBuV/m	dB	Detector	cm	degree	
1		95.9600	18.22	12.27	30.49	43.50	-13.01	peak		
2		183.2600	15.19	16.63	31.82	43.50	-11.68	peak		
3	*	500.4500	16.58	21.40	37.98	46.00	-8.02	peak		
4		567.3800	14.16	22.82	36.98	46.00	-9.02	peak		
5		633.3400	11.32	23.80	35.12	46.00	-10.88	peak		



Site site MOST 3M

Polarization: *Horizontal*

Temperature: 26

Limit: FCC Part15 B 3M Radiation

Power: DC 5V From PC Input Ac120V/60H

Humidity: 61 %

EUT: GTSYS-RFID UHF Desktop

Distance:

M/N: DR-U-USB

Mode: NORMAL WORKING

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	Antenna Height	Table Degree		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	225.9400	24.08	16.42	40.50	46.00	-5.50	peak			
2	*	500.4500	20.14	21.40	41.54	46.00	-4.46	peak			
3		566.4100	16.30	22.79	39.09	46.00	-6.91	peak			
4		834.1300	9.76	27.08	36.84	46.00	-9.16	peak			
5		927.2500	11.22	27.43	38.65	46.00	-7.35	peak			

**Above 1 GHz**

<b>Operation Mode:</b>	CH Low	<b>Test Date:</b>	2011-11-15
<b>Temperature:</b>	20°C	<b>Tested by:</b>	Habby Guo
<b>Humidity:</b>	70 % RH	<b>Polarity:</b>	Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak (dBuV)	AV (dBuV)	Ant. / CL CF	Actual Fs		Peak	AV	AV
							Limit	Limit	Margin
					(dBuV/ m)	(dBuV/ m)			
1805.50	H	49.56	34.32	15.23	64.79	49.55	74.00	54.00	-4.45
2708.25	H	42.38	27.50	19.64	62.02	47.14	74.00	54.00	-6.86
N/A	H								
4810.50	V	---	19.50	15.23	62.44	44.73	74.00	54.00	-7.27
N/A	V								

**Notes:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
  - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
  - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.
5. No additional spurious emissions found between lowest internal generated and 30 MHz

**Operation Mode:** CH Mid      **Test Date:** 2011-11-15  
**Temperature:** 20°C      **Tested by:** Habby Guo  
**Humidity:** 70 % RH      **Polarity:** Ver. / Hor.

<b>Freq.</b> <b>(MHz)</b>	<b>Ant. Pol</b> <b>H/V</b>	<b>Peak</b>	<b>AV</b>	<b>Ant. / CL</b> <b>CF</b>	<b>Actual Fs</b>		<b>Peak</b>	<b>AV</b>	<b>AV</b>
		<b>Reading</b>	<b>Reading</b>	<b>(dB)</b>			<b>Limit</b> <b>(dBuV/ m)</b>	<b>Limit</b> <b>(dBuV/ m)</b>	<b>Margin</b> <b>(dB)</b>
		<b>(dBuV)</b>	<b>(dBuV)</b>		<b>(dBuV/ m)</b>	<b>(dBuV/ m)</b>			
1828.50	H	51.42	32.29	15.54	66.96	47.83	74.00	54.00	-4.45
2742.75	H	49.17	25.24	20.32	69.49	45.56	74.00	54.00	-6.86
N/A	H								
1828.50	V	53.13	34.08	15.54	68.67	49.62	74.00	54.00	-4.38
2742.75	V	44.87	26.39	20.32	65.19	46.71	74.00	54.00	-7.29
N/A	V								

**Notes:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
  - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
  - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.
5. *No additional spurious emissions found between lowest internal generated and 30 MHz*

**Operation Mode:** CH High**Test Date:** 2011-11-15**Temperature:** 20°C**Tested by:** Habby Guo**Humidity:** 70 % RH**Polarity:** Ver. / Hor.

