



## Test Report

Product Name : UHF USB Reader Module  
Model No. : UEE006  
FCC ID. : WQH-UEE006

Applicant : ClarIDy Solutions, Inc.  
Address : 7F, No.9, Park Avenue II Rd., Hsinchu Science Park,  
Hsinchu 300, Taiwan, R.O.C.

Date of Receipt : 2010/11/23  
Issued Date : 2010/12/28  
Report No. : 10C170R-RFUSP43V01  
Report Version : V1.0

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

# Test Report Certification

Issued Date : 2010/12/28

Report No. : 10C170R-RFUSP43V01



Product Name : UHF USB Reader Module  
 Applicant : ClarIDy Solutions, Inc.  
 Address : 7F, No.9, Park Avenue II Rd., Hsinchu Science Park, Hsinchu  
 300, Taiwan, R.O.C.  
 Manufacturer : Super PCB Technology Co., Ltd  
 Model No. : UEE006  
 FCC ID. : WQH-UEE006  
 EUT Voltage : AC 100-240V, 50/60Hz  
 Trade Name : ClarIDy  
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2009  
 Test Result : Complied

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : Sandy Chuang  
 ( Sandy Chuang / Engineering Adm. Assistant )

Reviewed By : Lucia Lu  
 ( Lucia Lu / Engineer )

Approved By : Roy Wang  
 ( Roy Wang / Manager )

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## 1. General Information

### 1.1. EUT Description

Product Name	UHF USB Reader Module
Trade Name	ClarIDy
Model No.	UEE006
Frequency Range	902.75MHz~927.25MHz
Channel Number	50
Type of Modulation	ASK
Antenna Type	PIFA
Antenna Gain	0.26dBi

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	902.75	01	903.25	02	903.75	03	904.25
04	904.75	05	905.25	06	905.75	07	906.25
08	906.75	09	907.25	10	907.75	11	908.25
12	908.75	13	909.25	14	909.75	15	910.25
16	910.75	17	911.25	18	911.75	19	912.25
20	912.75	21	913.25	22	913.75	23	914.25
24	914.75	25	915.25	26	915.75	27	916.25
28	916.75	29	917.25	30	917.75	31	918.25
32	918.75	33	919.25	34	919.75	35	920.25
36	920.75	37	921.25	38	921.75	39	922.25
40	922.75	41	923.25	42	923.75	43	924.25
44	924.75	45	925.25	46	925.75	47	926.25
48	926.75	49	927.25				

**Note:**

1. This device is a UHF USB Reader Module included a 900MHz transmitting and receiving function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regards to the frequency band operation; the lowest 、 middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 10C170R-RFUSP37V02 under Declaration of Conformity.

### 1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
EMI	Mode 1: Transmit

Emission	
Conducted Emission	Yes
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Channel of Number	Yes
Channel Separation	Yes
Occupied Bandwidth	Yes
Dwell Time	Yes

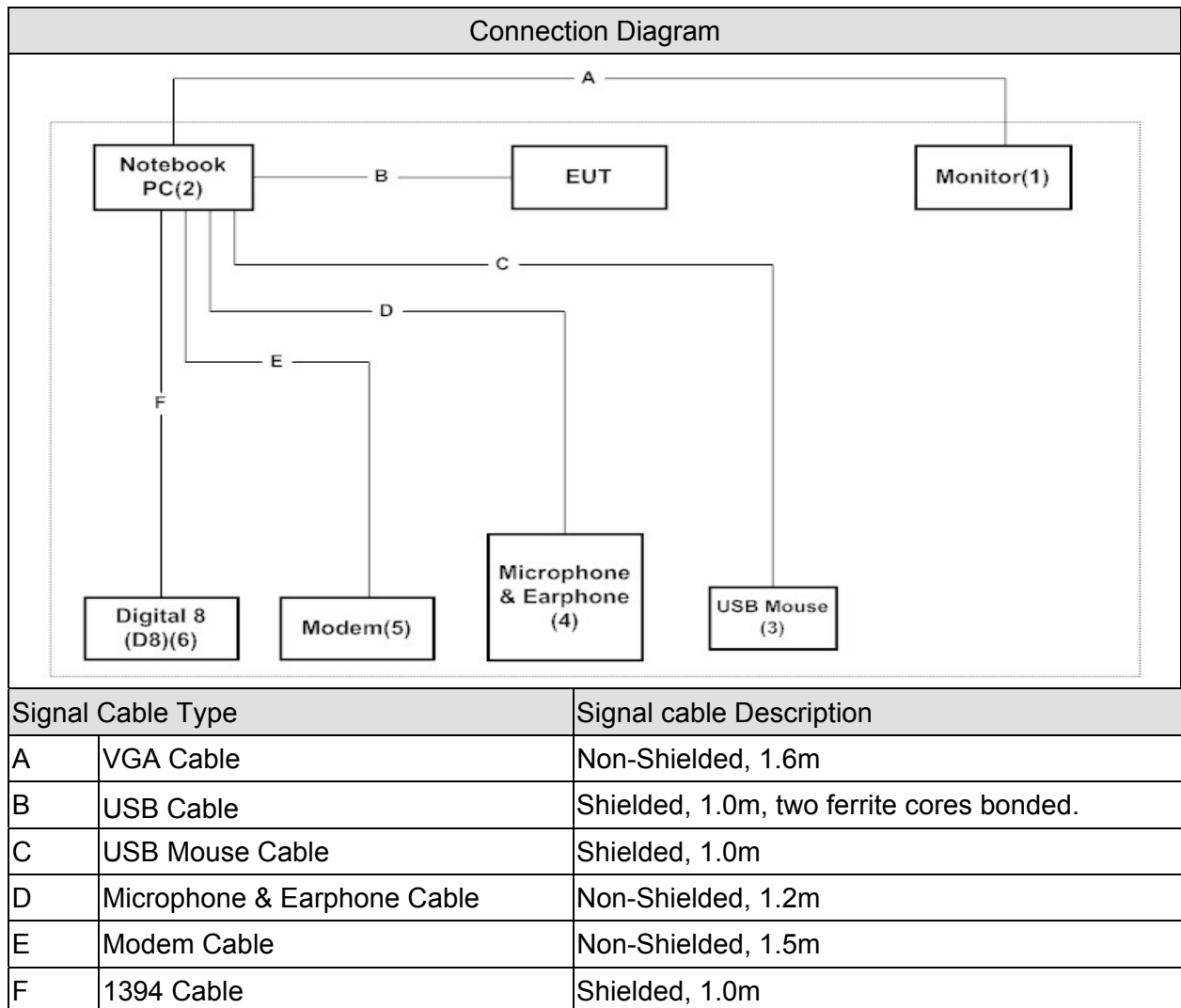
#### 1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Monitor	ViewSonic	E653	ER01502861	DoC	Non-Shielded, 1.8m
2	Notebook PC	DELL	LATITUDE D400	HK43D1S	DoC	Non-Shielded, 1.7m, a ferrite core bonded
3	USB Mouse	Logitech	M-UV83	LZE35005917	DoC	--
4	Microphone & Earphone	Fujiei	SBZ-38	N/A	DoC	--
5	Modem	ACEEX	DM-1414	0102027546	DoC	Non-Shielded, 1.6m
6	Digital 8 (D8)	SONY	DCR-TRV110	P35209	DoC	--



## 1.5. Configuration of tested System



## 1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.5
2	Turn on the power of all equipment.
3	Data will communicate between the tag and the reader.
4	The personal computer's monitor will show the receiving characteristics when the communication is success.
5	Repeat at the above procedure (3) to (4)

## 1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 B 15.107 Conducted Emission	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	58
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Of Number (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Separation (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	24
Humidity (%RH)		25 - 75	57
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Dwell Time (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	58
Barometric pressure (mbar)		860 - 1060	950-1000

## Site Description:

August 30, 2007 File on  
Federal Communications Commission  
Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 365520



Accredited by TAF  
Accreditation Number: 1313  
Effective through: December 27, 2010



Accredited by NVLAP  
NVLAP Lab Code: 200347-0  
Effective through: September 30, 2011



Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,  
Chiung-Lin, Hsin-Chu County,  
Taiwan, R.O.C.  
TEL : 886-3-592-8858 / FAX : 886-3-592-8859  
E-Mail : [service@quietek.com](mailto:service@quietek.com)

## 2. Conducted Emission

### 2.1. Test Equipment

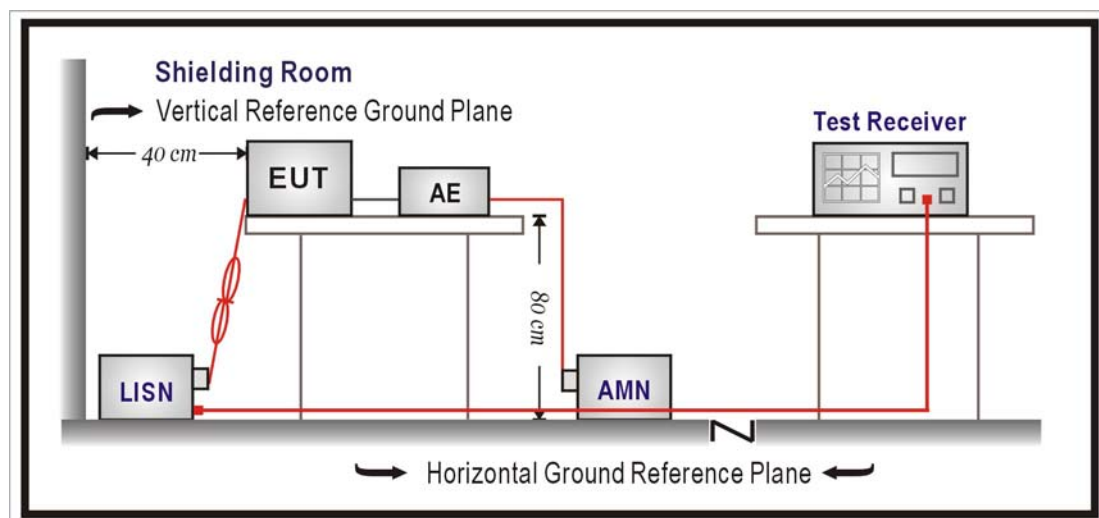
The following test equipments are used during the test:

Conducted Emission/ SR2

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2011/03/14
LISN	R&S	ENV216	100092	2011/09/12
Test Receiver	R&S	ESCS 30	825442/014	2011/09/02

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

### 2.2. Test Setup



### 2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

### 2.4. Test Procedure

The EUT was setup and tested according to ANSI C63.4, 2009.

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 2.5. Test Specification

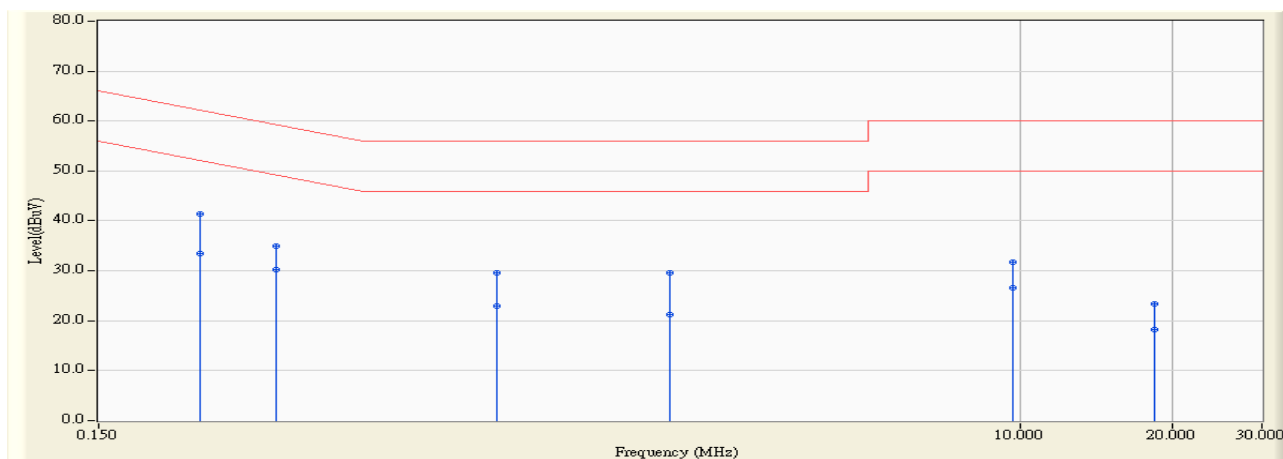
According to FCC Part 15 Subpart C Paragraph 15.207: 2009

### 2.6. Uncertainty

The measurement uncertainty is defined as  $\pm 2.26$  dB.

## 2.7. Test Result

Site : SR2	Time : 2010/12/06 - 17:26
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2_LISN(16A) - Line1	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX

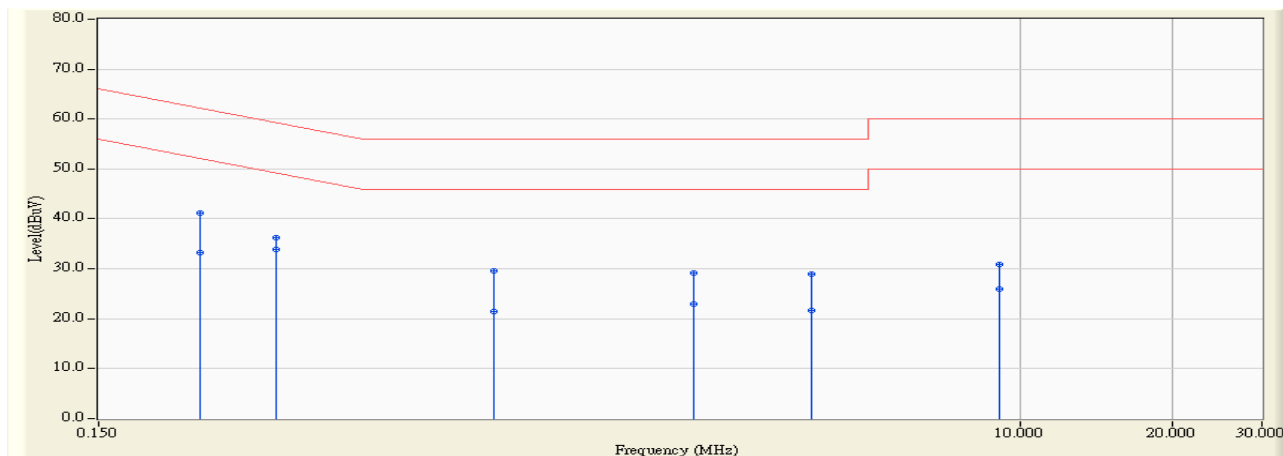


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.238	9.600	31.760	41.360	-20.801	62.161	QUASIPeAK
2	*	0.238	9.600	23.950	33.550	-18.611	52.161	AVERAGE
3		0.336	9.603	25.390	34.993	-24.317	59.311	QUASIPeAK
4		0.336	9.603	20.560	30.163	-19.147	49.311	AVERAGE
5		0.920	9.654	19.970	29.624	-26.376	56.000	QUASIPeAK
6		0.920	9.654	13.340	22.994	-23.006	46.000	AVERAGE
7		2.020	9.790	19.820	29.610	-26.390	56.000	QUASIPeAK
8		2.020	9.790	11.340	21.130	-24.870	46.000	AVERAGE
9		9.662	10.053	21.660	31.713	-28.287	60.000	QUASIPeAK
10		9.662	10.053	16.570	26.623	-23.377	50.000	AVERAGE
11		18.377	10.322	13.120	23.441	-36.559	60.000	QUASIPeAK
12		18.377	10.322	7.840	18.161	-31.839	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR2	Time : 2010/12/06 - 17:31
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2_LISN(16A) - Line2	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.239	9.600	31.510	41.110	-21.035	62.145	QUASIPeAK
2		0.239	9.600	23.570	33.170	-18.975	52.145	AVERAGE
3		0.338	9.600	26.540	36.140	-23.125	59.265	QUASIPeAK
4	*	0.338	9.600	24.370	33.970	-15.295	49.265	AVERAGE
5		0.906	9.641	19.930	29.571	-26.429	56.000	QUASIPeAK
6		0.906	9.641	11.810	21.451	-24.549	46.000	AVERAGE
7		2.262	9.789	19.390	29.179	-26.821	56.000	QUASIPeAK
8		2.262	9.789	13.230	23.019	-22.981	46.000	AVERAGE
9		3.849	9.845	19.110	28.955	-27.045	56.000	QUASIPeAK
10		3.849	9.845	11.820	21.665	-24.335	46.000	AVERAGE
11		9.079	10.075	20.770	30.844	-29.156	60.000	QUASIPeAK
12		9.079	10.075	15.840	25.914	-24.086	50.000	AVERAGE

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

### 3. Peak Power Output

#### 3.1. Test Equipment

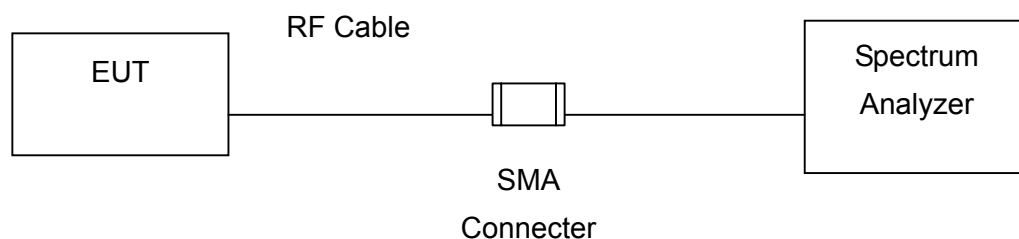
The following test equipments are used during the test:

Peak Power / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2011/02/04

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

#### 3.2. Test Setup



#### 3.3. Test procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

#### 3.4. Limits

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.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

#### 3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

#### 3.6. Uncertainty

The measurement uncertainty is defined as  $\pm 1.27$  dB.

