



**DIGITAL EMC CO., LTD.**

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<http://www.digitalemc.com>

**CERTIFICATION OF COMPLIANCE**

**LG Electronics USA.**  
 1000 Sylvan Avenue Englewood Cliffs New Jersey.  
 United States

Dates of Tests: February 9 ~ 20, 2009  
 Test Report S/N: DR50110902T  
 Test Site : DIGITAL EMC CO., LTD.

FCC ID

**BEJRBFS-C921A**

APPLICANT

**LG Electronics USA.**

**FCC Classification** : **Frequency Hopping Spread Spectrum (FHSS)**  
**Device name** : **Bluetooth Module**  
**Manufacturer** : **LG Electronics Co., Ltd.**  
**FCC ID** : **BEJRBFS-C921A**  
**Model name** : **RBFS-C921A**  
**Test Device Serial number** : **Identical prototype**  
**FCC Rule Part(s)** : **FCC Part 15.247 Subpart C**  
**ANSI C-63.4-2003**  
**Frequency Range** : **2402 ~ 2480 MHz**  
**Max. Output power** : **1.66 dBm Conducted (Normal Mode, 1Mbps)**  
**1.75 dBm Conducted (EDR Mode, 2Mbps)**  
**1.81 dBm Conducted (EDR Mode, 3Mbps)**  
**Data of issue** : **February 25, 2009**

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## 1. General information

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address : 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080

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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competent of calibration and testing laboratory".

### Test By : Engineer

February 25, 2008

D.C. Cha



Data

Name

Signature

### Report Reviewed By: Technical Director

February 25, 2008

Harvey Sung



Data

Name

Signature

### Ordering party:

Company name : LG Electronics Inc.  
 Address : Gasan-dong, Gumchon-gu, 153-802  
 City/town : Seoul  
 Country : Korea  
 Date of order : February 13, 2009

## 2. Information about test item

### BEJRBFS-C921A

#### 2.1 Equipment information

Equipment model no.	RBFS-C921A
Equipment serial no.	Identical prototype
Type of equipment	Bluetooth Module
Frequency band	2402 ~ 2480 MHz
Type of Modulation	GFSK, $\Pi/4$ -DQPSK, 8-DPSK
Channel Access Protocol	Frequency Hopping
Channel Spacing	1.0 MHz
Type of antenna	Chip Antenna

#### 2.2 Tested frequency

Frequency	TX	RX
Low frequency	2402MHz	2402MHz
Middle frequency	2441MHz	2441MHz
High frequency	2480MHz	2480MHz

#### 2.3 Tested environment

Temperature	: 15 ~ 35 (°C)
Relative humidity content	: 20 ~ 75 %
Air pressure	: 86 ~ 103 kPa
Details of power supply	: DC 3.3 V

#### 2.4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
-	-	-	-
-	-	-	-

#### 2.5 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing

-> None

### 3. Test Report

#### 3.1 Summary of tests

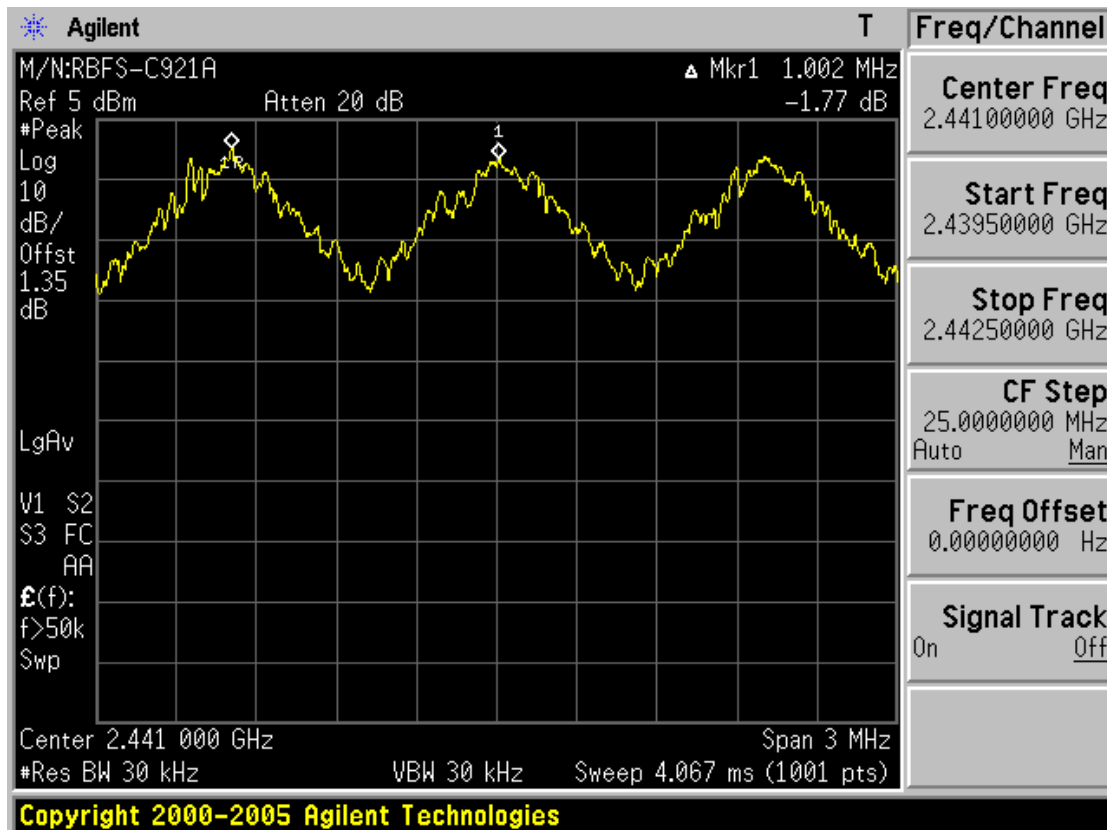
FCC Part Section(s)	Parameter	Limit (Using in 2400 ~ 2483.5MHz)	Test Condition	Status (note 1)
<b>I. Test Items</b>				
15.247(a)	Carrier Frequency Separation	>= 20dB BW or >= Two-Thirds of the 20dB BW	Conducted	C
	Number of Hopping Frequencies	>= 15 hops		C
	20 dB Bandwidth	None		C
	Dwell Time	< 0.4 seconds		C
15.247(b)	Transmitter Output Power	=< 1Watt , if CHs >= 75 Others =<0.125W		C
15.247(c)	Band-edge /Conducted	The radiated emission to any 100 kHz of outband shall be at least 20dB below the highest inband spectral density.		C
	Conducted Spurious Emissions		C	
15.205 15.209	Radiated Emissions	FCC 15.209 Limits	Radiated	C
15.207	AC Conducted Emissions	EN 55022	AC Line Conducted	C
Note 1: C=Complies    NC=Not Complies    NT=Not Tested    NA=Not Applicable				

The sample was tested according to the following specification:

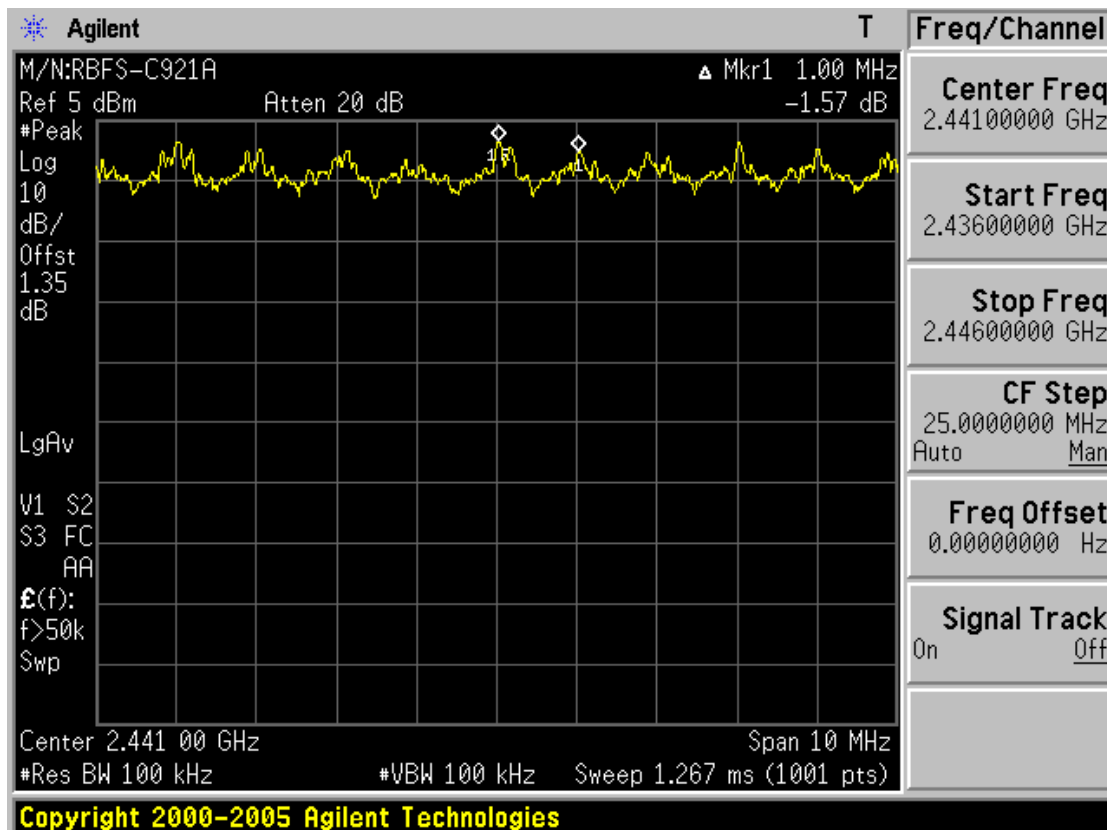
FCC Parts 15.247; ANSI C-63.4-2003



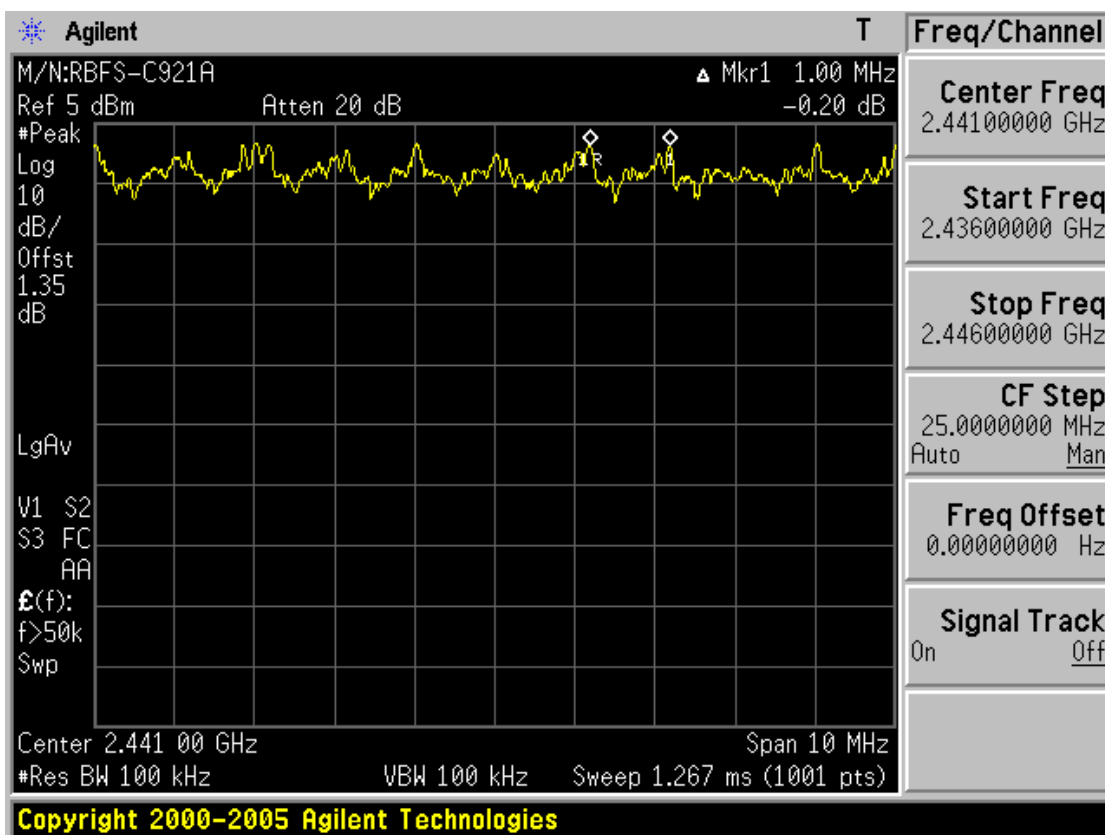
### Carrier Frequency Separation (Normal 1Mbps)



### Carrier Frequency Separation (EDR 2Mbps)



Carrier Frequency Separation (EDR 3Mbps)



### 3.2.2 Number of Hopping Frequencies

**- Procedure:**

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

To get higher resolution, four frequency ranges within the 2400 ~ 2483.5 MHz band were examined.

The spectrum analyzer is set to:

Frequency range    1: Start = 2389.5MHz,    Stop = 2414.5 MHz

                          2: Start = 2414.5MHz,    Stop = 2439.5 MHz

                          3: Start = 2439.5MHz,    Stop = 2464.5 MHz

                          4: Start = 2464.5MHz,    Stop = 2489.5 MHz

RBW = 300 kHz (1% of the span or more)        Sweep = auto

VBW = 300 kHz (VBW ≥ RBW)                    Detector function = peak

Trace = max hold                                    Span = 25MHz

**- Measurement Data: Complies**

<b>Total number of Hopping Channels</b>	79 (Normal, EDR)
---	------------------

- See next pages for actual measured spectrum plots.

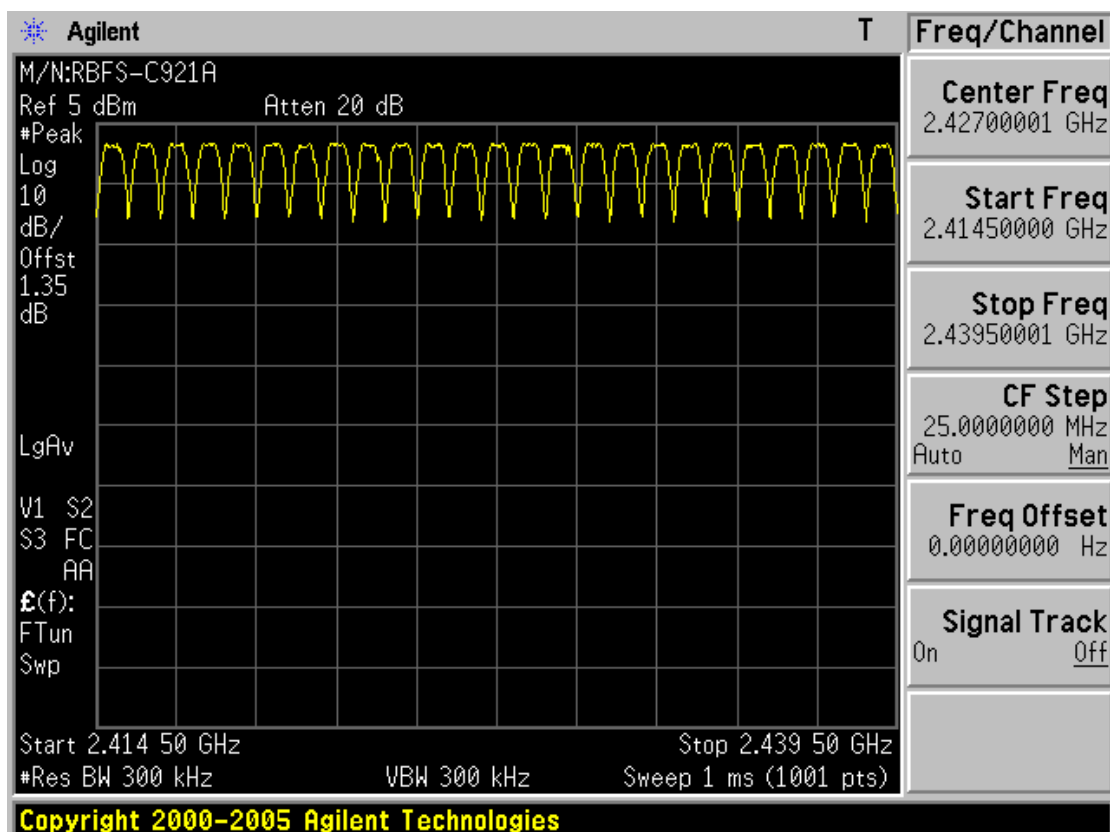
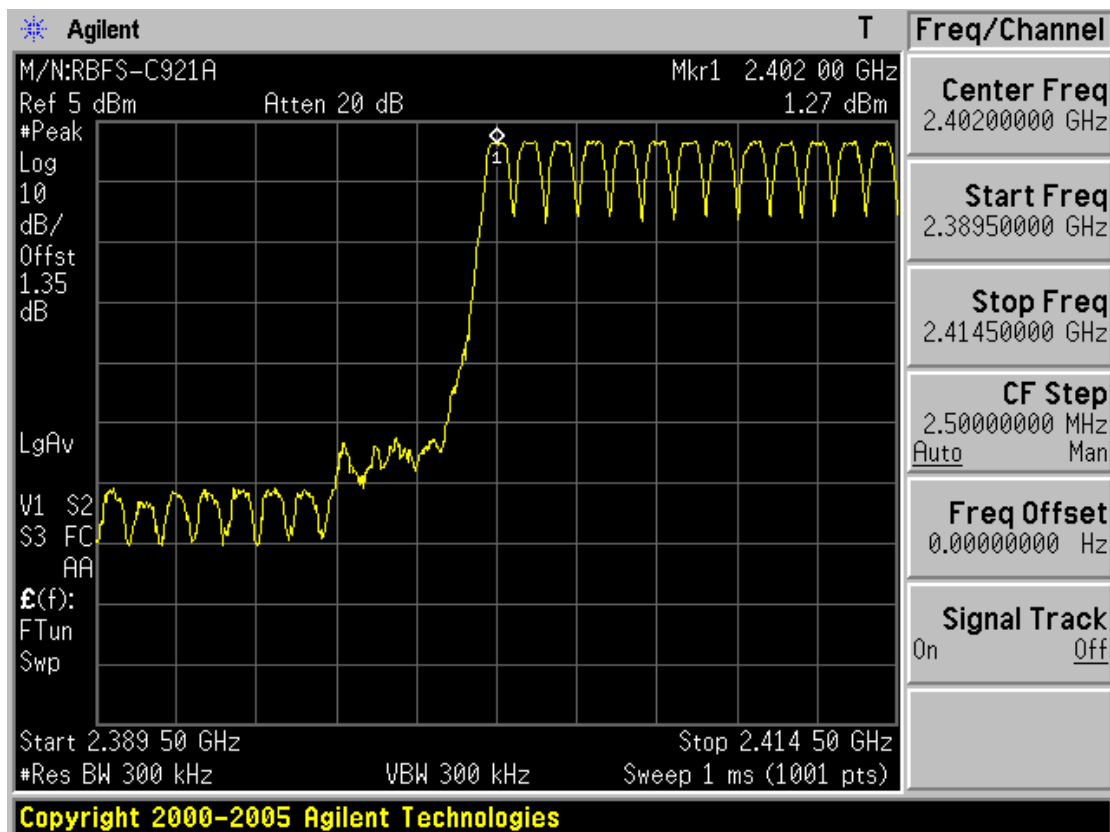
**- Minimum Standard:**