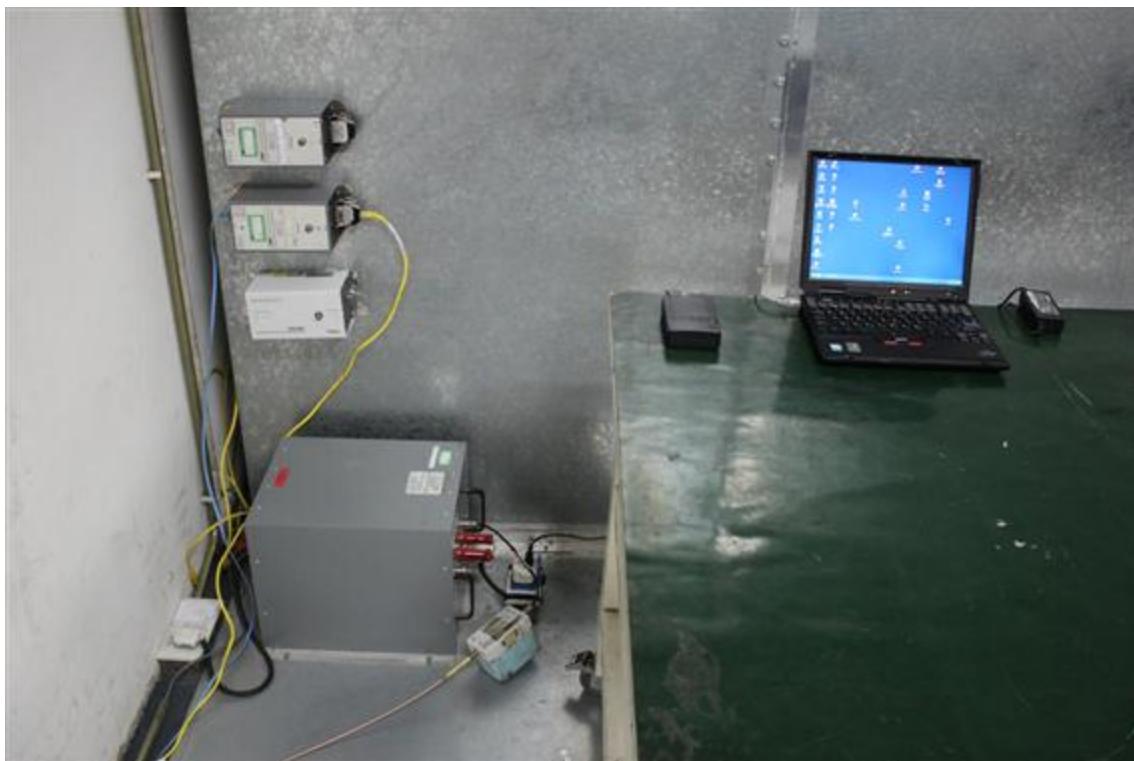
<b>Freq.</b> <b>(MHz)</b>	<b>Ant. Pol</b> <b>H/V</b>	<b>Peak</b>	<b>AV</b>	<b>Ant. / CL</b> <b>CF</b>	<b>Actual Fs</b>		<b>Peak</b>	<b>AV</b>	<b>AV</b>
		<b>Reading</b>	<b>Reading</b>	<b>(dB)</b>			<b>Limit</b> <b>(dBuV/ m)</b>	<b>Limit</b> <b>(dBuV/ m)</b>	<b>Margin</b> <b>(dB)</b>
		<b>(dBuV)</b>	<b>(dBuV)</b>		<b>(dBuV/ m)</b>	<b>(dBuV/ m)</b>			
1854.50	H	53.26	31.51	16.32	69.58	47.83	74.00	54.00	53.26
2781.75	H	46.13	23.71	21.46	67.59	45.17	74.00	54.00	46.13
N/A	H								
1854.50	V	54.21	33.30	16.32	70.53	49.62	74.00	54.00	-4.38
2781.75	V	24.84	21.46	66.89	46.30	74.00	54.00	-7.70	-7.29
N/A	V								

**Notes:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
  - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
  - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.
5. *No additional spurious emissions found between lowest internal generated and 30 MHz*