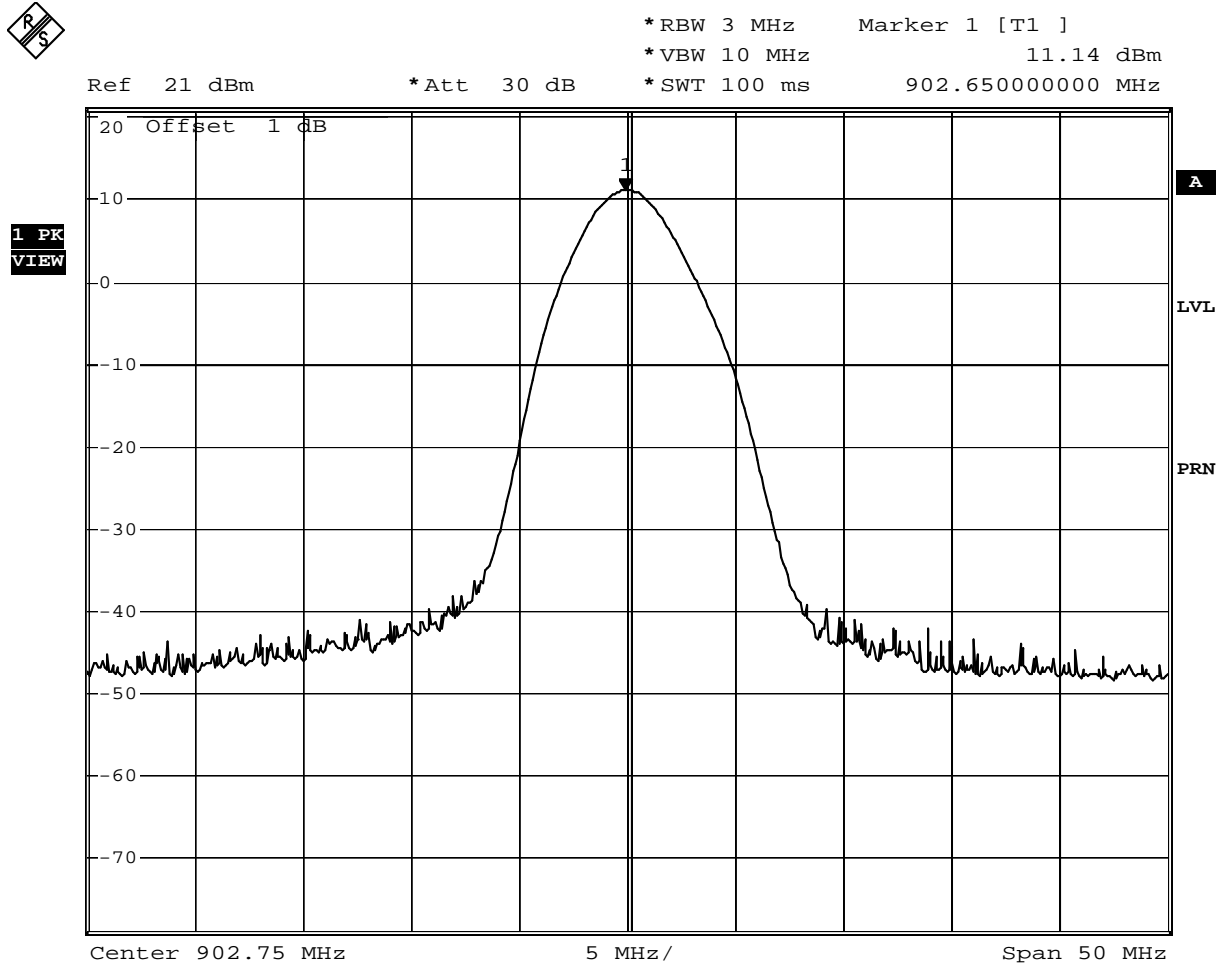


## 3.7. Test Result

Product	UHF USB Reader Module		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2010/12/02	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	902.75	11.14	1Watt= 30 dBm	Pass
25	915.25	10.87	1Watt= 30 dBm	Pass
49	927.25	10.53	1Watt= 30 dBm	Pass

### Channel 00



Date: 2.DEC.2010 19:05:09

Channel 25

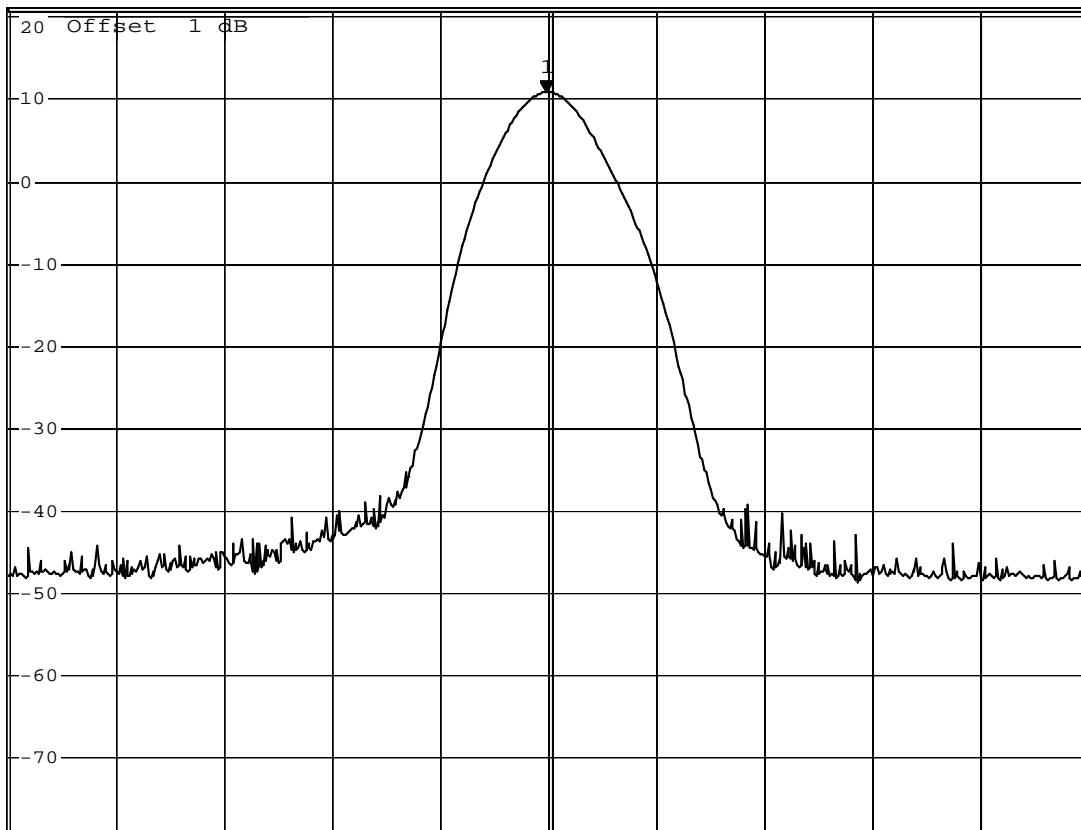


\*RBW 3 MHz      Marker 1 [T1 ]  
 \*VBW 10 MHz      10.87 dBm  
 \*SWT 100 ms      915.150000000 MHz

Ref 21 dBm

\*Att 30 dB

1 PK  
VIEW



Center 915.25 MHz

5 MHz/

Span 50 MHz

Date: 2.DEC.2010 19:10:08

**Channel 49**

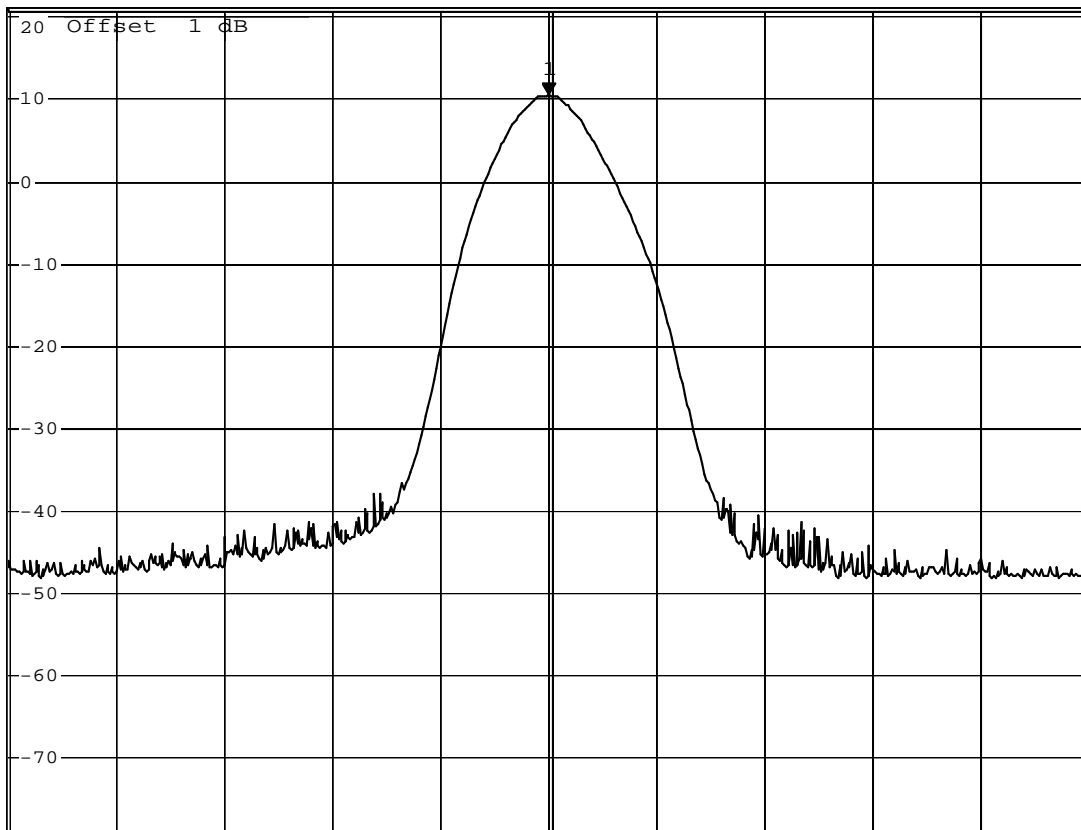


\*RBW 3 MHz      Marker 1 [T1 ]  
 \*VBW 10 MHz      10.53 dBm  
 \*SWT 100 ms      927.25000000 MHz

Ref 21 dBm

\*Att 30 dB

1 PK  
VIEW



A

LVL

PRN

Date: 2.DEC.2010 19:07:25

## 4. Radiated Emission

### 4.1. Test Equipment

The following test equipments are used during the test:

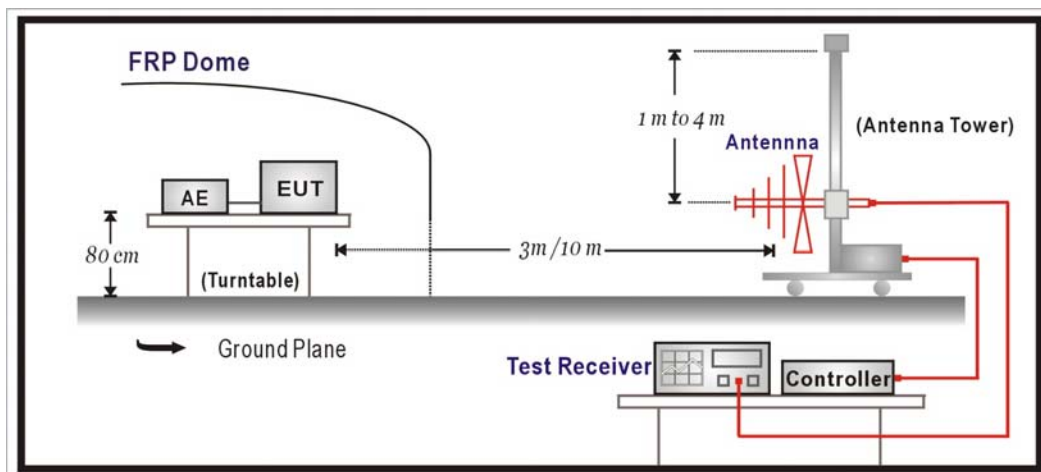
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2011/08/14
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/14
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2011/12/03
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2011/03/25
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

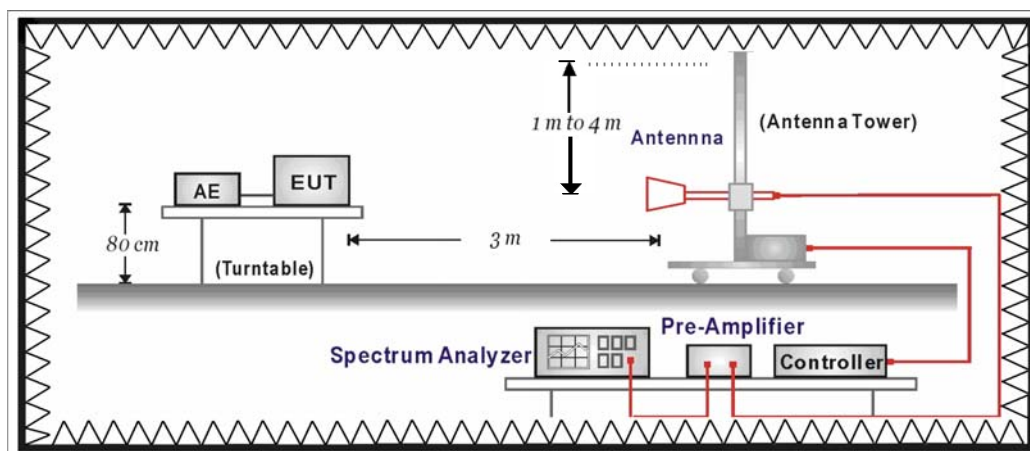
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



#### 4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

#### 4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2009 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

**4.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

**4.6. Uncertainty**

The measurement uncertainty

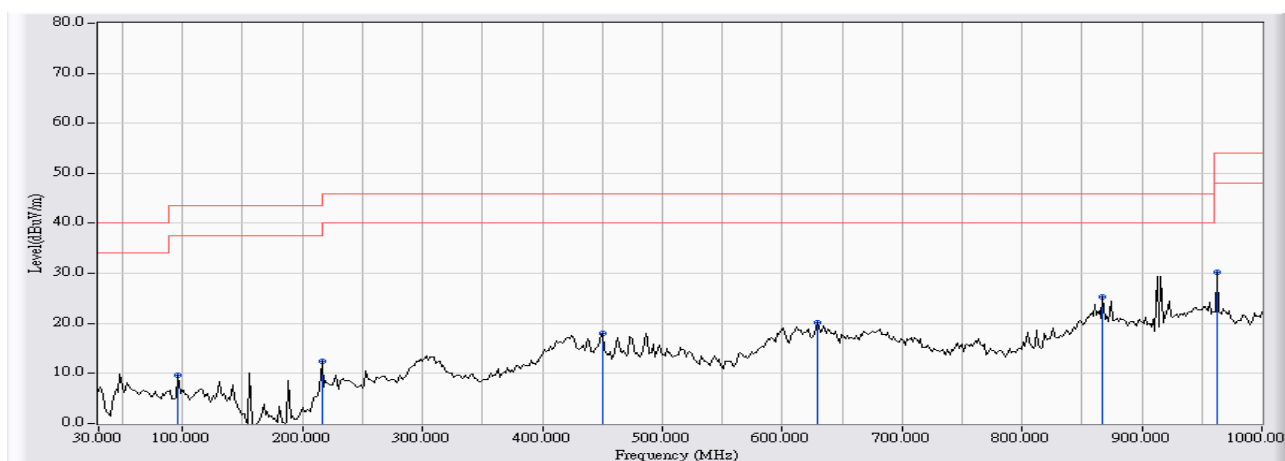
30MHz~1GHz as  $\pm 3.43\text{dB}$

1GHz~26.5GHz as  $\pm 3.65\text{dB}$

## 4.7. Test Result

### Under 1GHz Spurious:

Site : CB1	Time : 2010/11/24 - 19:04
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - HORIZONTAL	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX-915.25MHz