At least 15 hopes
-------------------

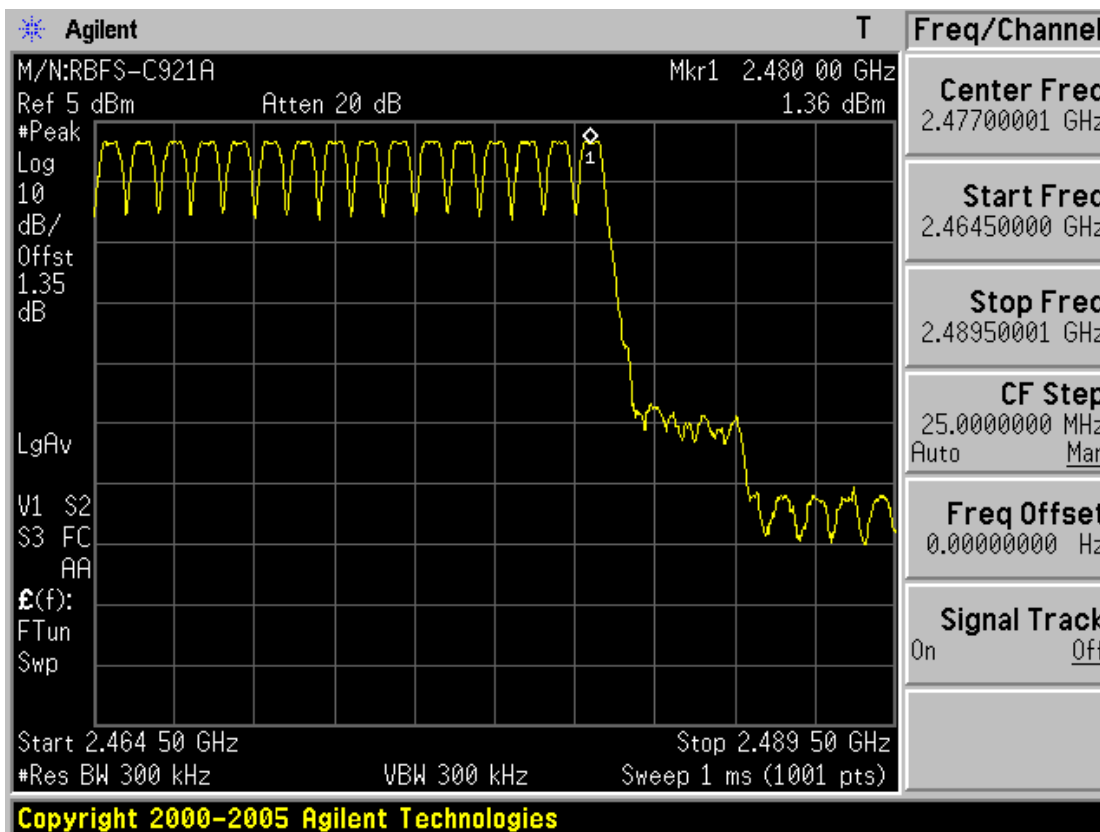
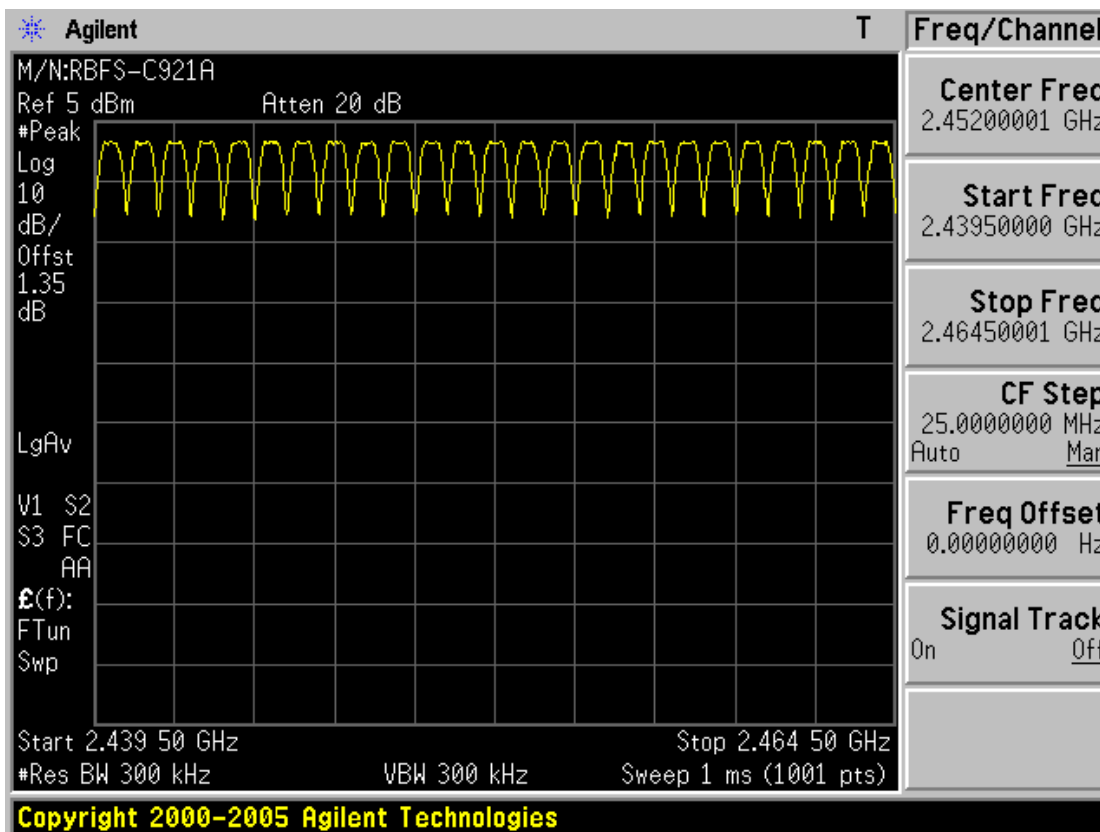
**Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

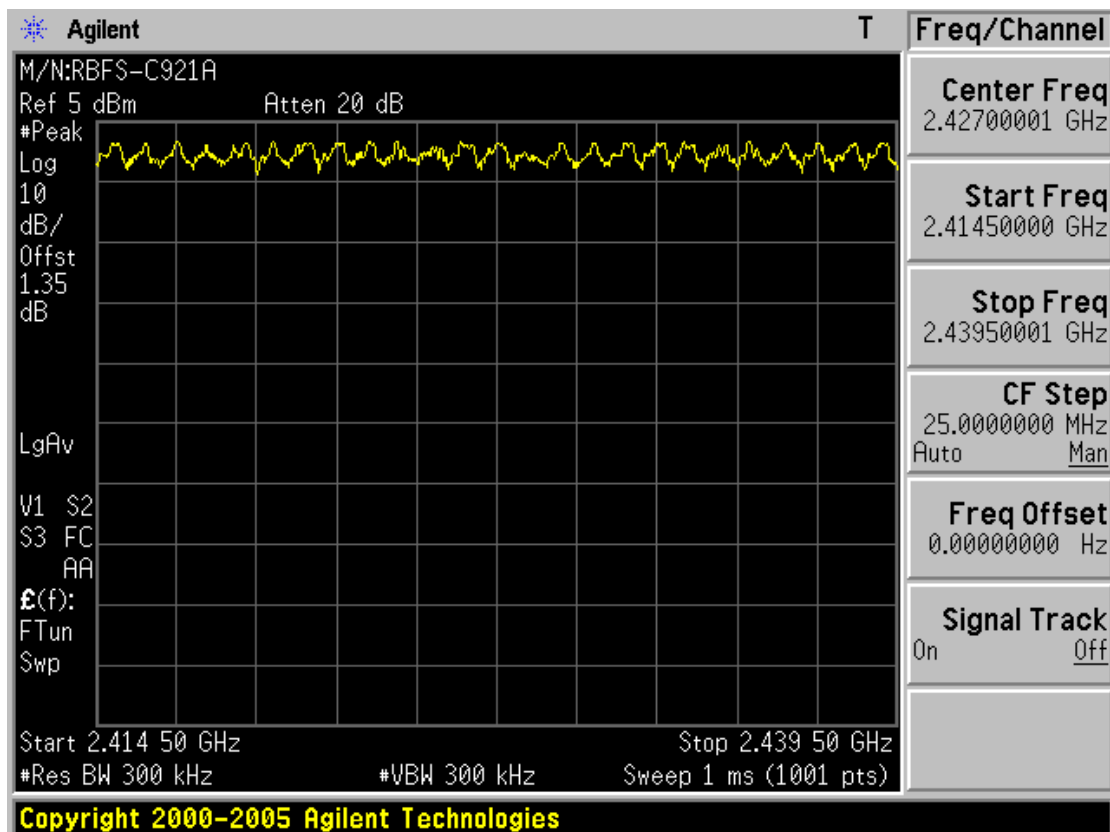
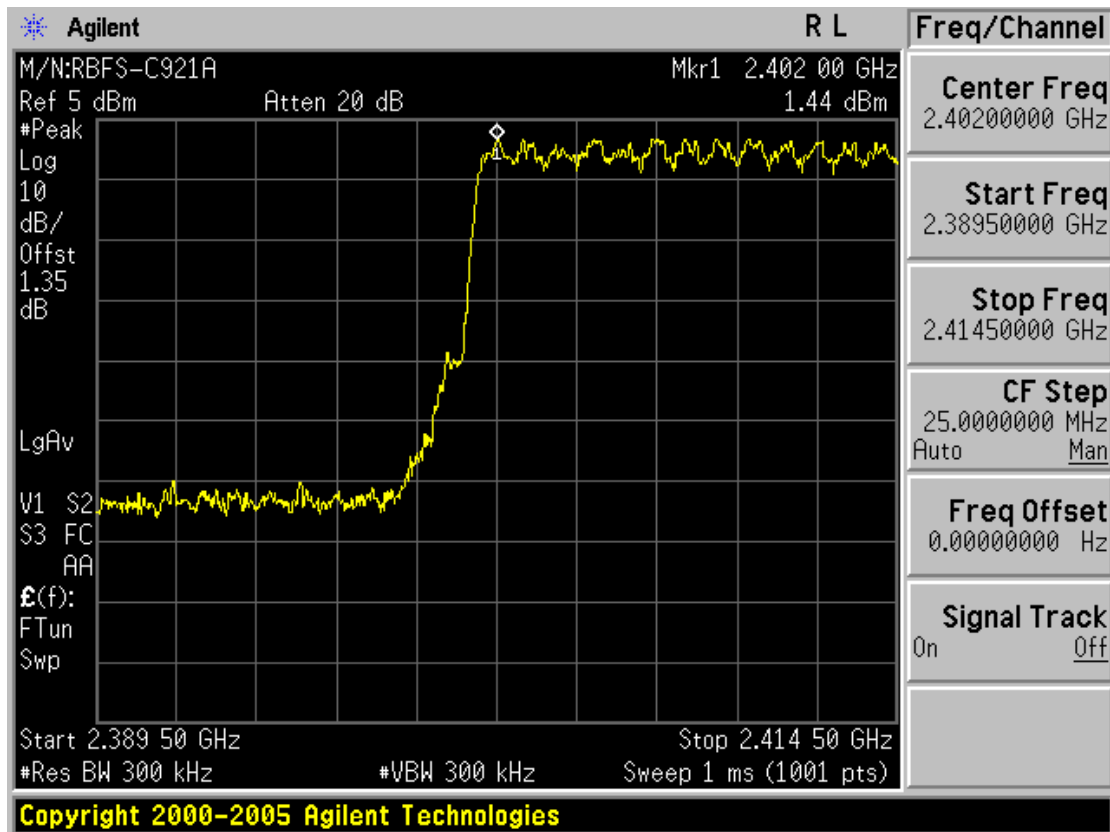
Number of Hopping Frequencies (Normal 1Mbps)