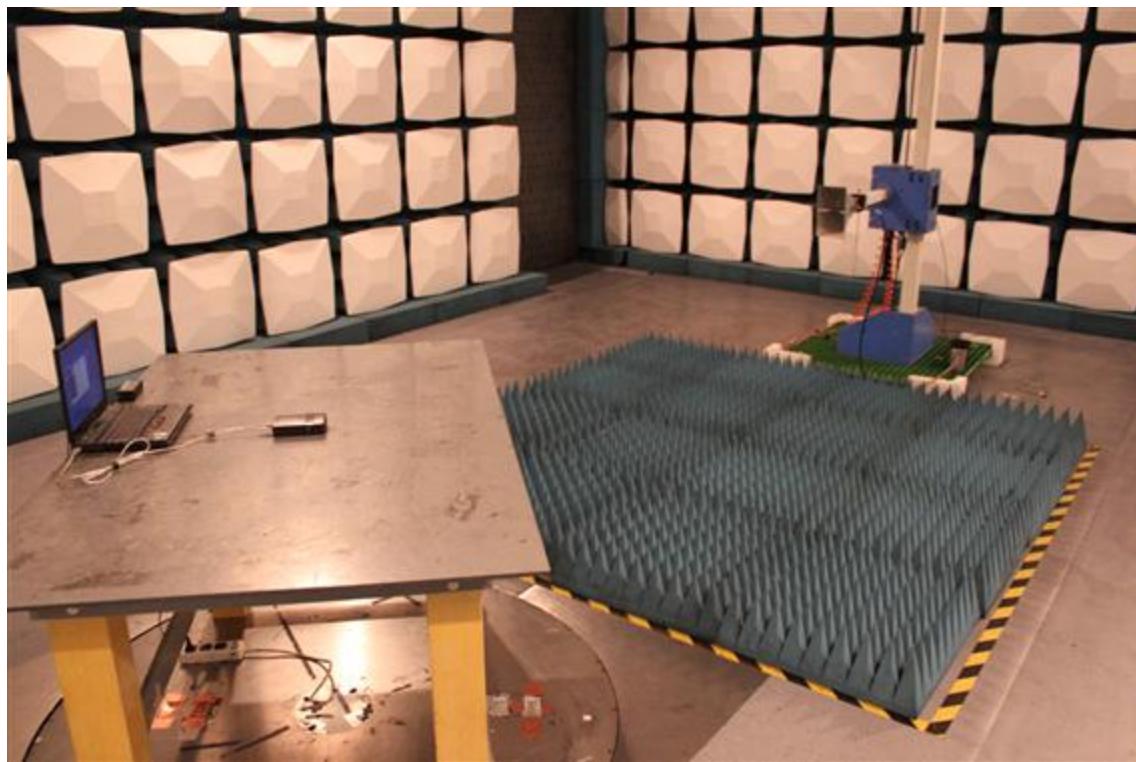
**APPENDIX 1**  
**PHOTOGRAPHS OF TEST SETUP**