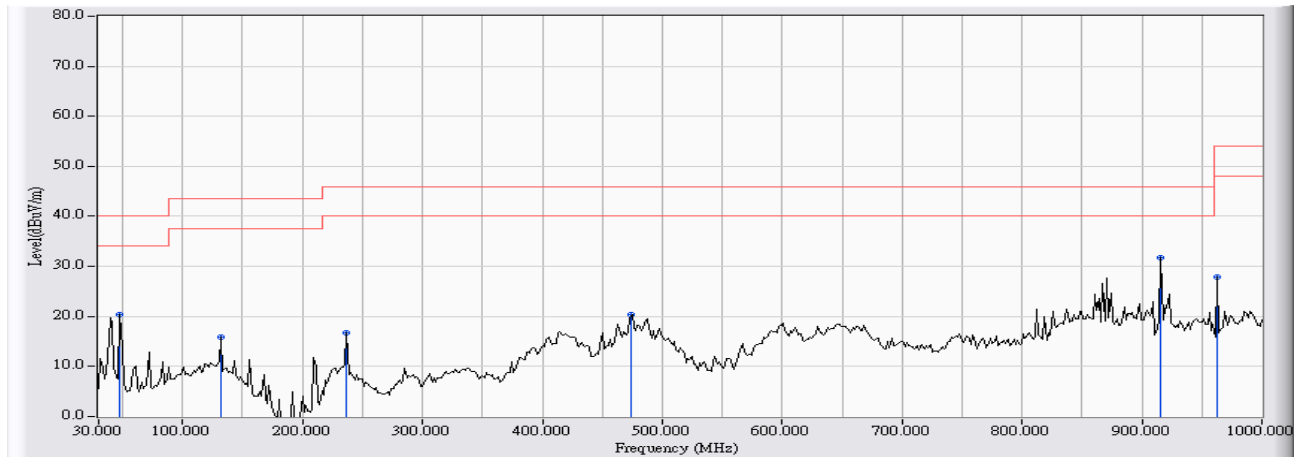


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		96.283	-15.808	25.391	9.584	-33.916	43.500	QUASIPeAK
2		215.917	-14.423	26.888	12.464	-31.036	43.500	QUASIPeAK
3		450.333	-7.148	25.207	18.060	-27.940	46.000	QUASIPeAK
4		629.783	-2.347	22.556	20.209	-25.791	46.000	QUASIPeAK
5	*	867.433	-0.299	25.606	25.307	-20.693	46.000	QUASIPeAK
6		962.817	1.123	29.152	30.275	-23.725	54.000	QUASIPeAK

#### Note:

1. All Reading Levels are Quasi-Peak value.
2. “ \* ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB1	Time : 2010/11/24 - 19:11
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - VERTICAL	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX-915.25MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		47.783	-13.918	34.348	20.430	-19.570	40.000	QUASIPeAK
2		131.850	-12.341	28.143	15.802	-27.698	43.500	QUASIPeAK
3		236.933	-12.546	29.353	16.807	-29.193	46.000	QUASIPeAK
4		474.583	-3.745	24.128	20.382	-25.618	46.000	QUASIPeAK
5	*	915.933	-3.926	35.649	31.724	-14.276	46.000	QUASIPeAK
6		962.817	-4.711	32.631	27.919	-26.081	54.000	QUASIPeAK

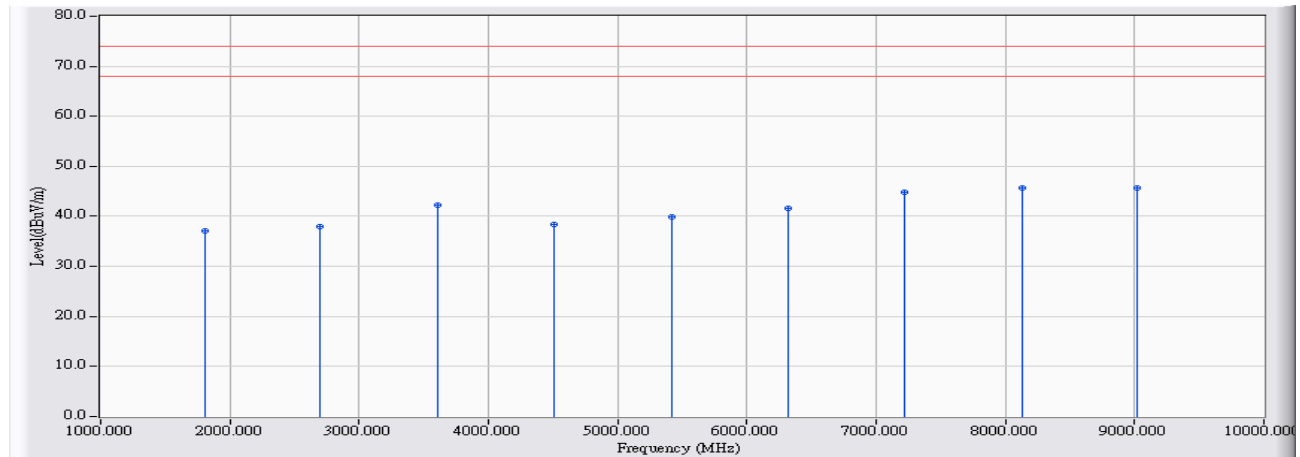
## Note:

1. All Reading Levels are Quasi-Peak value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.



**Above 1GHz Spurious:**

Site : CB1	Time : 2010/11/19 - 13:17
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-11) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : UHF USB Reader Module	Note : TX-902.75MHz

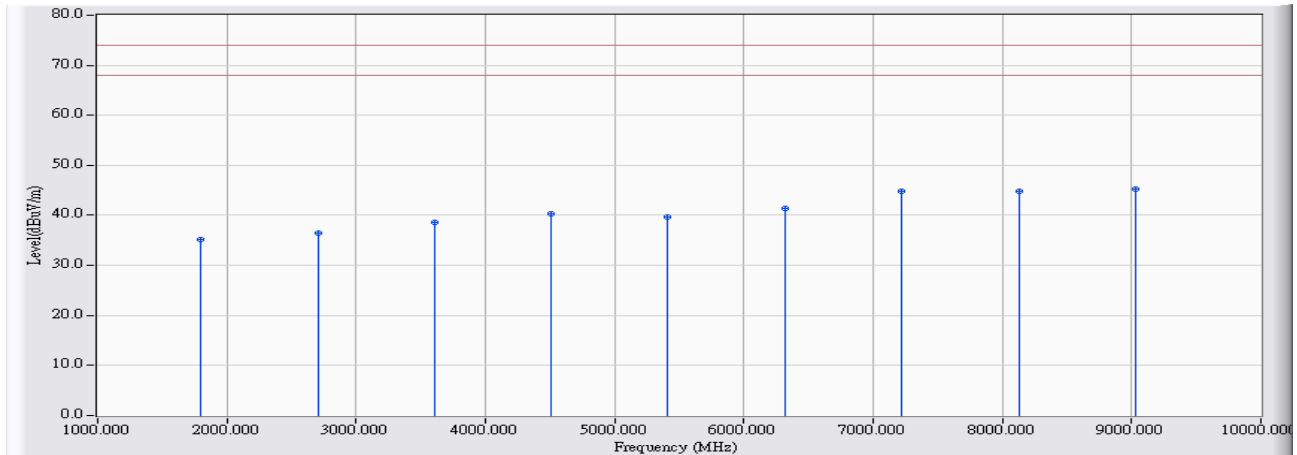


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		1809.700	-9.170	46.233	37.062	-36.938	74.000	54.000	PEAK
2		2700.190	-6.120	44.002	37.882	-36.118	74.000	54.000	PEAK
3		3611.020	-4.515	46.849	42.334	-31.666	74.000	54.000	PEAK
4		4506.010	-2.188	40.581	38.392	-35.608	74.000	54.000	PEAK
5		5424.880	-0.196	40.078	39.882	-34.118	74.000	54.000	PEAK
6		6316.150	2.290	39.410	41.700	-32.300	74.000	54.000	PEAK
7		7221.920	4.732	40.005	44.737	-29.263	74.000	54.000	PEAK
8	*	8132.050	6.072	39.682	45.755	-28.245	74.000	54.000	PEAK
9		9021.080	6.554	39.156	45.710	-28.290	74.000	54.000	PEAK

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/11/19 - 15:19
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-11) - VERTICAL	Power : AC 120V / 60Hz
EUT : UHF USB Reader Module	Note : TX-902.75MHz

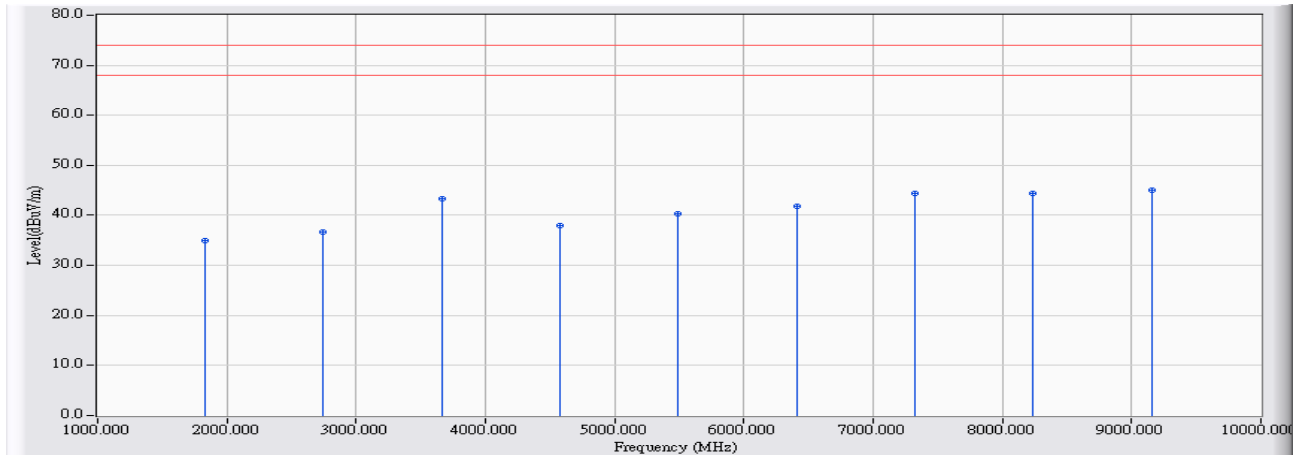


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	1800.720	-9.192	44.454	35.263	-38.737	74.000	54.000	PEAK
2	2705.440	-6.104	42.534	36.430	-37.570	74.000	54.000	PEAK
3	3610.880	-4.515	43.115	38.600	-35.400	74.000	54.000	PEAK
4	4508.870	-2.182	42.488	40.306	-33.694	74.000	54.000	PEAK
5	5412.870	-0.222	39.798	39.576	-34.424	74.000	54.000	PEAK
6	6317.120	2.294	39.142	41.435	-32.565	74.000	54.000	PEAK
7	7222.015	4.732	40.121	44.853	-29.147	74.000	54.000	PEAK
8	8126.770	6.076	38.682	44.758	-29.242	74.000	54.000	PEAK
9	* 9026.755	6.563	38.696	45.258	-28.742	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/11/19 - 15:24
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-11) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : UHF USB Reader Module	Note : TX-915.25MHz

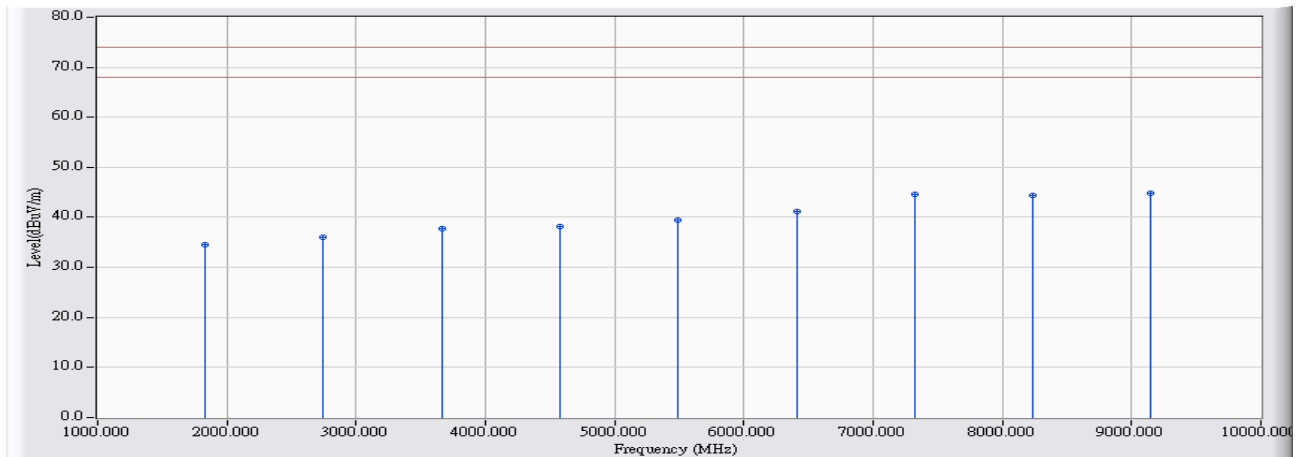


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	1832.755	-9.117	43.988	34.871	-39.129	74.000	54.000	PEAK
2	2747.670	-5.973	42.752	36.779	-37.221	74.000	54.000	PEAK
3	3660.995	-4.368	47.710	43.343	-30.657	74.000	54.000	PEAK
4	4576.722	-2.036	40.044	38.008	-35.992	74.000	54.000	PEAK
5	5492.426	-0.048	40.348	40.300	-33.700	74.000	54.000	PEAK
6	6407.354	2.597	39.306	41.903	-32.097	74.000	54.000	PEAK
7	7322.105	4.915	39.536	44.451	-29.549	74.000	54.000	PEAK
8	8236.476	6.013	38.312	44.325	-29.675	74.000	54.000	PEAK
9	* 9152.948	6.745	38.318	45.063	-28.937	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/11/19 - 15:30
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-11) - VERTICAL	Power : AC 120V / 60Hz
EUT : UHF USB Reader Module	Note : TX-915.25MHz

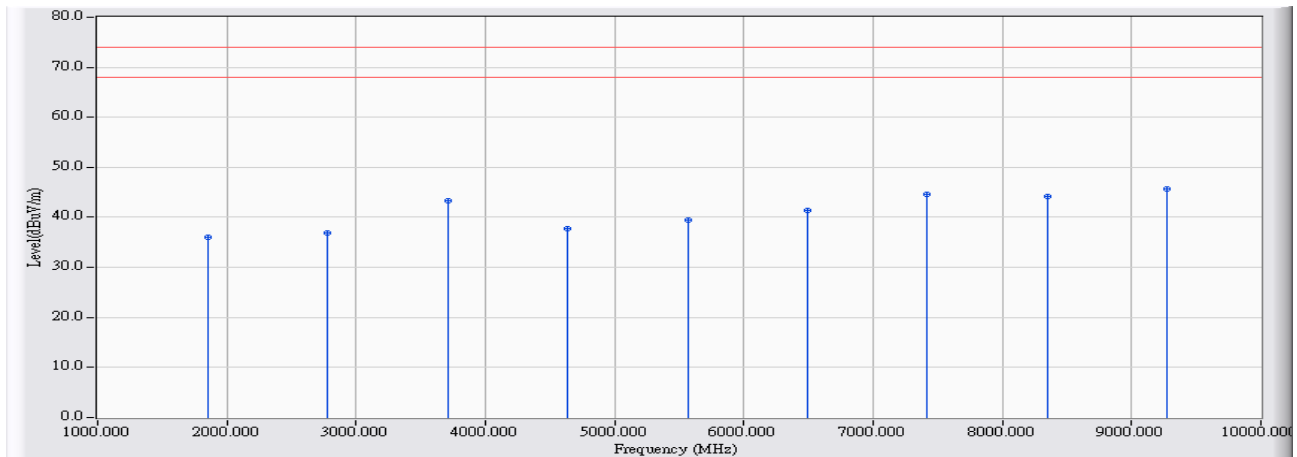


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	1831.374	-9.120	43.635	34.515	-39.485	74.000	54.000	PEAK
2	2745.716	-5.978	42.028	36.049	-37.951	74.000	54.000	PEAK
3	3660.698	-4.369	42.037	37.669	-36.331	74.000	54.000	PEAK
4	4576.166	-2.037	40.122	38.085	-35.915	74.000	54.000	PEAK
5	5492.008	-0.048	39.532	39.483	-34.517	74.000	54.000	PEAK
6	6407.492	2.598	38.511	41.109	-32.891	74.000	54.000	PEAK
7	7321.750	4.914	39.649	44.564	-29.436	74.000	54.000	PEAK
8	8236.395	6.013	38.321	44.334	-29.666	74.000	54.000	PEAK
9	* 9151.220	6.743	38.061	44.804	-29.196	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/11/19 - 15:38
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-11) - HORIZONTAL	Power : AC 120V / 60Hz
EUT : UHF USB Reader Module	Note : TX-927.25MHz