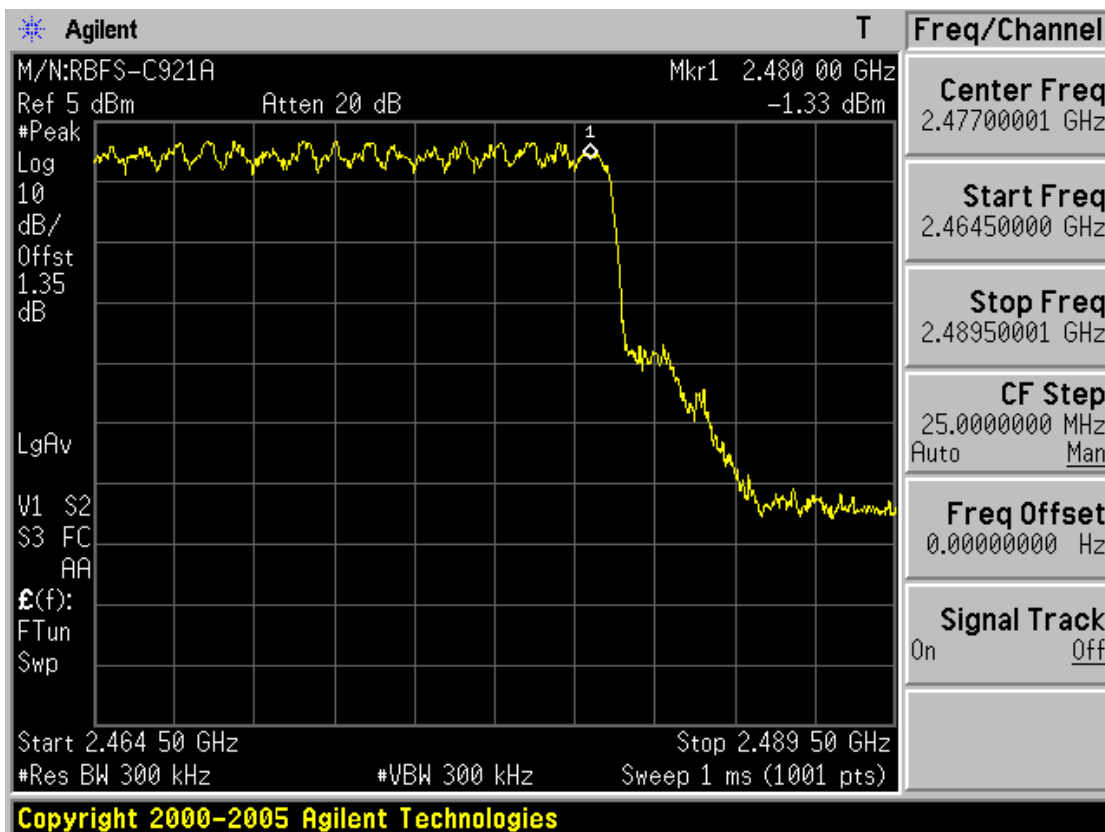
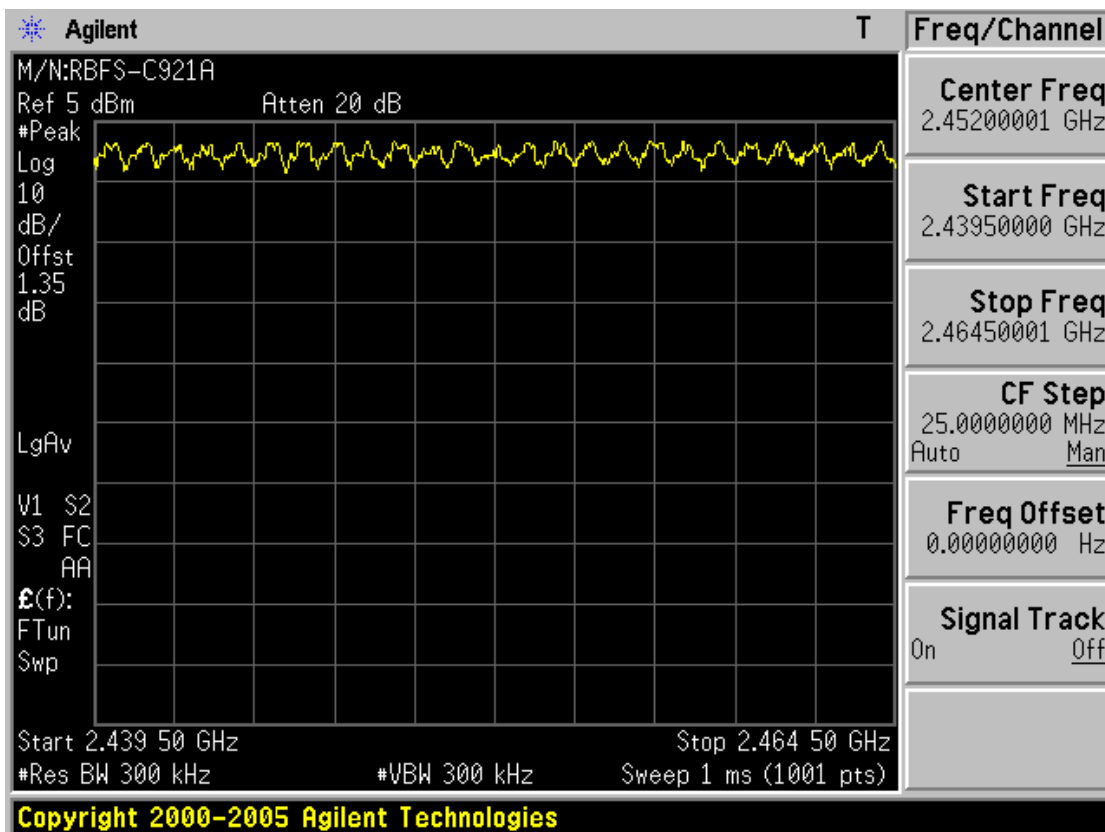
Number of Hopping Frequencies (Normal 1Mbps)