CE TEST SETUP



RE TEST SETUP





CONDUCTED SPURIOUS EMISSION TEST SETUP

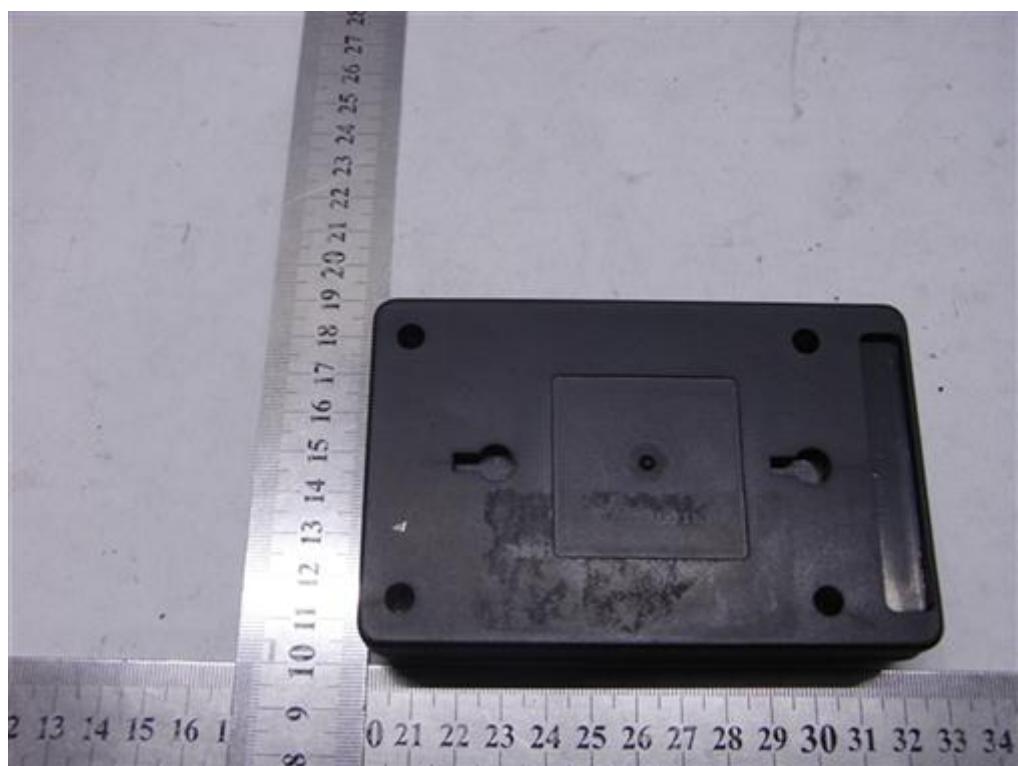


**APPENDIX 2**  
**PHOTOGRAPHS OF EUT**

FRONT VIEW OF SAMPLE



BACK VIEW OF SAMPLE