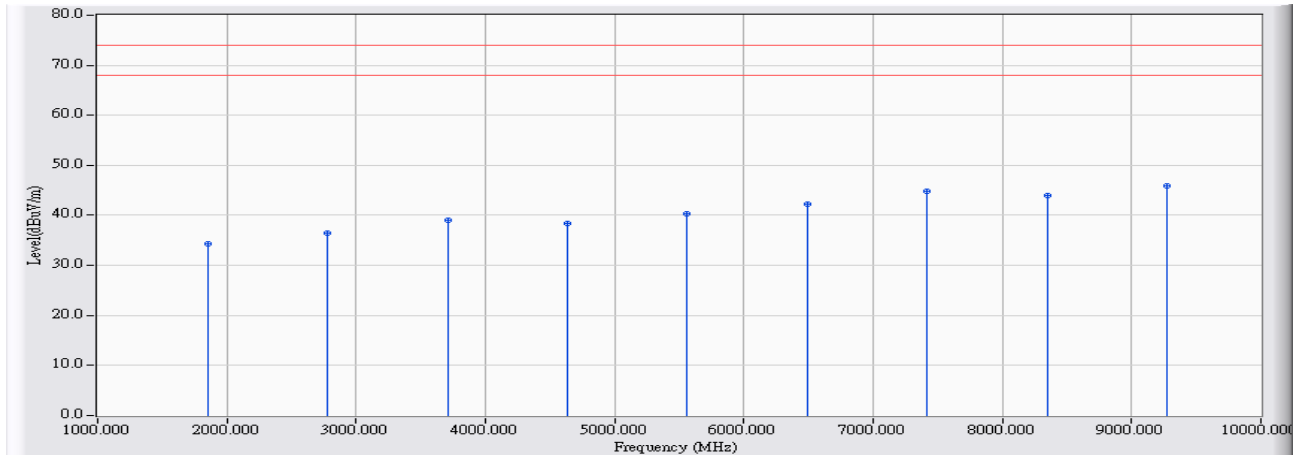


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	1853.135	-9.071	45.051	35.981	-38.019	74.000	54.000	PEAK
2	2781.916	-5.866	42.657	36.791	-37.209	74.000	54.000	PEAK
3	3708.970	-4.225	47.631	43.405	-30.595	74.000	54.000	PEAK
4	4637.085	-1.906	39.612	37.706	-36.294	74.000	54.000	PEAK
5	5564.495	0.131	39.340	39.471	-34.529	74.000	54.000	PEAK
6	6491.015	2.879	38.559	41.438	-32.562	74.000	54.000	PEAK
7	7417.965	5.092	39.420	44.511	-29.489	74.000	54.000	PEAK
8	8345.630	5.950	38.273	44.223	-29.777	74.000	54.000	PEAK
9	* 9273.010	6.919	38.869	45.789	-28.211	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/11/19 - 15:45
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G(2010-11) - VERTICAL	Power : AC 120V / 60Hz
EUT : UHF USB Reader Module	Note : TX-927.25MHz



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	1854.686	-9.066	43.288	34.222	-39.778	74.000	54.000	PEAK
2	2782.386	-5.865	42.231	36.366	-37.634	74.000	54.000	PEAK
3	3709.364	-4.224	43.189	38.965	-35.035	74.000	54.000	PEAK
4	4636.176	-1.908	40.287	38.379	-35.621	74.000	54.000	PEAK
5	5562.696	0.126	40.261	40.388	-33.612	74.000	54.000	PEAK
6	6489.790	2.874	39.298	42.172	-31.828	74.000	54.000	PEAK
7	7418.510	5.093	39.725	44.817	-29.183	74.000	54.000	PEAK
8	8344.584	5.951	38.051	44.002	-29.998	74.000	54.000	PEAK
9	* 9271.752	6.918	38.919	45.837	-28.163	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

TX Channel 00					
HORIZONTAL					
Frequency	RBW=1MHz VBW=10Hz	Duty cycle	Average level	Margin	Limit
1800.520	21.009	0.329	11.353	-42.647	54
2710.090	24.635		14.979	-39.021	54
3611.030	37.659		28.003	-25.997	54
4514.040	23.616		13.960	-40.040	54
5416.360	25.147		15.491	-38.509	54
6323.710	27.239		17.583	-36.417	54
7221.980	32.003		22.347	-31.653	54
8121.820	30.850		21.194	-32.806	54
9021.020	38.859		29.203	-24.797	54

TX Channel 00					
VERTICAL					
Frequency	RBW=1MHz VBW=10Hz	Duty cycle	Average level	Margin	Limit
1800.520	21.195	0.329	11.539	-42.461	54
2711.000	22.669		13.013	-40.987	54
3611.040	27.370		17.714	-36.286	54
4513.770	23.655		13.999	-40.001	54
5412.170	25.127		15.471	-38.529	54
6324.060	27.276		17.620	-36.380	54
7222.045	32.691		23.035	-30.965	54
8125.265	30.999		21.343	-32.657	54
9027.895	31.261		21.605	-32.395	54

TX Channel 25					
HORIZONTAL					
Frequency	RBW=1MHz VBW=10Hz	Duty cycle	Average level	Margin	Limit
1830.970	22.336	0.329	12.680	-41.320	54
2747.495	22.569		12.913	-41.087	54
3661.035	38.656		29.000	-25.000	54
4575.984	23.907		14.251	-39.749	54
5491.046	25.626		15.970	-38.030	54
6407.288	27.469		17.813	-36.187	54
7322.105	44.451		34.795	-19.205	54
8236.252	30.710		21.054	-32.946	54
9152.632	31.517		21.861	-32.139	54

TX Channel 25					
VERTICAL					
Frequency	RBW=1MHz VBW=10Hz	Duty cycle	Average level	Margin	Limit
1830.282	20.261	0.329	10.605	-43.395	54
2745.854	22.551		12.895	-41.105	54
3660.960	23.308		13.652	-40.348	54
4576.296	23.883		14.227	-39.773	54
5491.782	25.632		15.976	-38.024	54
6406.130	27.512		17.856	-36.144	54
7322.000	31.394		21.738	-32.262	54
8235.290	30.891		21.235	-32.765	54
9152.560	31.508		21.852	-32.148	54

TX Channel 49					
HORIZONTAL					
Frequency	RBW=1MHz VBW=10Hz	Duty cycle	Average level	Margin	Limit
1853.584	20.990	0.329	11.334	-42.666	54
2781.960	22.847		13.191	-40.809	54
3709.025	39.575		29.919	-24.081	54
4638.745	23.996		14.340	-39.660	54
5563.495	25.669		16.013	-37.987	54
6490.305	27.984		18.328	-35.672	54
7417.935	31.022		21.366	-32.634	54
8344.286	30.583		20.927	-33.073	54
9272.200	31.636		21.980	-32.020	54

TX Channel 49					
VERTICAL					
Frequency	RBW=1MHz VBW=10Hz	Duty cycle	Average level	Margin	Limit
1854.550	20.903	0.329	11.247	-42.753	54
2782.328	22.769		13.113	-40.887	54
3709.030	28.775		19.119	-34.881	54
4636.204	24.852		15.196	-38.804	54
5564.216	25.678		16.022	-37.978	54
6490.882	27.955		18.299	-35.701	54
7417.978	31.139		21.483	-32.517	54
8344.414	30.573		20.917	-33.083	54
9271.656	31.657		22.001	-31.999	54

Average level = (RBW=1MHz VBW=10Hz)+ 20 log duty cycle

duty cycle = 32.9ms / 100ms = 0.329



## 5. RF Conducted Emission

### 5.1. Test Equipment

The following test equipments are used during the test:

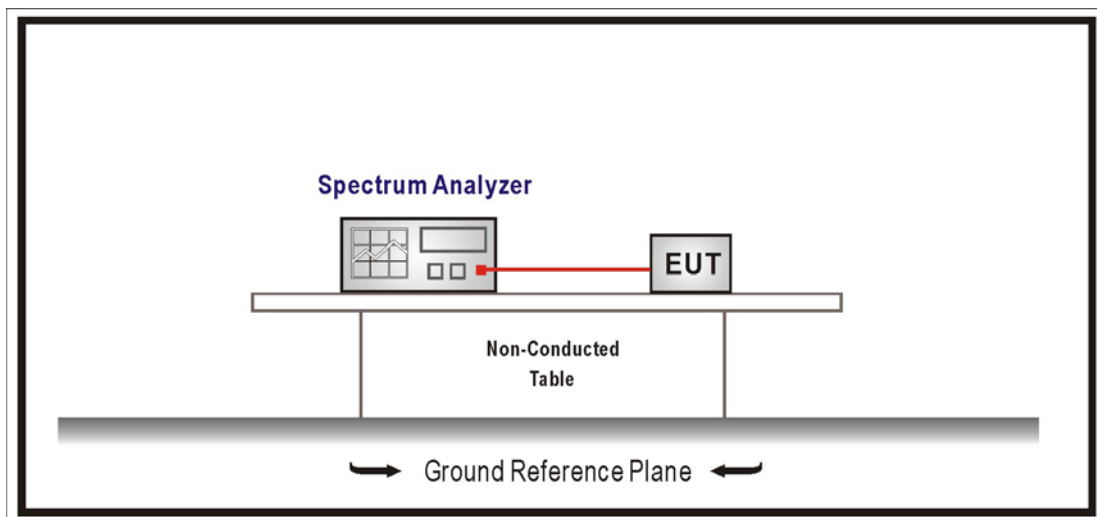
RF Antenna Conducted Test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2011/02/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 5.2. Test Setup

RF Conducted Measurement:



### **5.3. Limits**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### **5.4. Test Procedure**

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

### **5.5. Test Specification**

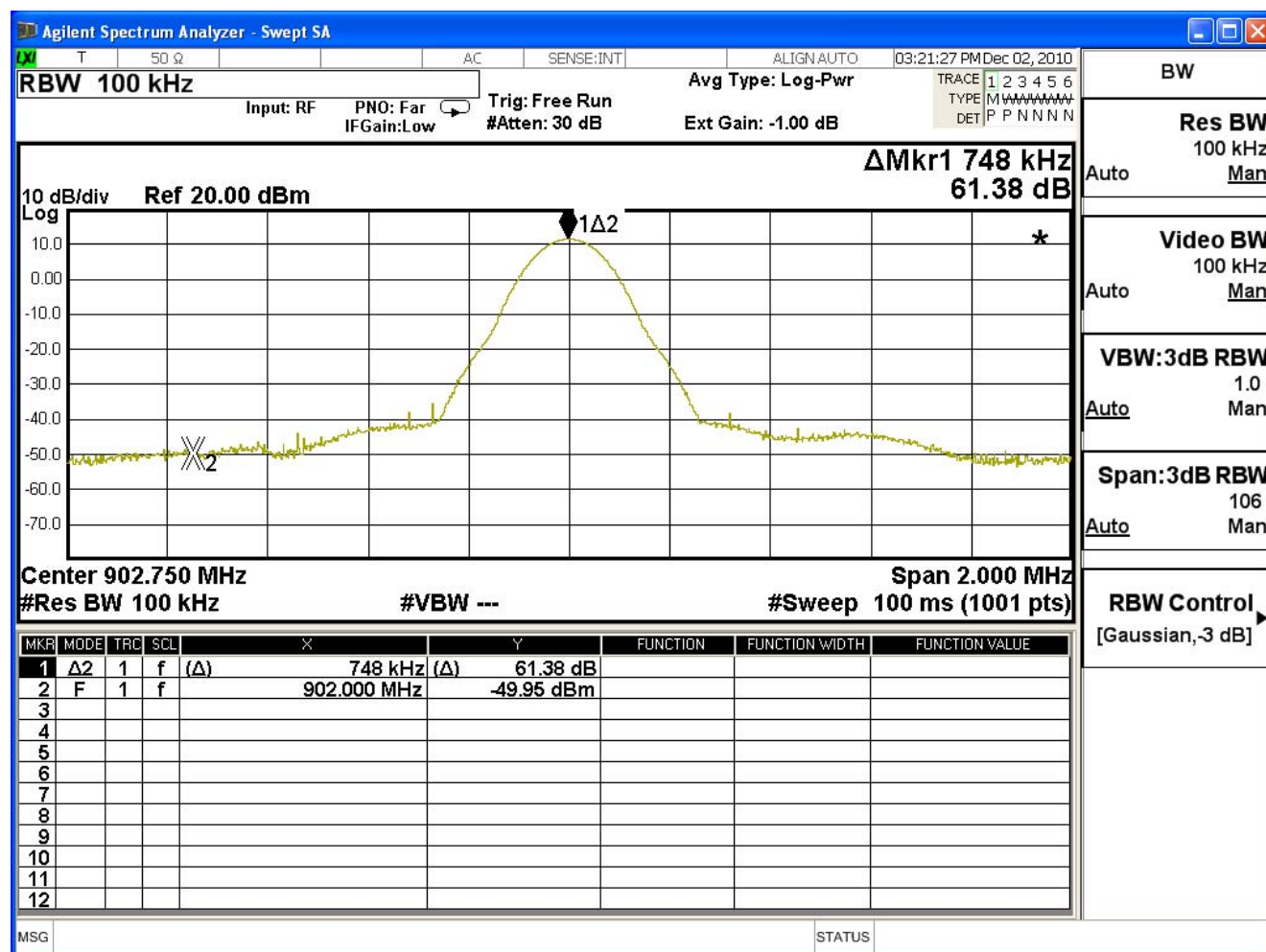
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

## 5.6. Test Result

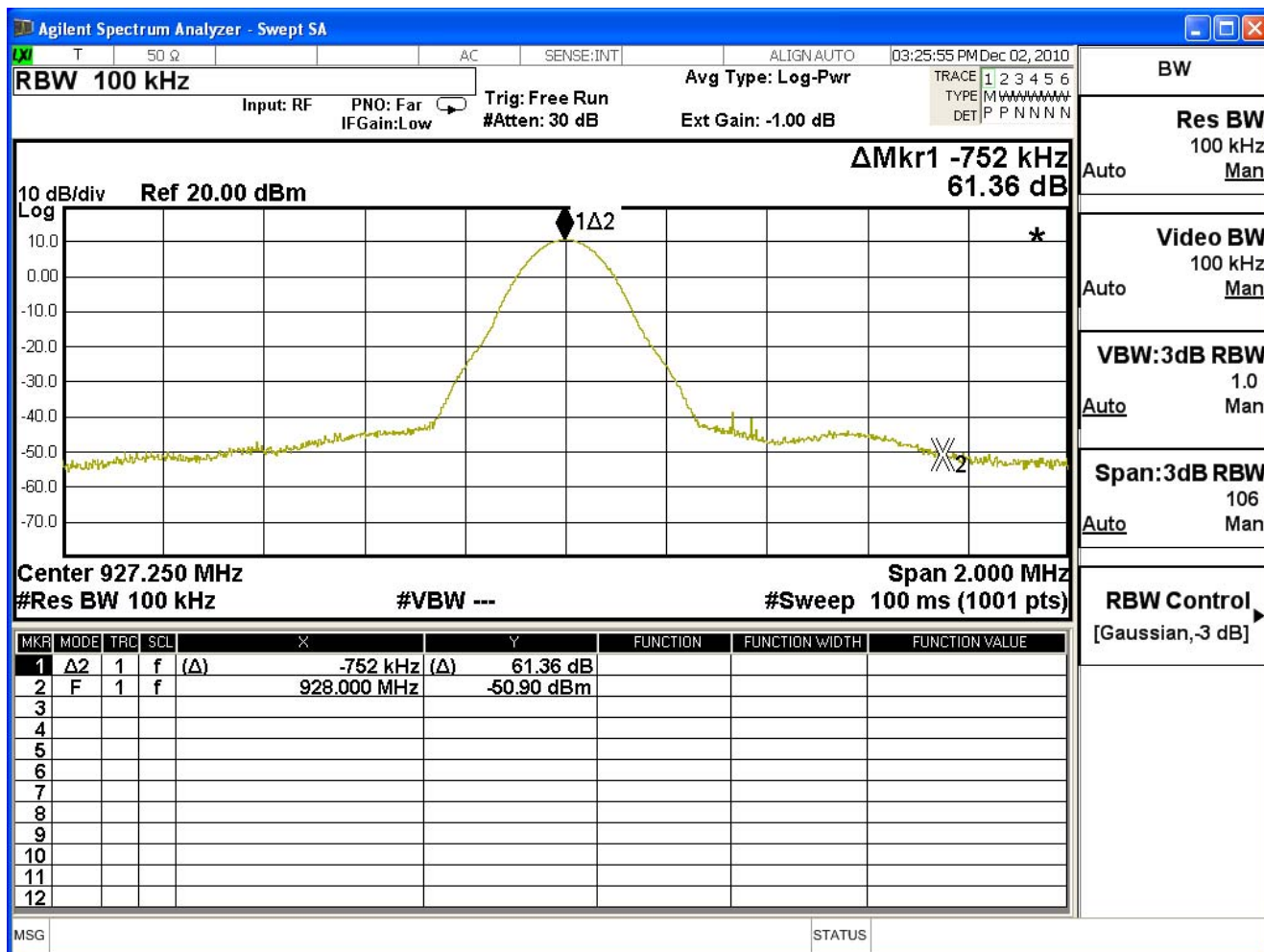
Product	UHF USB Reader Module		
Test Item	RF Conducted Emissions		
Test Mode	Mode 1: Transmit		
Date of Test	2010/12/02	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (dBc)	Required Limit (dBc)	Result
00	902.75	61.38	$\geq 20$	Pass
49	927.25	61.36	$\geq 20$	Pass