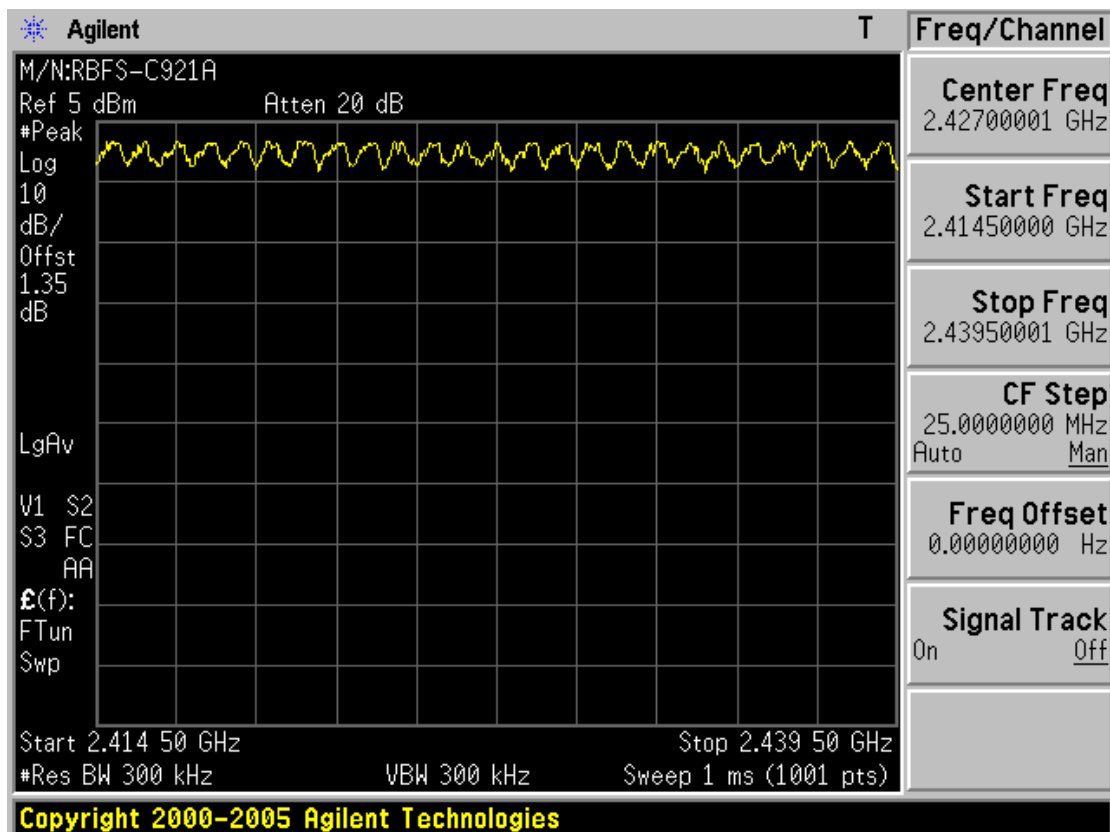
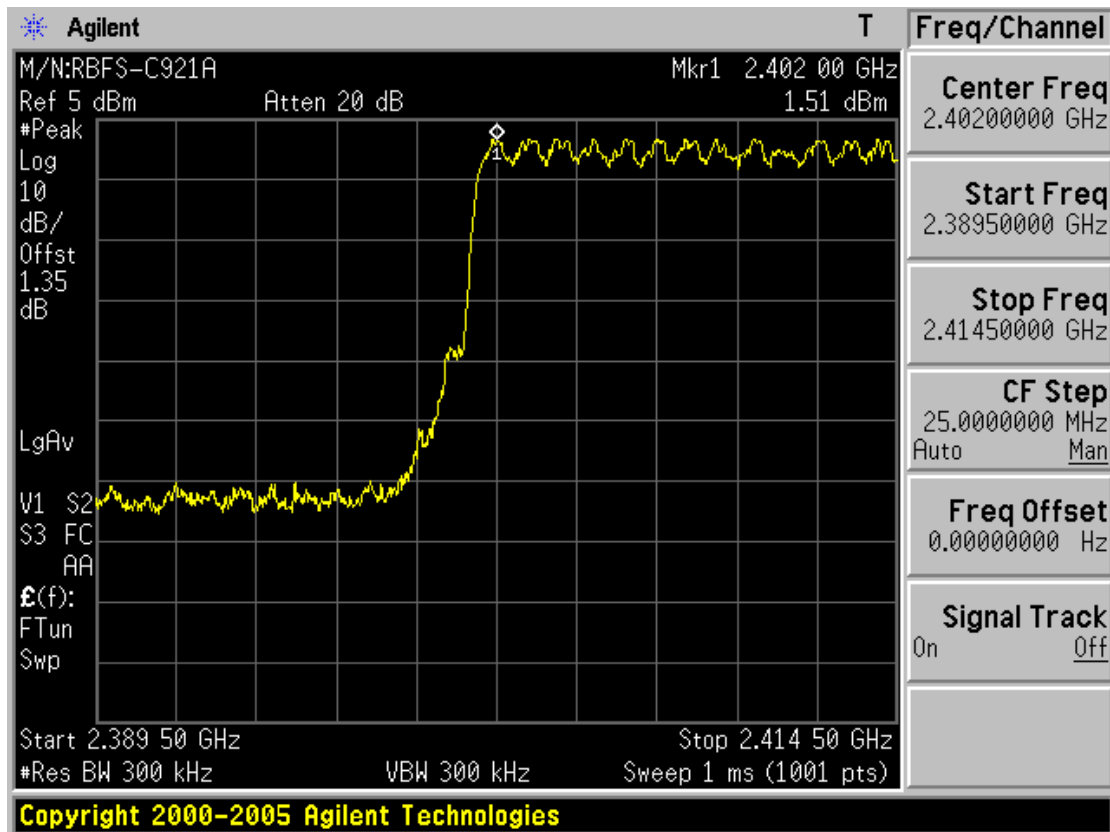
### Number of Hopping Frequencies (EDR 2Mbps)



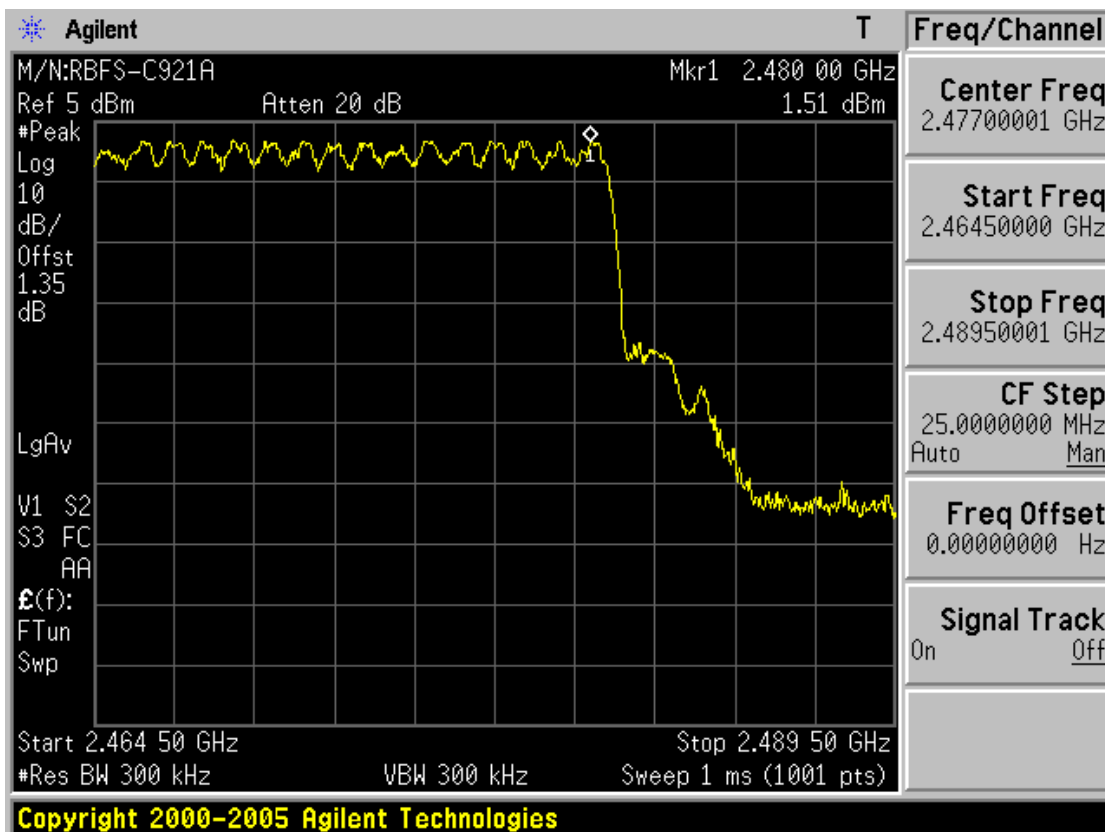
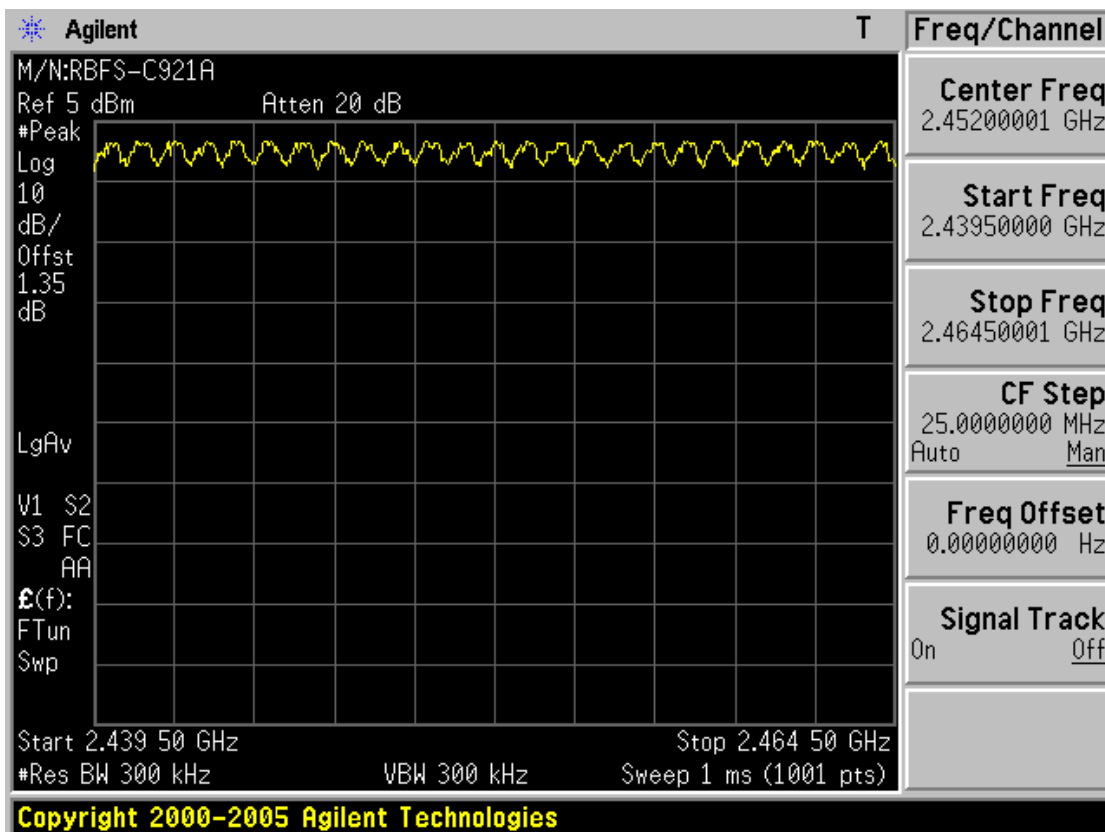
### Number of Hopping Frequencies (EDR 2Mbps)