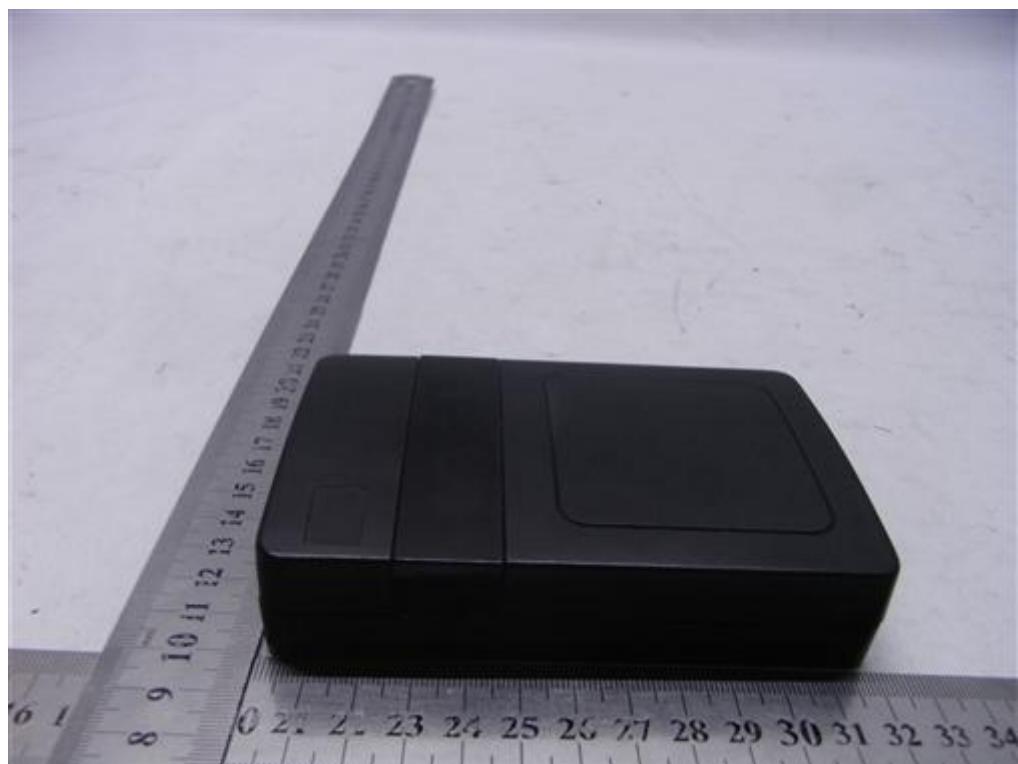
LEFT VIEW OF SAMPLE



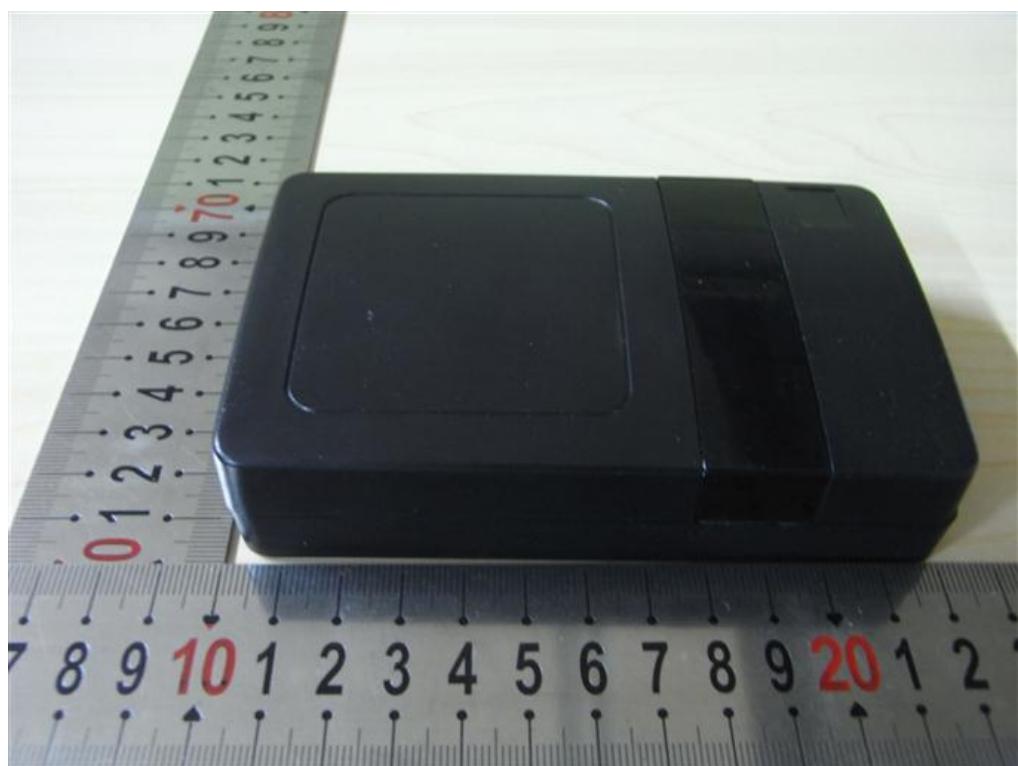
RIGHT VIEW OF SAMPLE



TOP VIEW OF SAMPLE



BOTTOM VIEW OF SAMPLE



## PHOTO OF THE ENTIRE SAMPLE



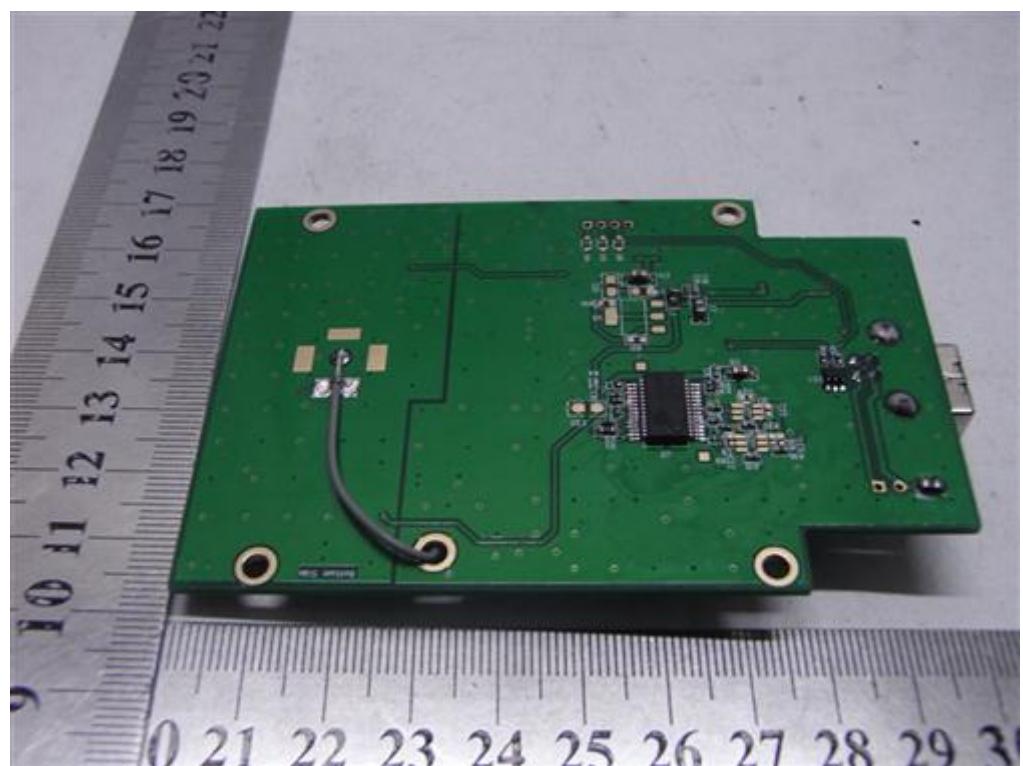