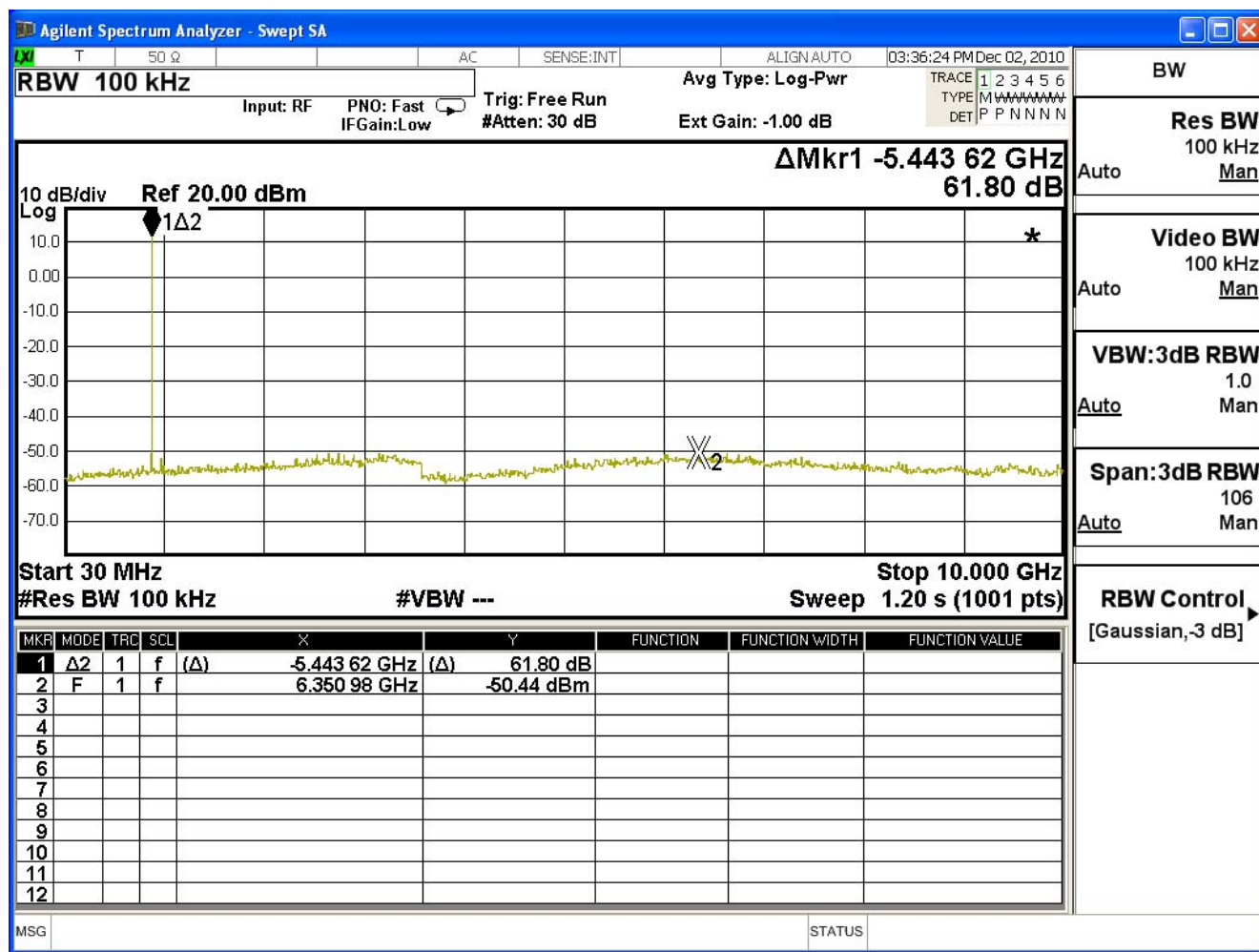
### Channel 00



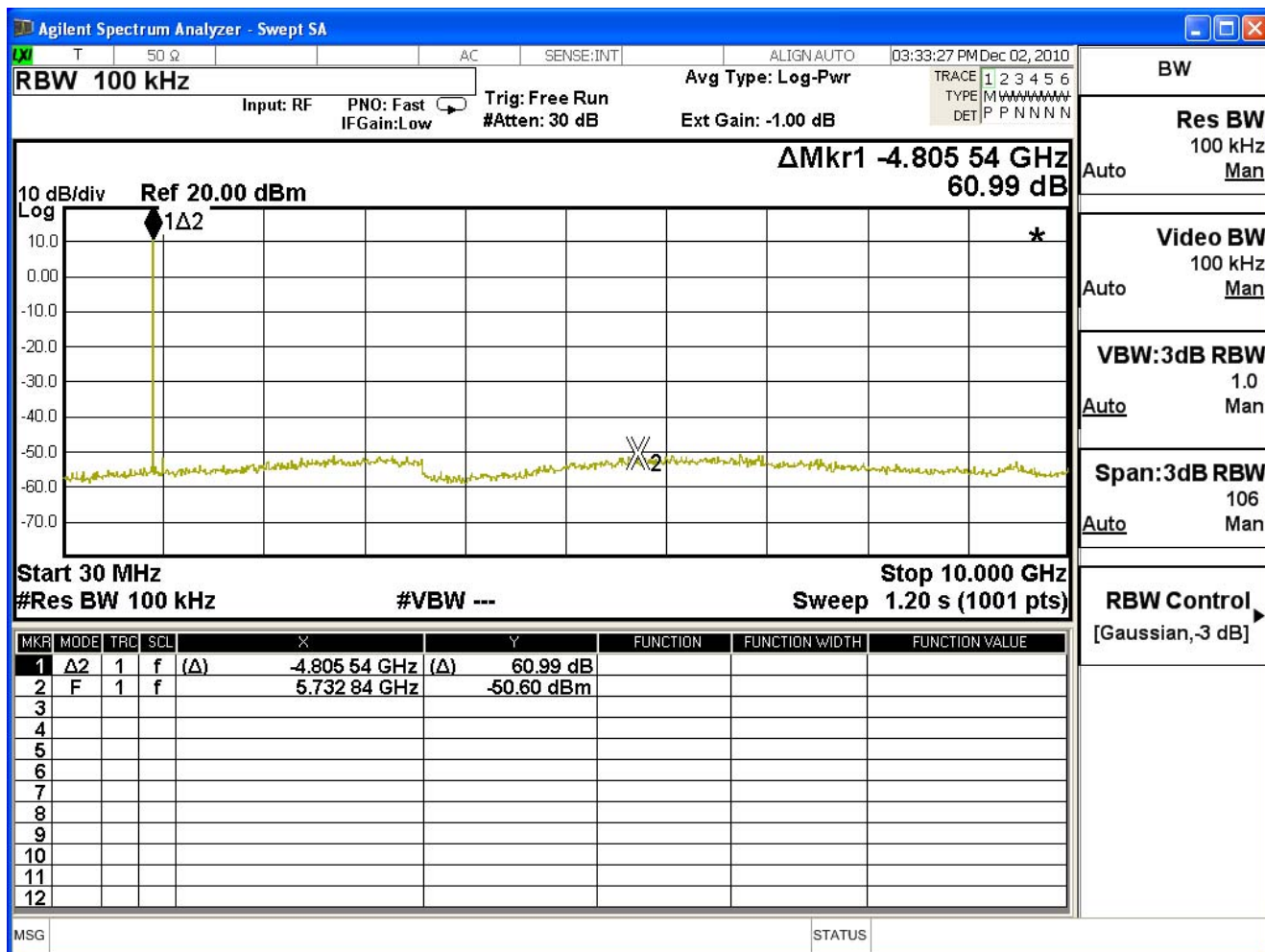
Channel 49



**Channel 00 (30M~10G)**



## Channel 49 (30M~10G)



## 6. Band Edge

### 6.1. Test Equipment

The following test equipments are used during the test:

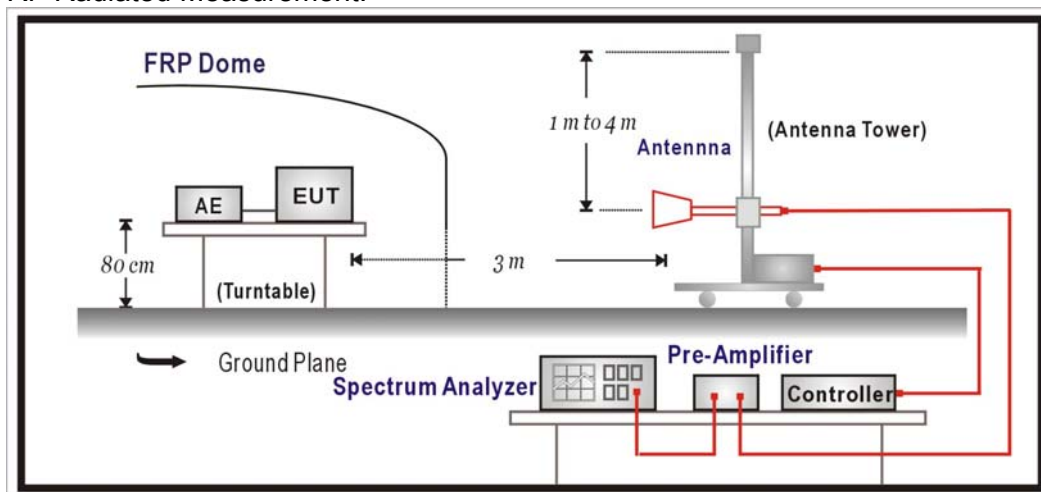
Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Horn Antenna	Schwarzback	BBHA 9120D	743	2011/03/14
Spectrum Analyzer	Agilent	E4440A	MY46187335	2011/01/14
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2011/04/07

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 6.2. Test Setup

RF Radiated Measurement:



### **6.3. Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

### **6.4. Test Procedure**

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2009 on radiated measurement.

### **6.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

### **6.6. Uncertainty**

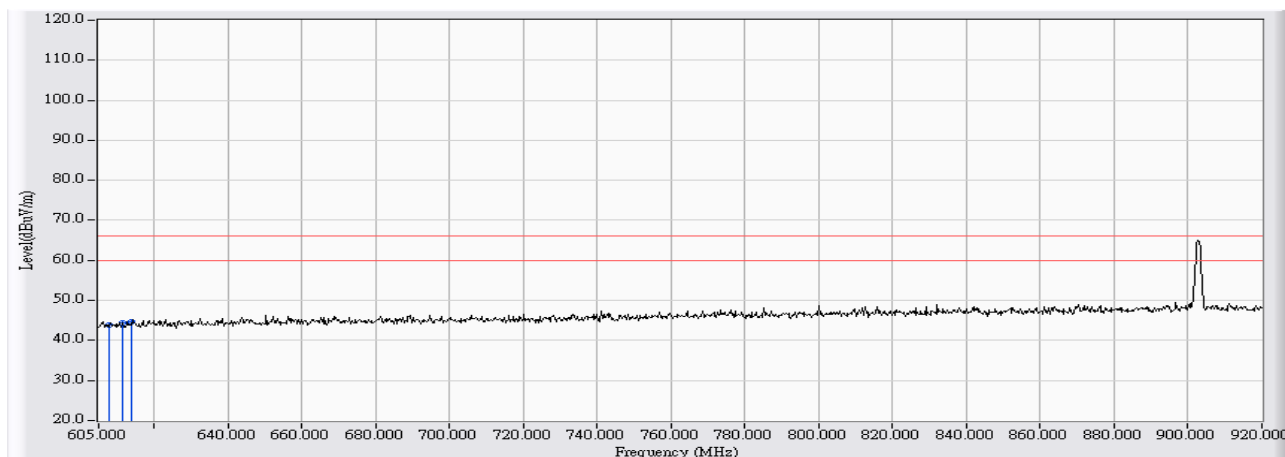
The measurement uncertainty

± 3.9 dB above 1GHz



## 6.7. Test Result

Site : CB1	Time : 2010/12/02 - 10:04
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX-902.75

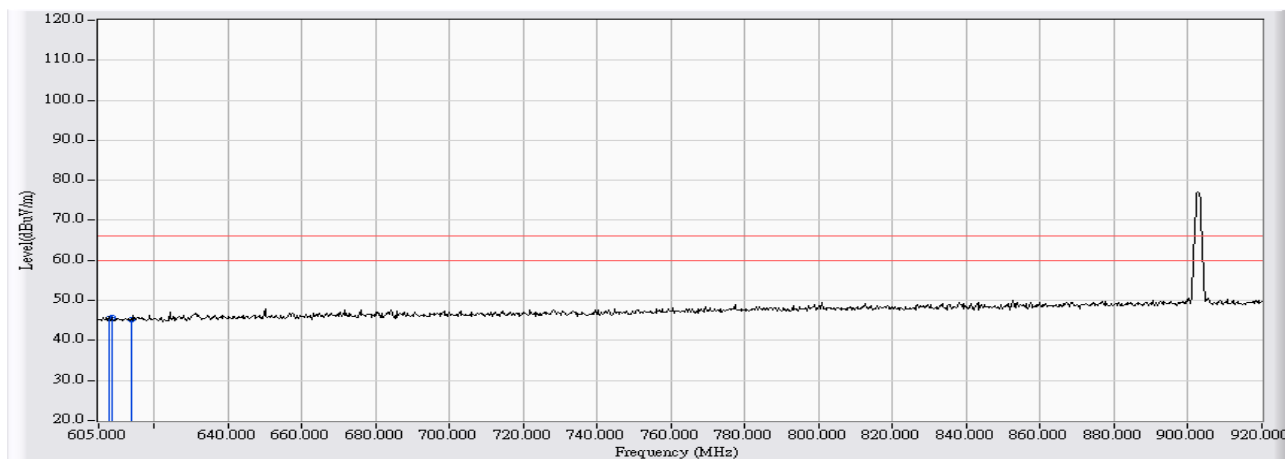


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		608.000	17.219	26.705	43.924	-22.096	66.020	PEAK
2		611.615	17.241	27.147	44.388	-21.632	66.020	PEAK
3	*	614.000	17.256	27.446	44.702	-21.318	66.020	PEAK

### Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/02 - 10:17
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX-902.75

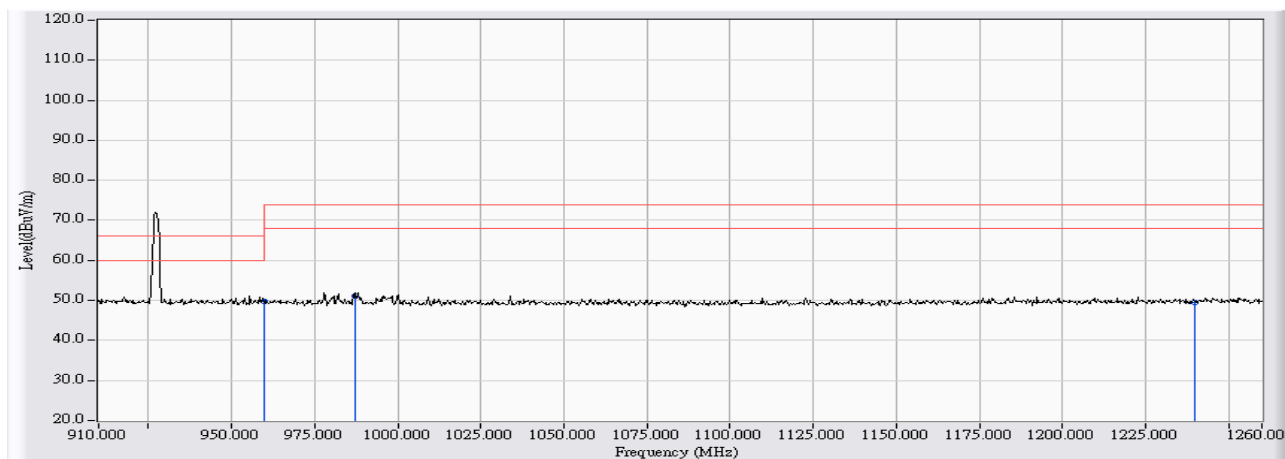


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		608.000	17.219	28.278	45.497	-20.523	66.020	PEAK
2	*	608.465	17.222	28.404	45.626	-20.394	66.020	PEAK
3		614.000	17.256	27.973	45.229	-20.791	66.020	PEAK

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/02 - 10:47
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - HORIZONTAL	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX-927.25