### Number of Hopping Frequencies (EDR 3Mbps)



### Number of Hopping Frequencies (EDR 3Mbps)



### 3.2.3 20 dB Bandwidth

**- Procedure:**

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is ( as close as possible to ) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 5 MHz (approximately 2 or 3 times of the 20 dB bandwidth)

RBW = 10 kHz (1% of the 20dB bandwidth or more)      Sweep = auto

VBW = 10 kHz (VBW ≥ RBW)      Detector function = peak

Trace = max hold

**- Measurement Data:**

MODE	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
Normal 1Mbps	2402	1	0.930	Comply
	2441	40	0.930	Comply
	2480	79	0.935	Comply
EDR 2Mbps	2402	1	1.255	Comply
	2441	40	1.255	Comply
	2480	79	1.265	Comply
EDR 3Mbps	2402	1	1.245	Comply
	2441	40	1.245	Comply
	2480	79	1.245	Comply

- See next pages for actual measured spectrum plots.

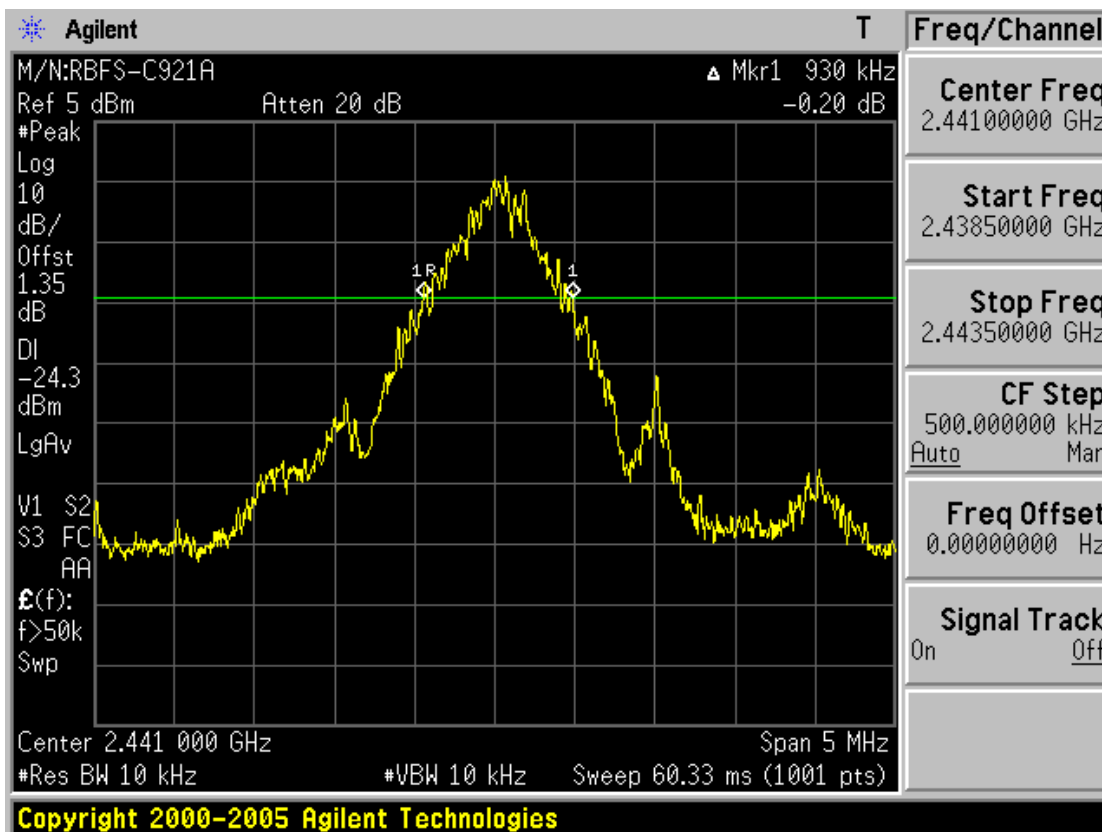
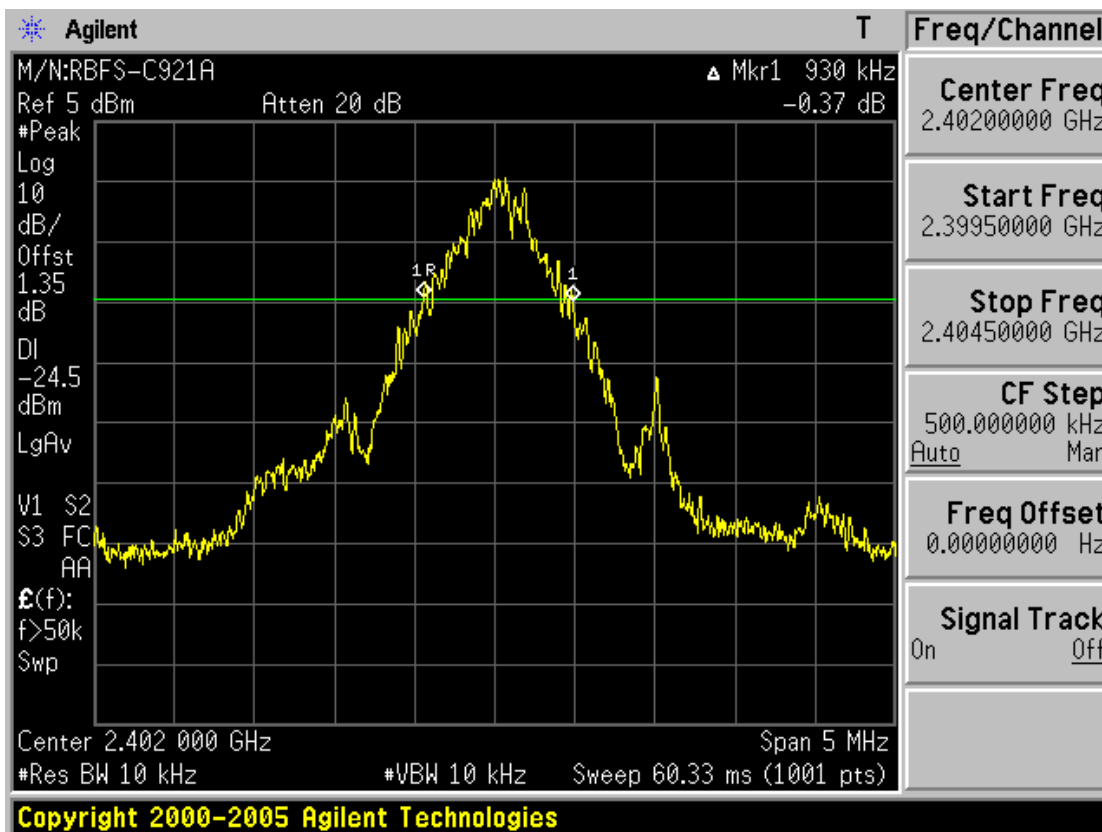
**- Minimum Standard:**

None
------

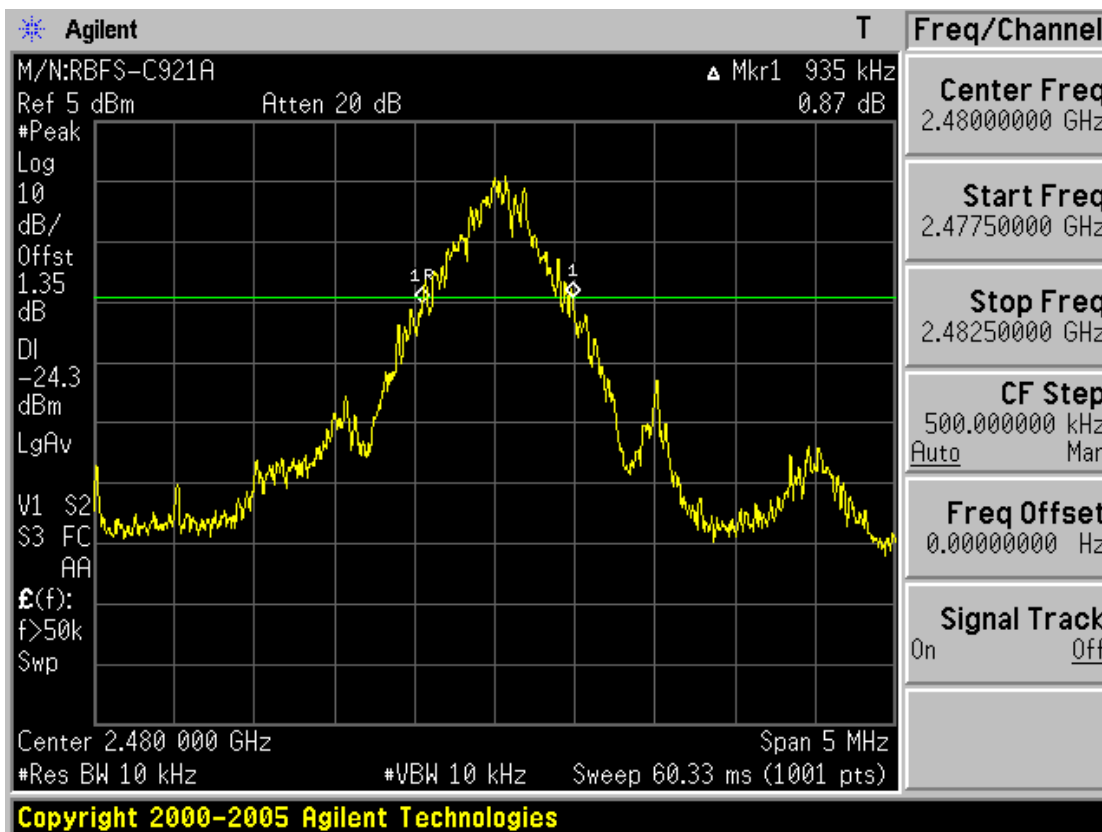
**Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