## INTERNAL PHOTO OF SAMPLE – 1



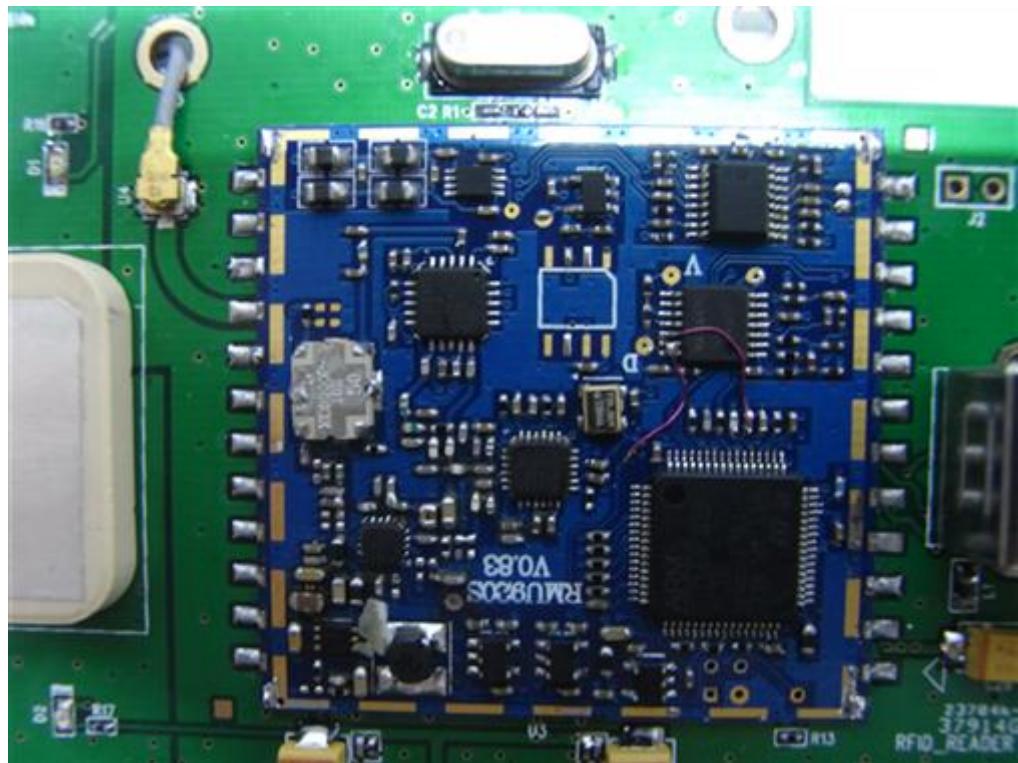
INTERNAL PHOTO OF SAMPLE – 2



INTERNAL PHOTO OF SAMPLE – 3



INTERNAL PHOTO OF SAMPLE -4



-----END OF REPORT-----