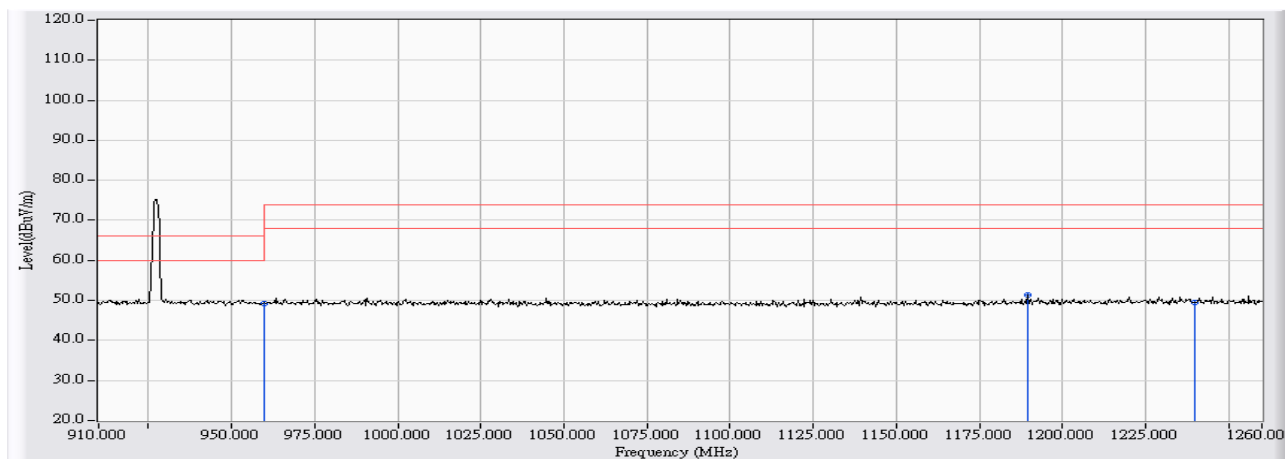


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	960.000	20.271	29.621	49.892	-16.128	66.020	PEAK
2		987.350	20.265	30.946	51.211	-22.789	74.000	PEAK
3		1240.000	20.281	29.305	49.586	-24.414	74.000	PEAK

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2010/12/02 - 10:56
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_30-1G(2010-12) - VERTICAL	Power : AC 120V/60Hz
EUT : UHF USB Reader Module	Note : TX-927.25



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	960.000	20.271	29.046	49.317	-16.703	66.020	PEAK
2		1189.650	20.281	31.204	51.485	-22.515	74.000	PEAK
3		1240.000	20.281	29.258	49.539	-24.461	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

## 7. Number of hopping frequency

### 7.1. Test Equipment

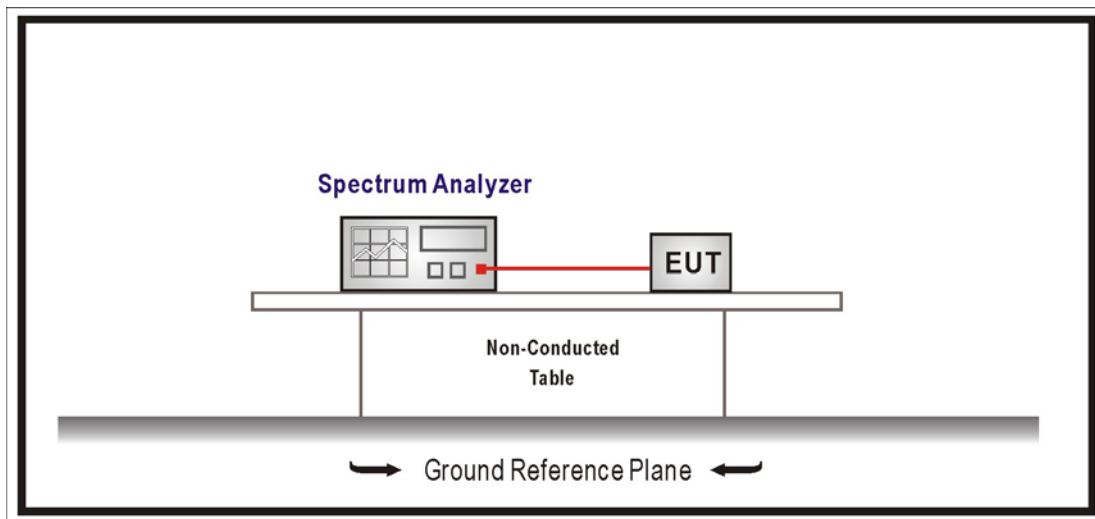
The following test equipments are used during the test:

Number Of Hopping Frequency / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2011/02/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 7.2. Test Setup



### 7.3. Limits

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. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

### 7.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = the frequency band of operation

$RBW \geq 1\%$  of the span ,  $VBW \geq RBW$

Sweep = auto, Detector function = peak, Trace = max hold

### 7.5. Test Specification

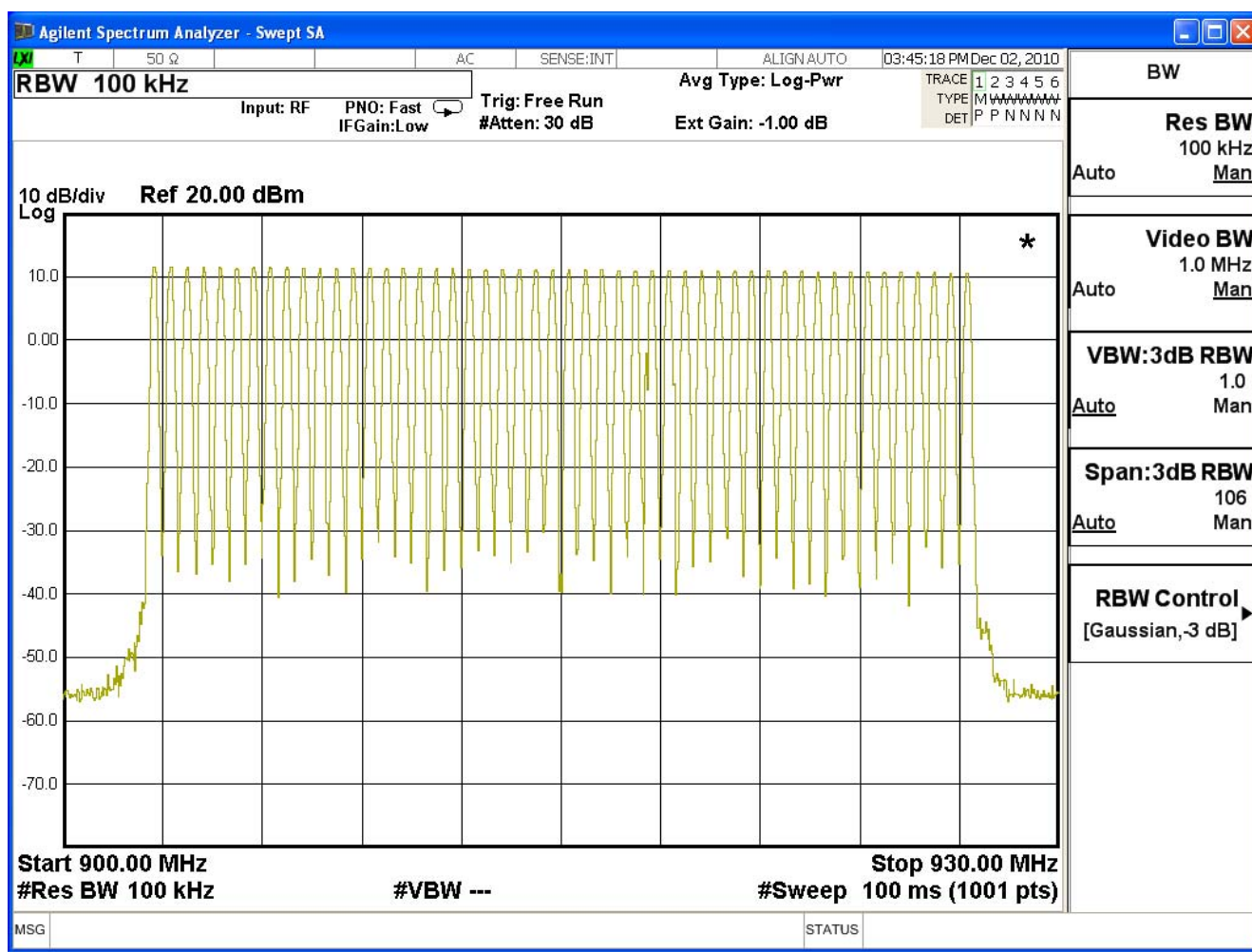
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

## 7.6. Test Result

Product	UHF USB Reader Module		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Transmit		
Date of Test	2010/12/02	Test Site	SR7

Frequency Range (MHz)	Measure Level (Hopping Channel)	Limit (Hopping Channel)	Result
902~928	50	$\geq 15$	Pass

### 915MHz



## 8. Carrier Frequency Separation

### 8.1. Test Equipment

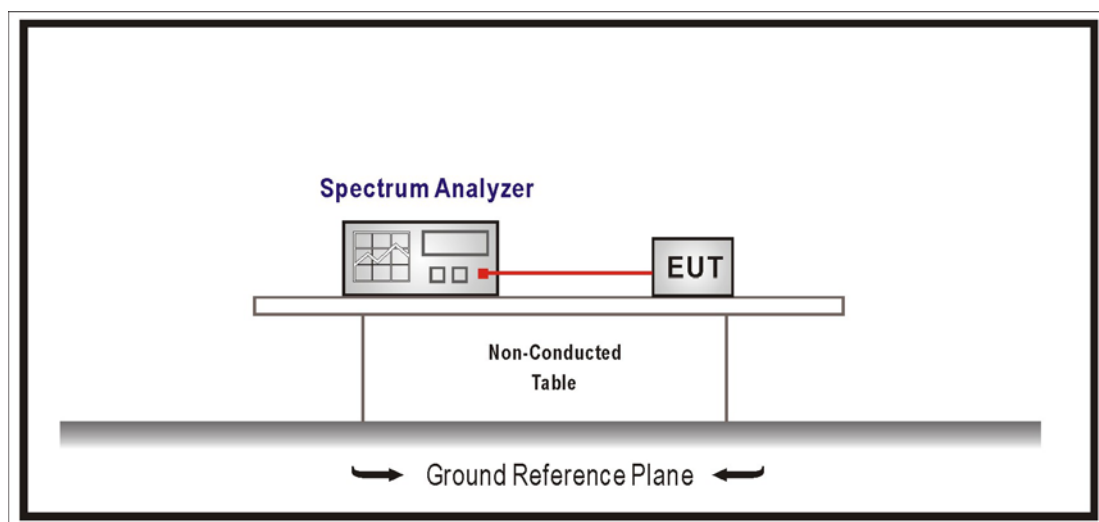
The following test equipment are used during the test:

Carrier Frequency Separation / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2011/02/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 8.2. Test Setup



### 8.3. Limits

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

### 8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = wide enough to capture the peaks of two adjacent channels

Resolution Bandwidth (RBW)  $\geq$  1% of the span, VBW  $\geq$  RBW

Sweep = auto, Detector function = peak, Trace = max hold

### 8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

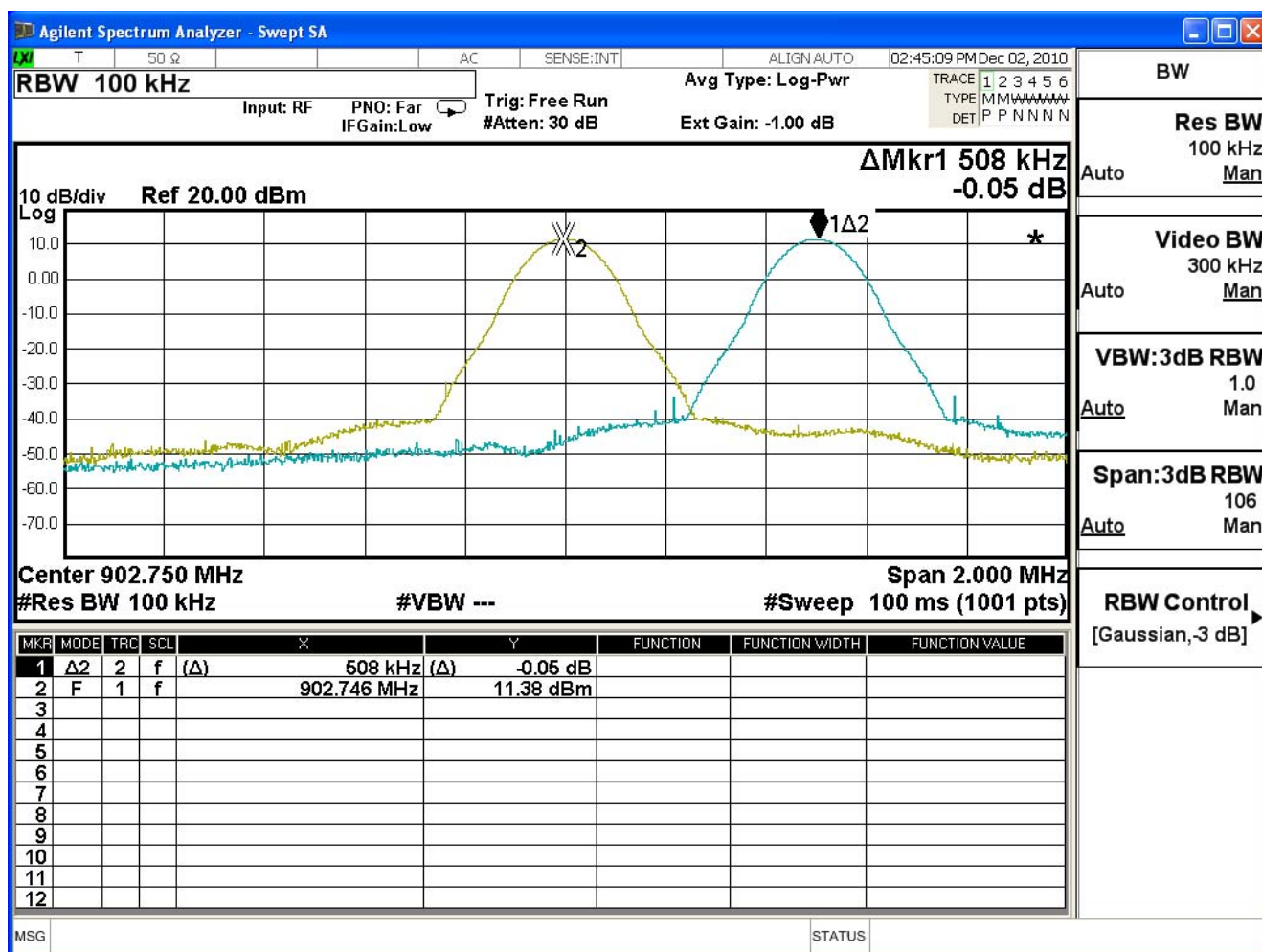


## 8.6. Test Result

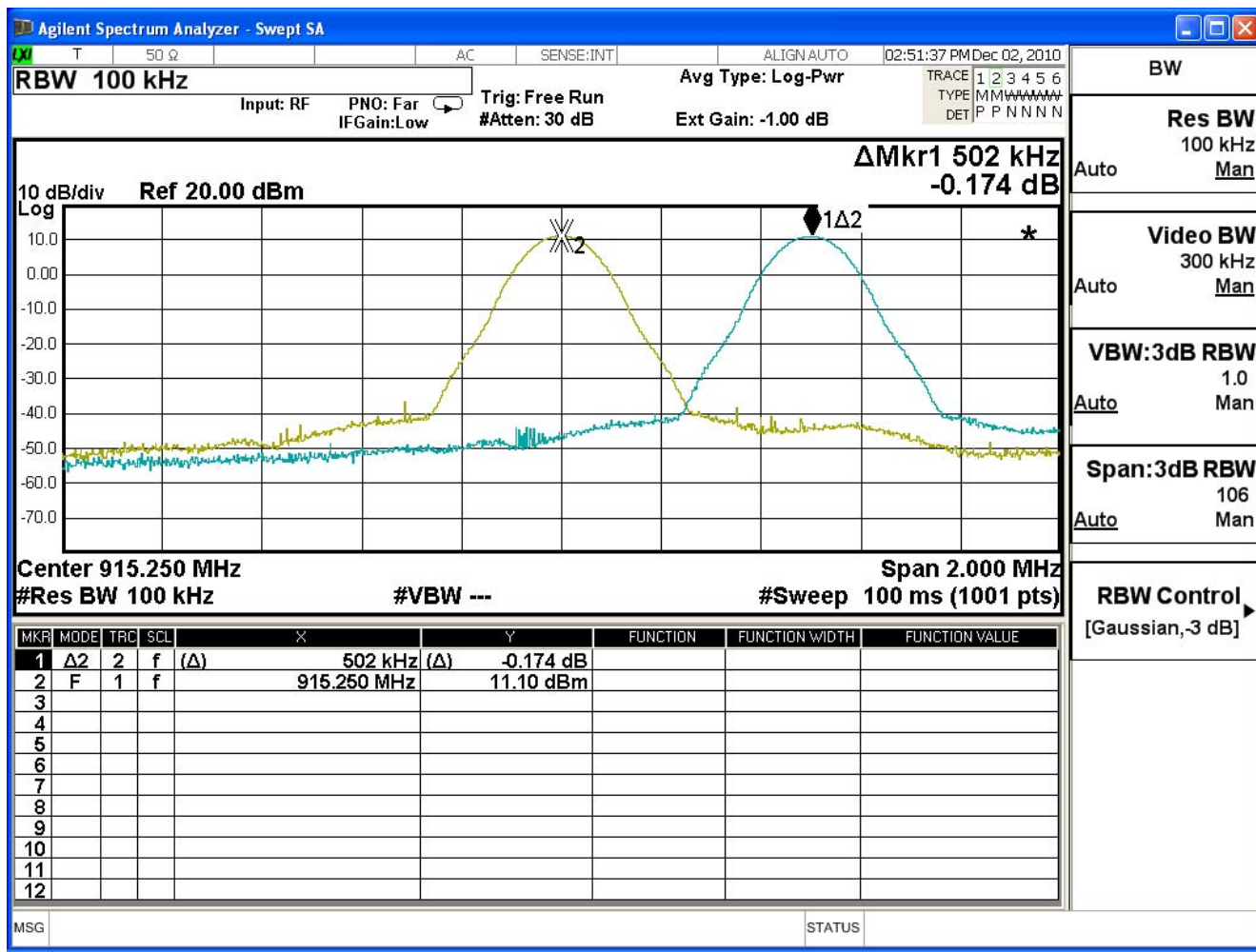
Product	UHF USB Reader Module		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2010/12/02	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	902.75	508	$\geq 264$	Pass
25	915.25	502	$\geq 268$	Pass
49	927.25	504	$\geq 266$	Pass