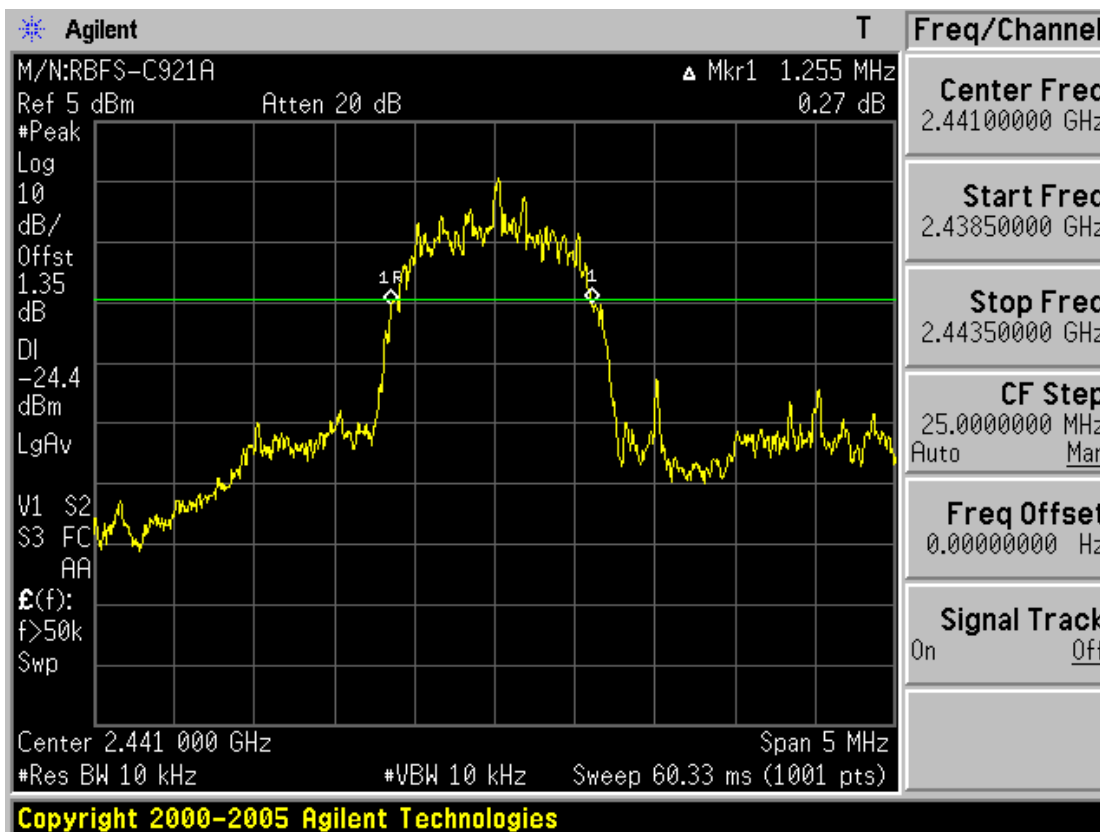
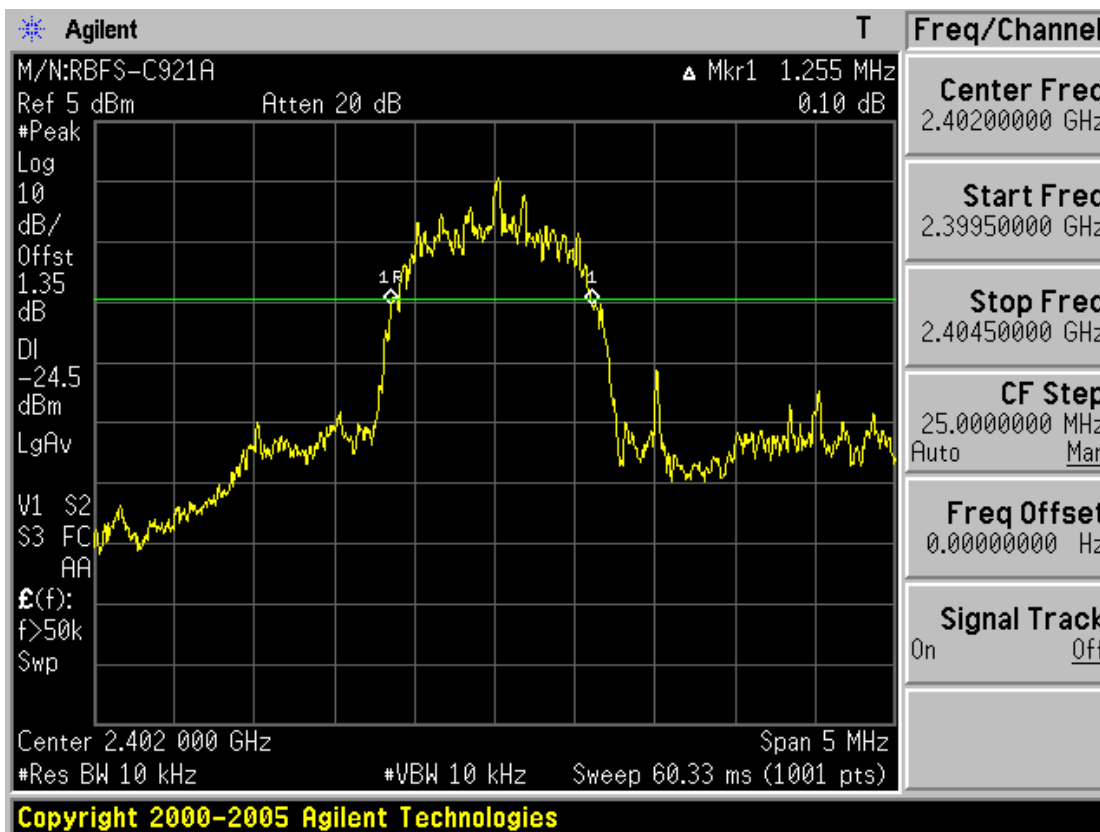
20 dB Bandwidth (Normal 1Mbps)



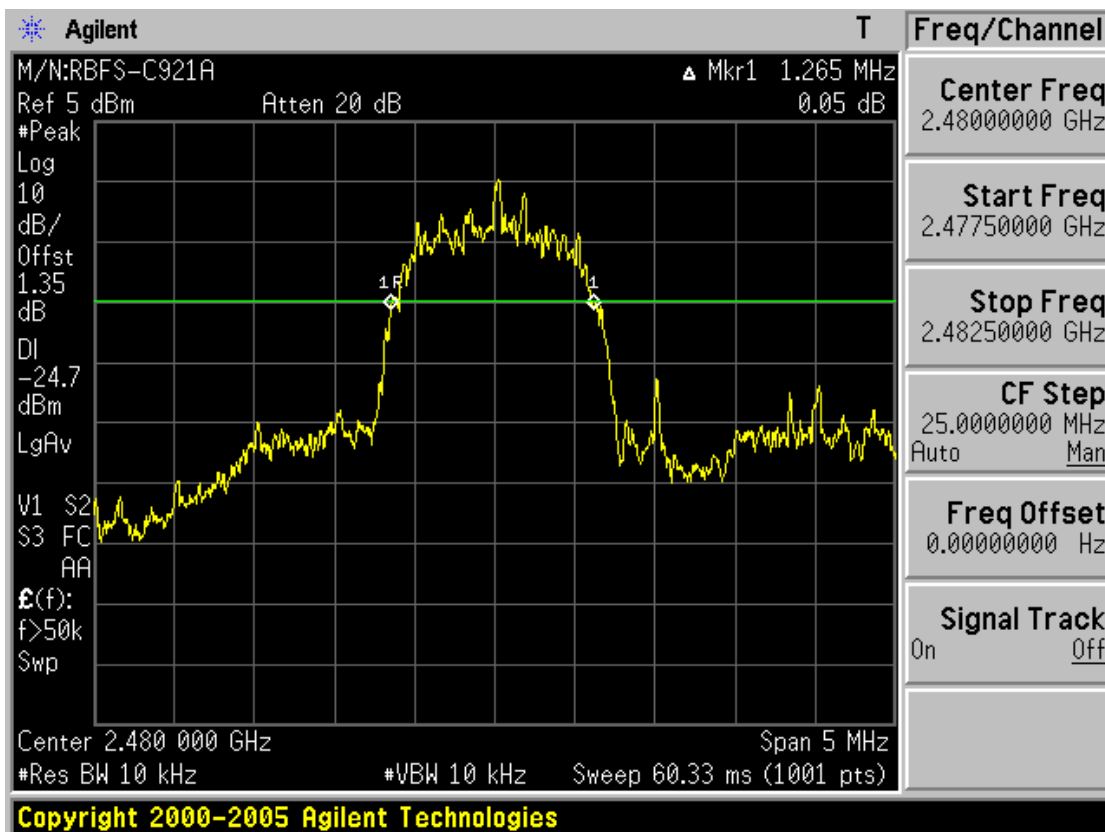
20 dB Bandwidth (Normal 1Mbps)