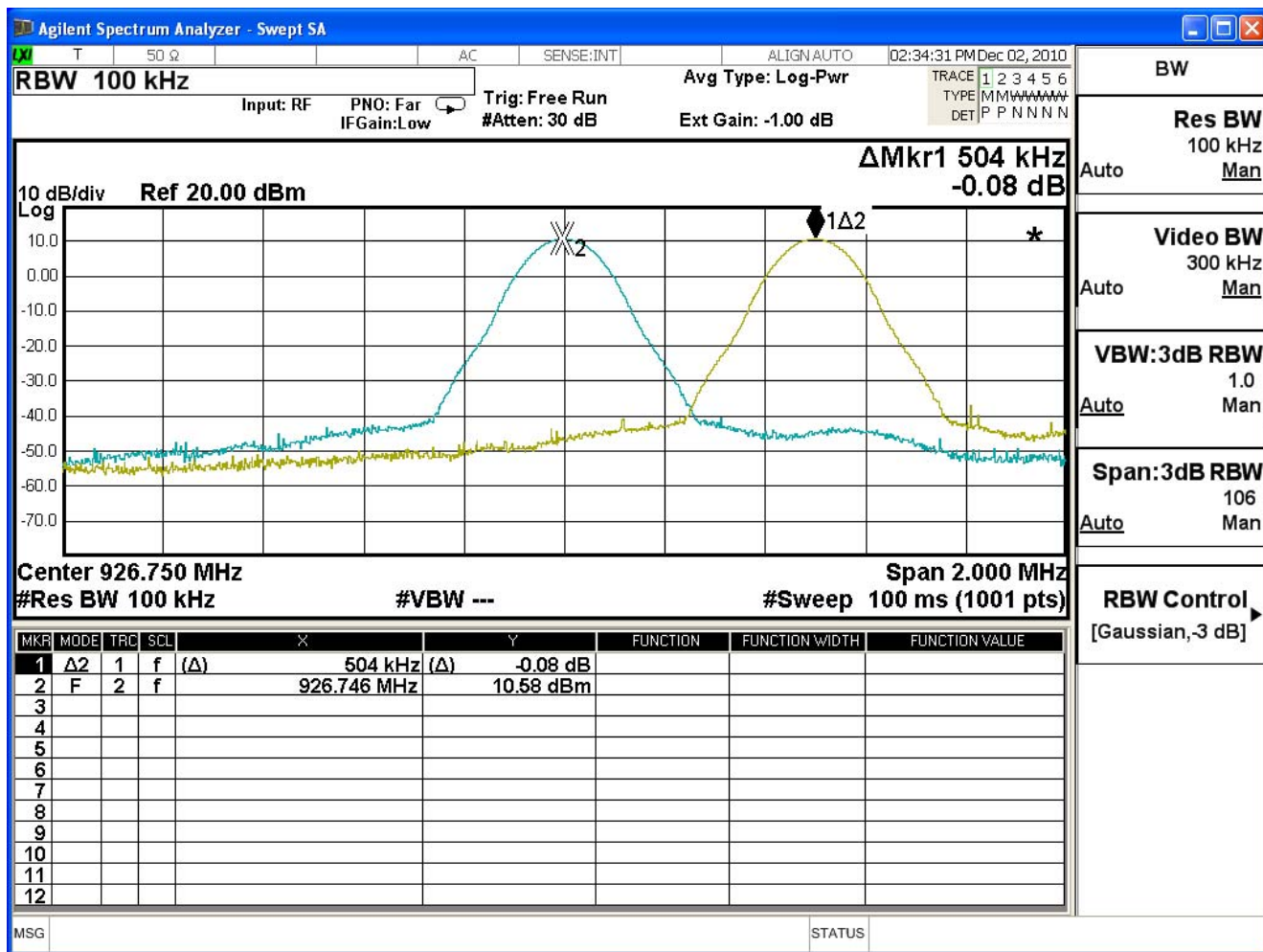
### Channel 00



## Channel 25



### Channel 49



## 9. Occupied Bandwidth

### 9.1. Test Equipment

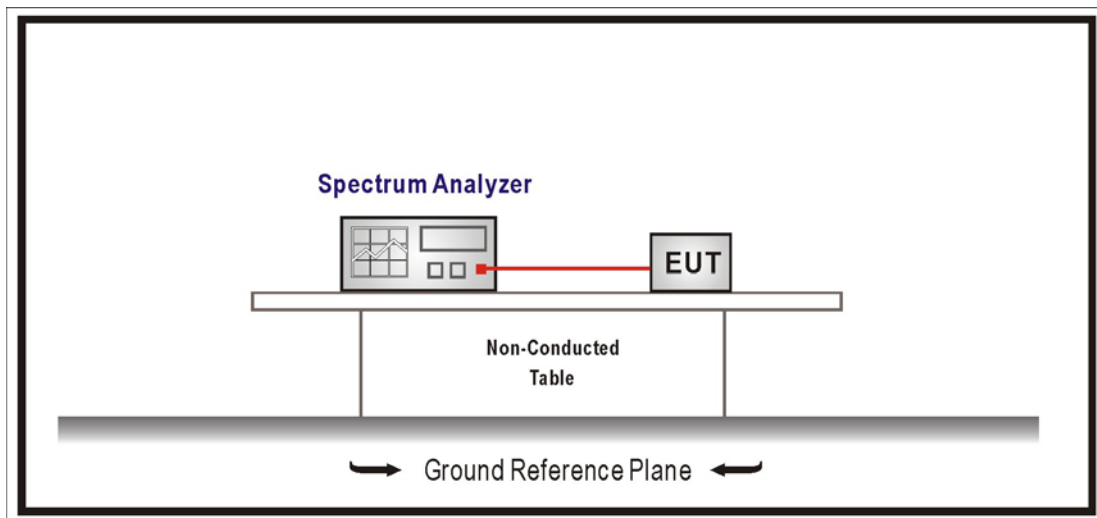
The following test equipment are used during the test:

Occupied Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2011/02/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 9.2. Test Setup



### **9.3. Limits**

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. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

### **9.4. Test Procedures**

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW  $\geq$  1% of the 20 dB bandwidth, VBW  $\geq$  RBW

Sweep = auto, Detector function = peak, Trace = max hold

The EUT should be transmitting at its maximum data rate.

### **9.5. Test Specification**

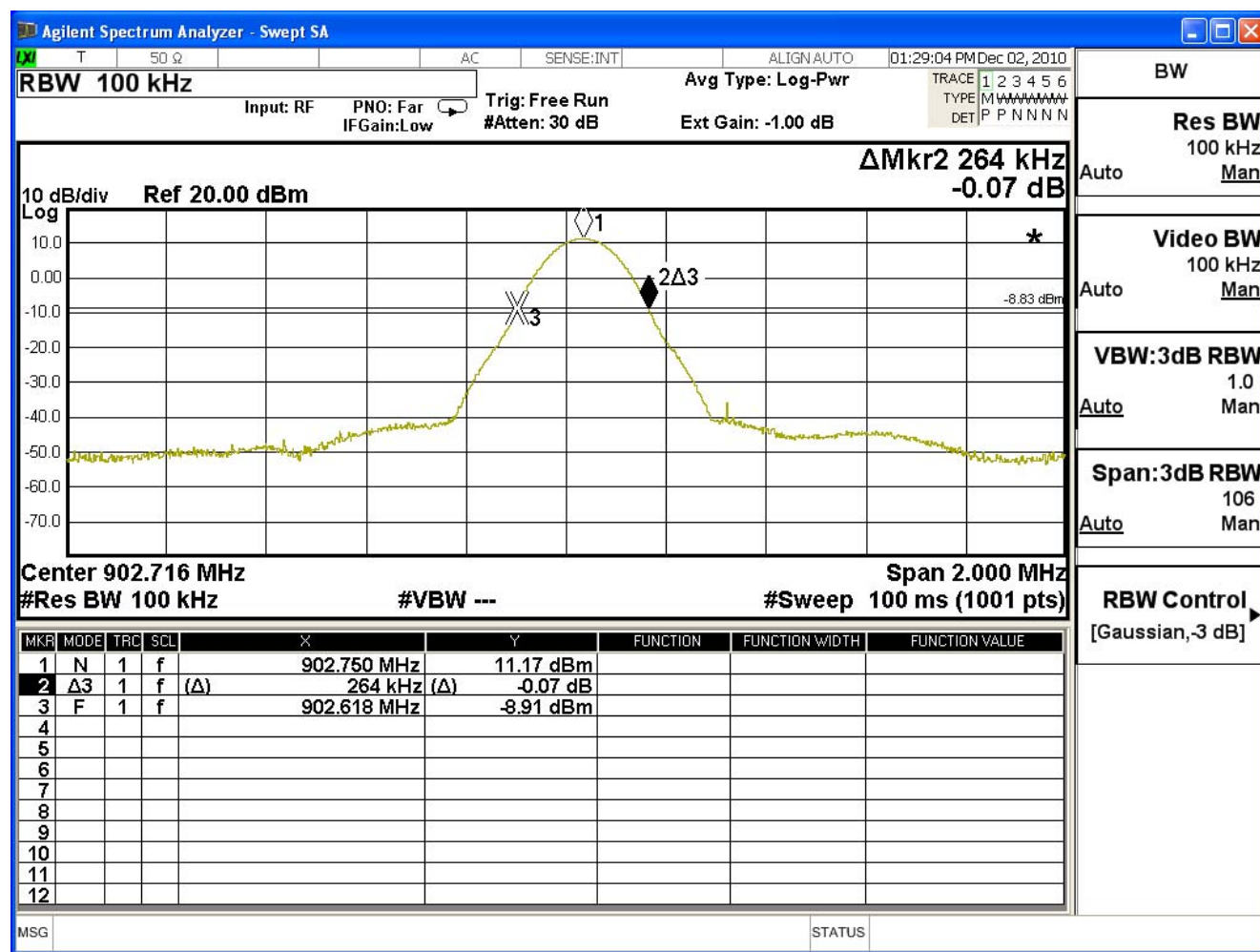
According to FCC Part 15 Subpart C Paragraph 15.247: 2009

## 9.6. Test Result

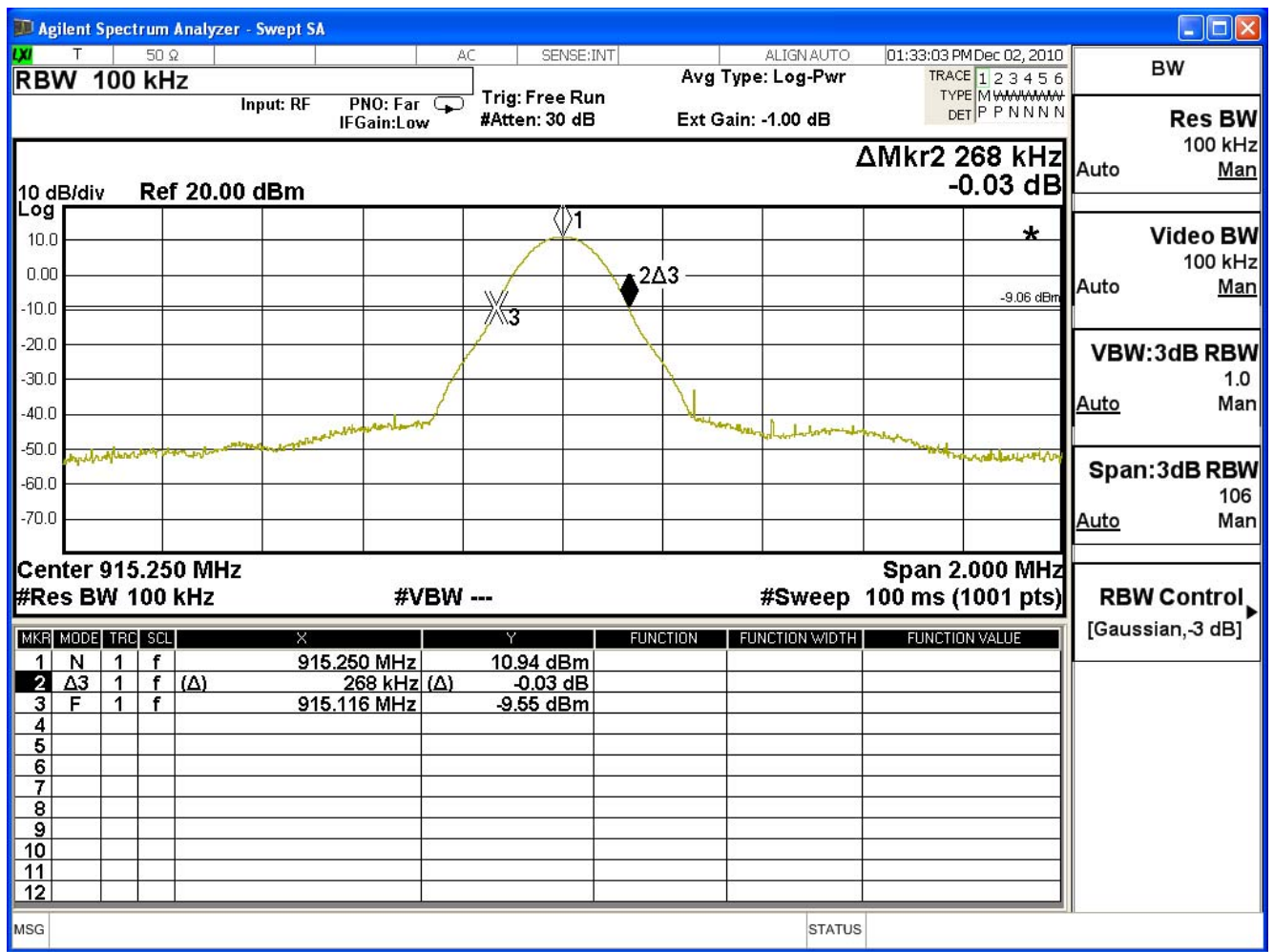
Product	UHF USB Reader Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2010/12/02	Test Site	SR7

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	902.75	264	$\leq 500$	Pass
25	915.25	268	$\leq 500$	Pass
49	927.25	266	$\leq 500$	Pass

### Channel 00

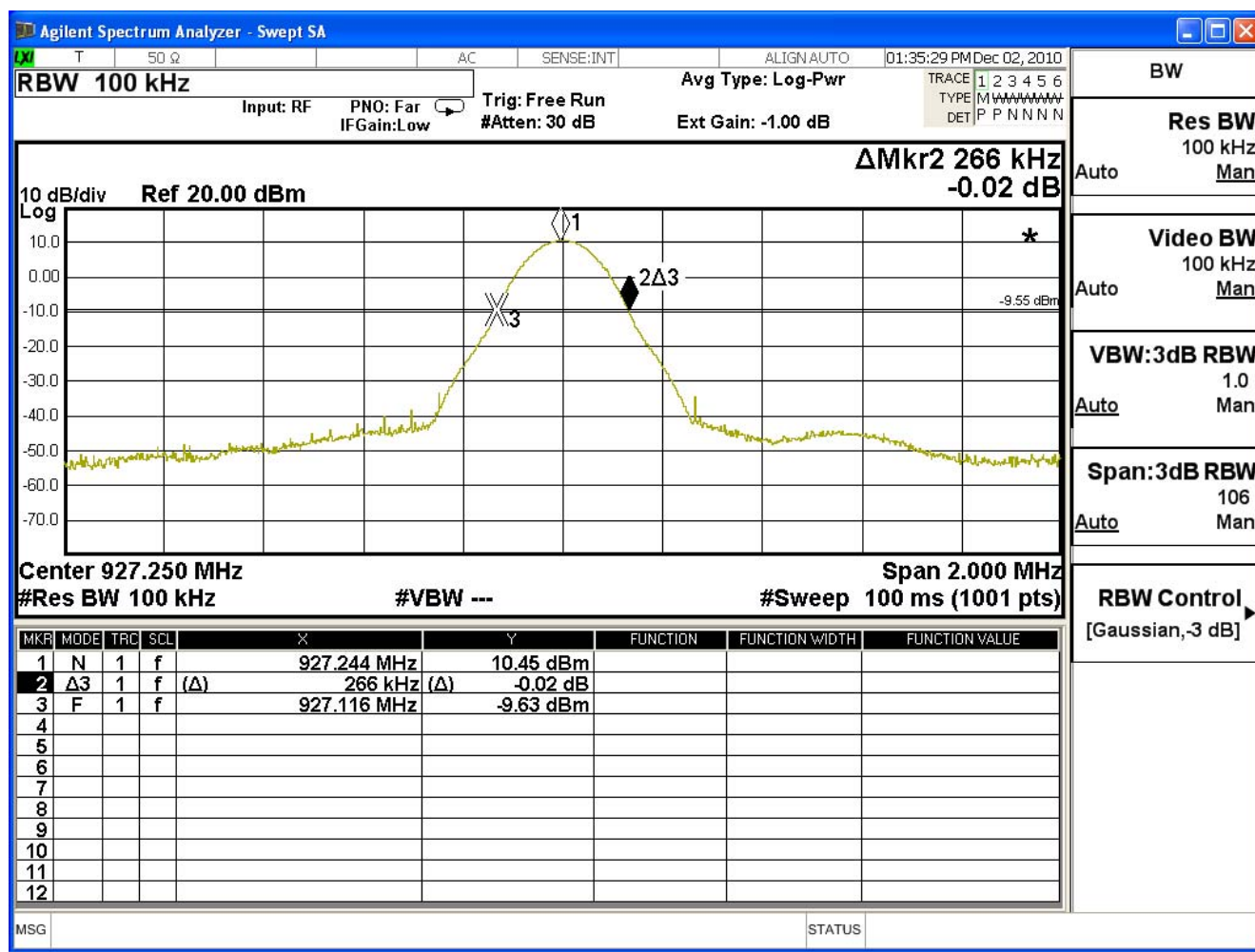


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## Channel 49





## 10. Dwell Time

### 10.1. Test Equipment

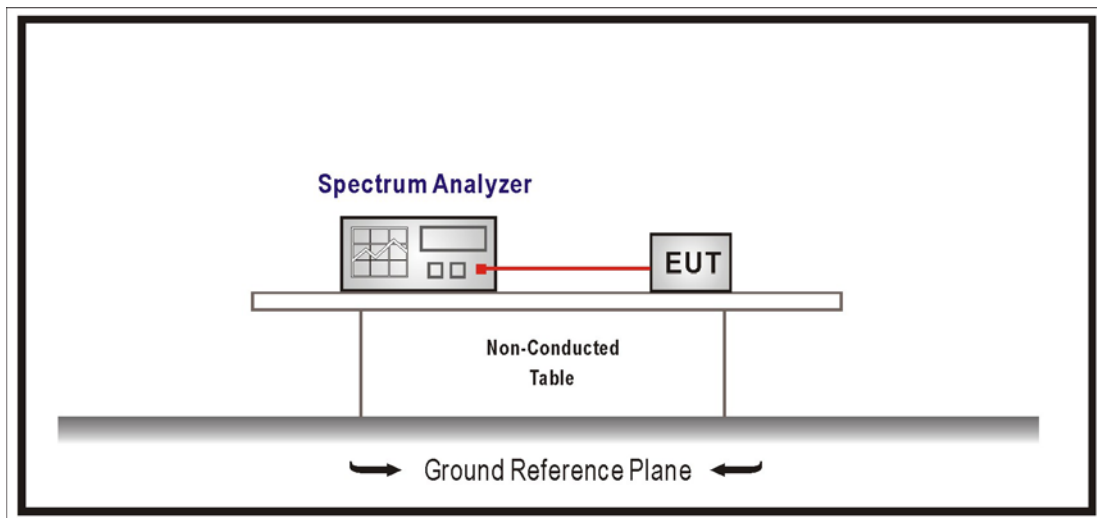
The following test equipment are used during the test:

Dwell Time / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2011/02/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 10.2. Test Setup



### **10.3. Limits**

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. For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

### **10.4. Test Procedures**

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = zero span, centered on a hopping channel

RBW = 1 MHz, VBW  $\geq$  RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak, Trace = max hold

### **10.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2009

## 10.6. Test Result

Product	UHF USB Reader Module		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2010/12/02	Test Site	SR7

### Occupancy Time of Frequency Hopping System

A) 902.75MHz Test Time Period: 10sec , Hopping Times Within 1sec: 7/700msec=10 /sec

The Maximum Occupancy Time Within 10sec:  $0.0322 \times (10/50) \times 10 = 0.0644 \text{ sec}$  .

B) 915.25MHz Test Time Period: 10sec , Hopping Times Within 1sec: 7/700msec=10 /sec

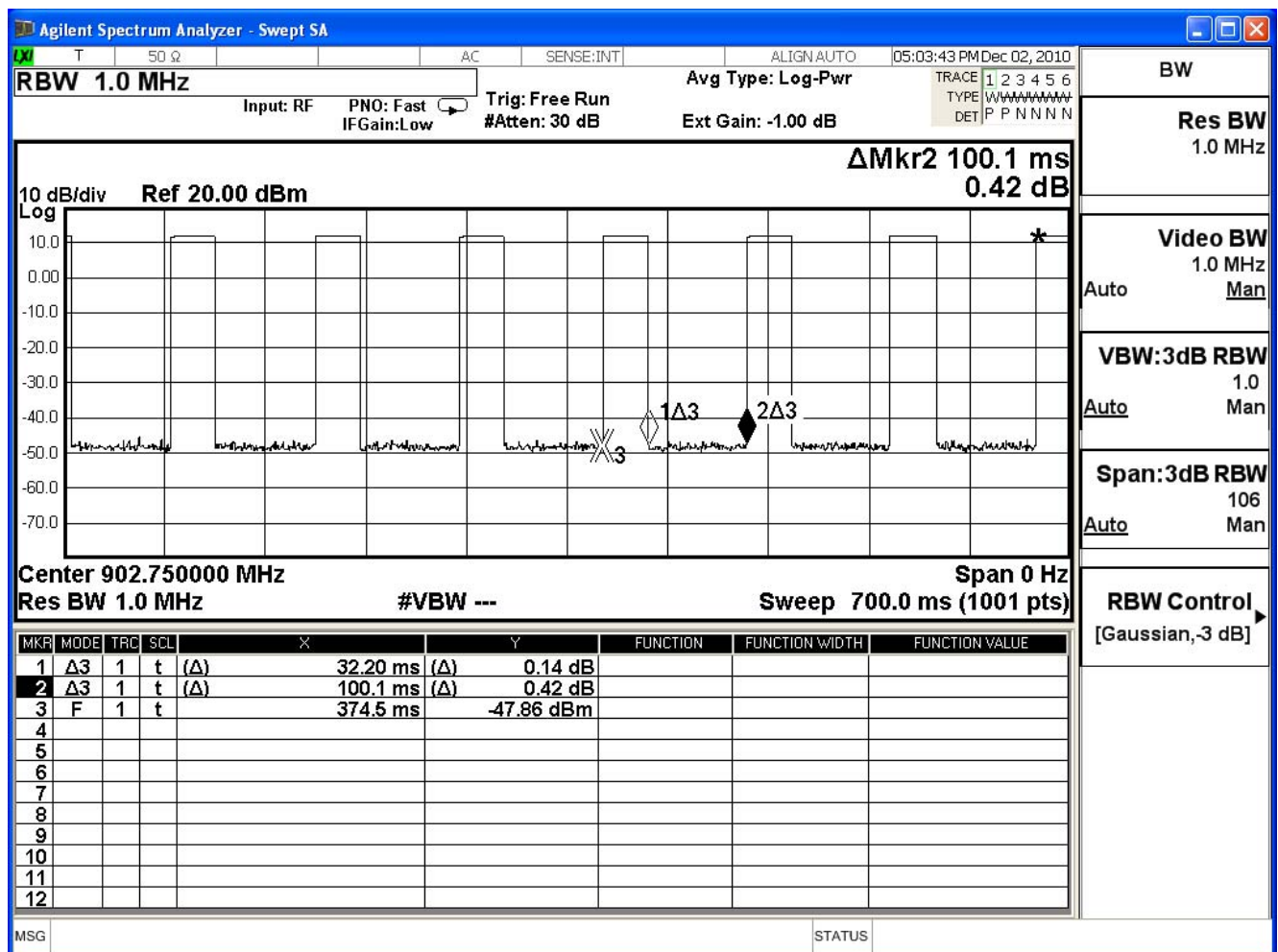
The Maximum Occupancy Time Within 10sec:  $0.0329 \times (10/50) \times 10 = 0.0658 \text{ sec}$  .

C) 927.25MHz Test Time Period: 10sec , Hopping Times Within 1sec: 7/700msec=10 /sec

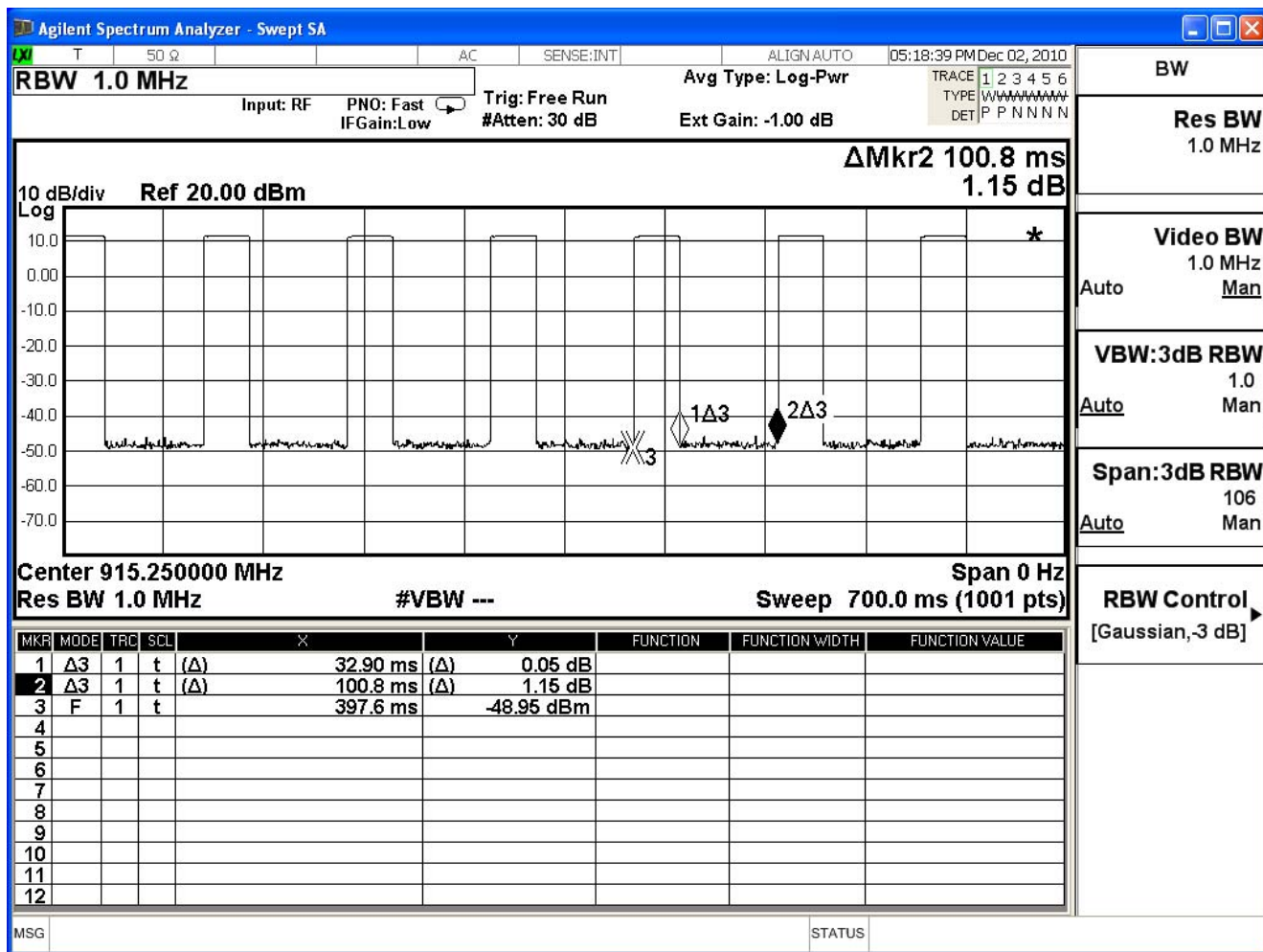
The Maximum Occupancy Time Within 10sec:  $0.0322 \times (10/50) \times 10 = 0.0644 \text{ sec}$  .

Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

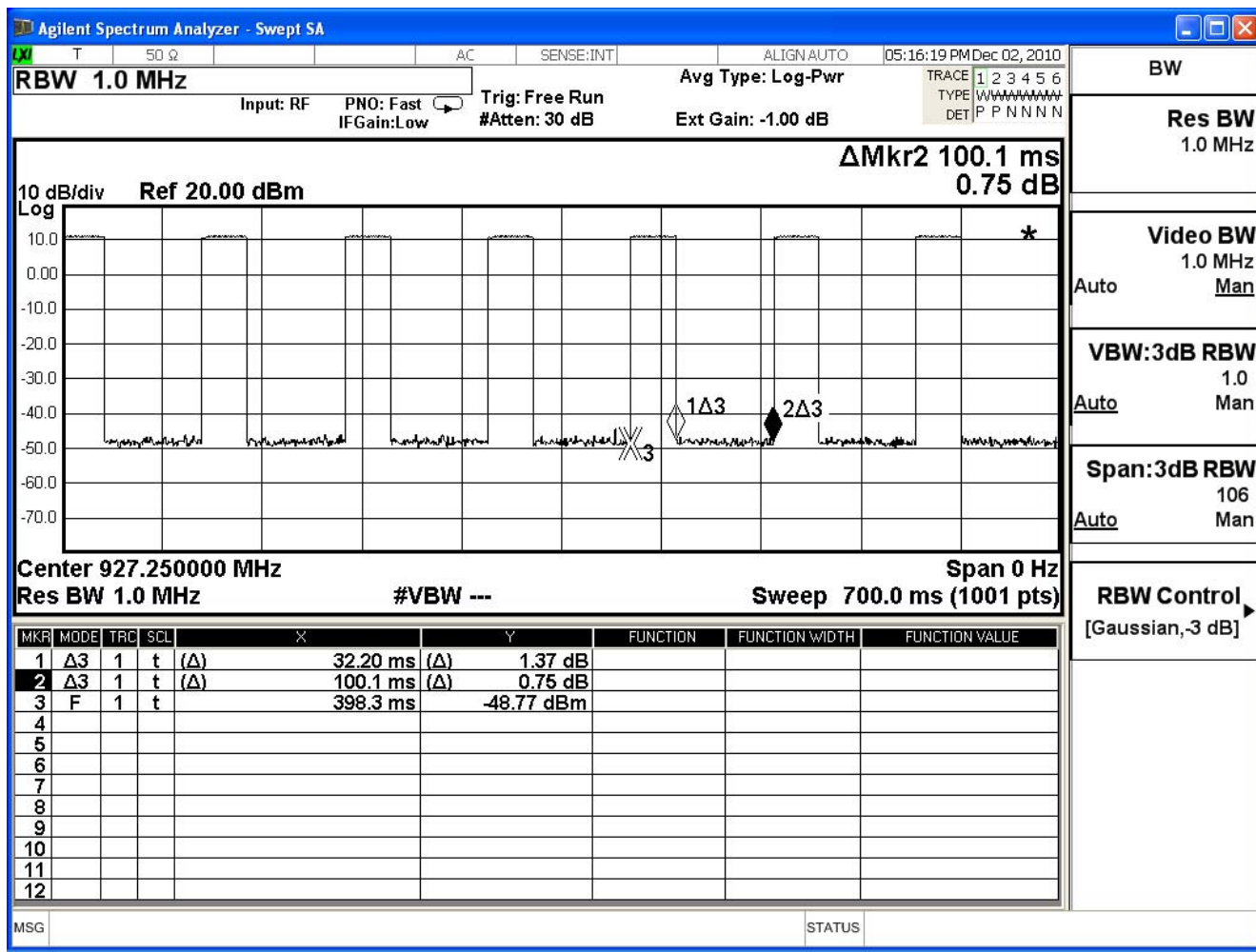
### Hop rate-902.75MHz



## Hop rate-915.25MHz



## Hop rate-927.25MHz



Note: Dwell time = time slot length \* hop rate / number of hopping channels \* period