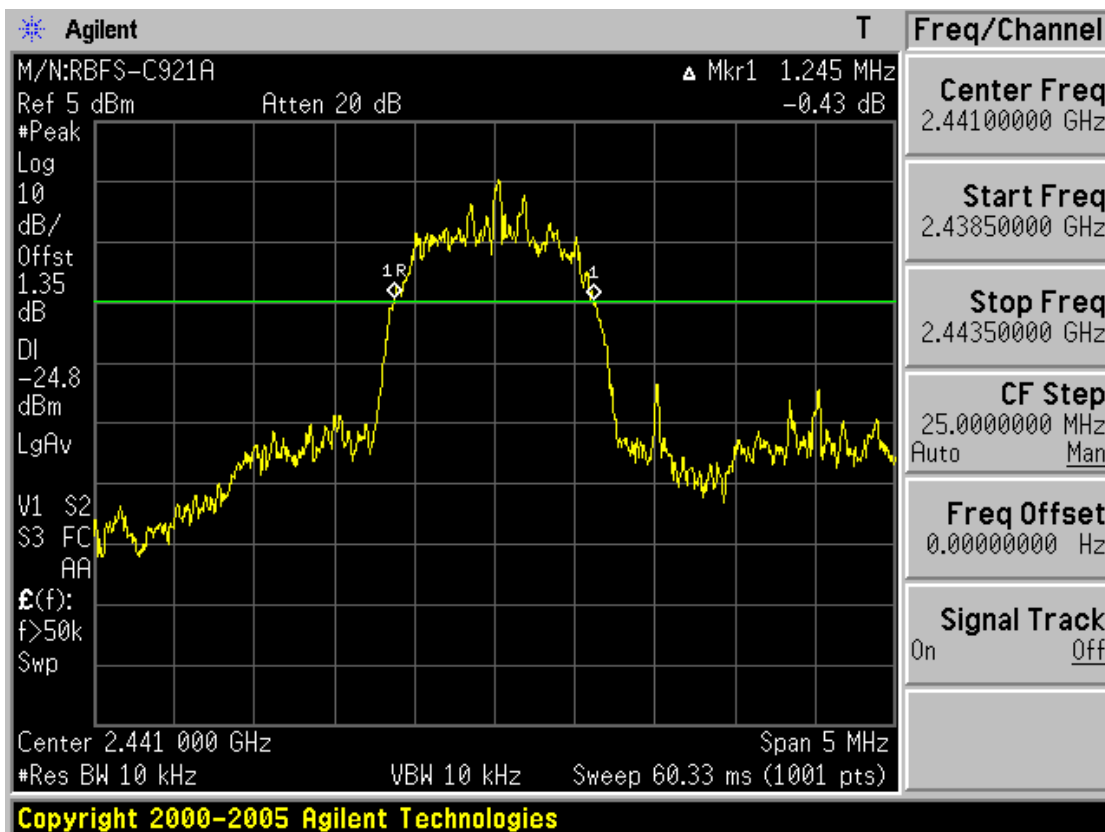
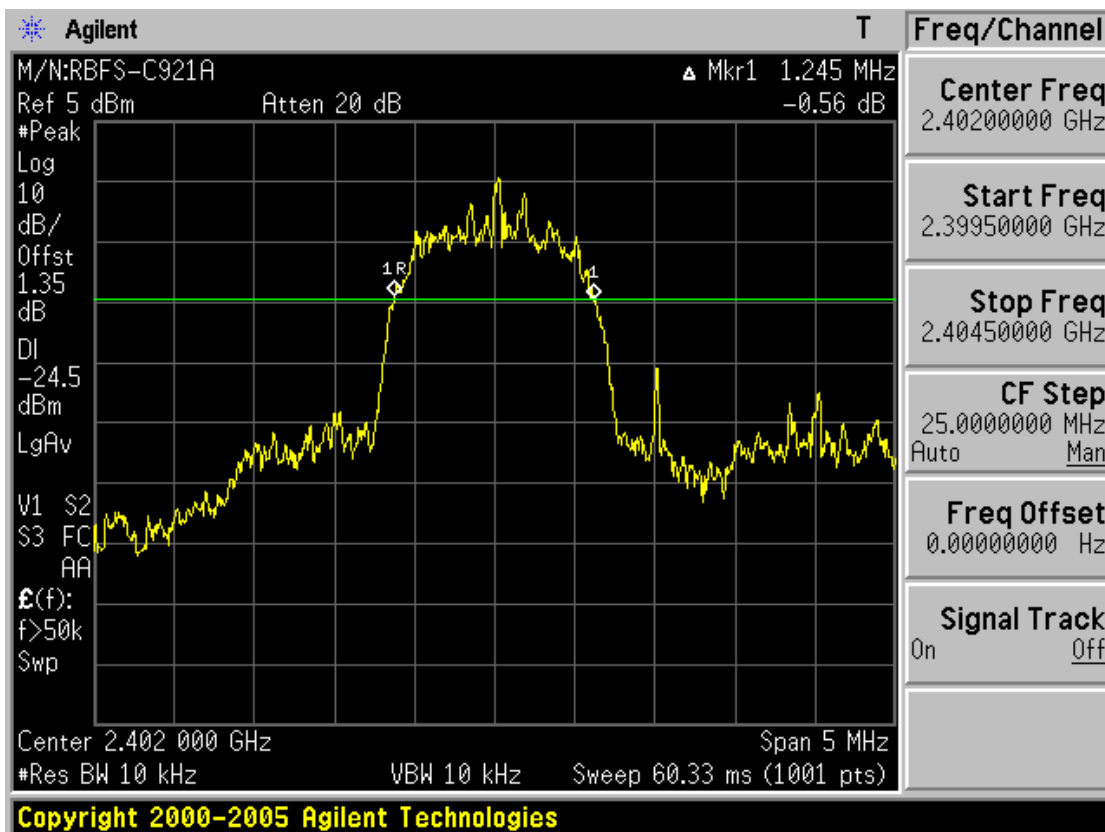
20 dB Bandwidth (EDR 2Mbps)



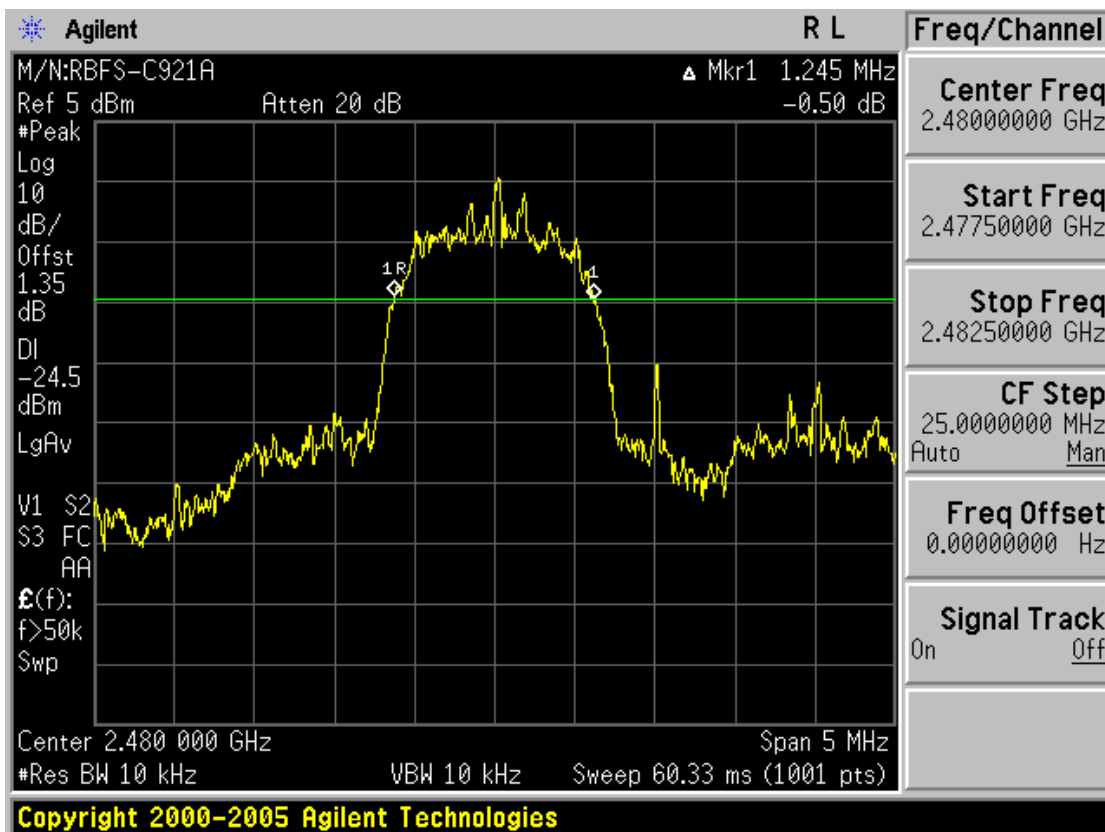
20 dB Bandwidth (EDR 2Mbps)



20 dB Bandwidth (EDR 3Mbps)



20 dB Bandwidth (EDR 3Mbps)



### 3.2.4 Time of Occupancy (Dwell Time)

**- Procedure:**

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

Center frequency = 2441 MHz

Span = zero

RBW = 1 MHz

VBW = 1 MHz (VBW ≥ RBW)

Trace = max hold

Detector function = peak

**- Measurement Data:** See next pages for actual measured spectrum plots.

MODE	Packet Type	Burst On Time (ms)	Period (ms)	Number of hopping Channels	DWELL TIME (s)	Result
Normal 1Mbps	DH 5	2.900	3.750	79	0.309	Comply
EDR 2Mbps	DH 5	2.910	3.720	79	0.313	Comply
EDR 3Mbps	DH 5	2.910	3.750	79	0.310	Comply

Note: Each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event.

$$DWELL\ TIME = (0.4 \times \text{Number of hopping Channels}) \times \text{Burst On time} / (\text{period} \times \text{Number of hopping Channels})$$

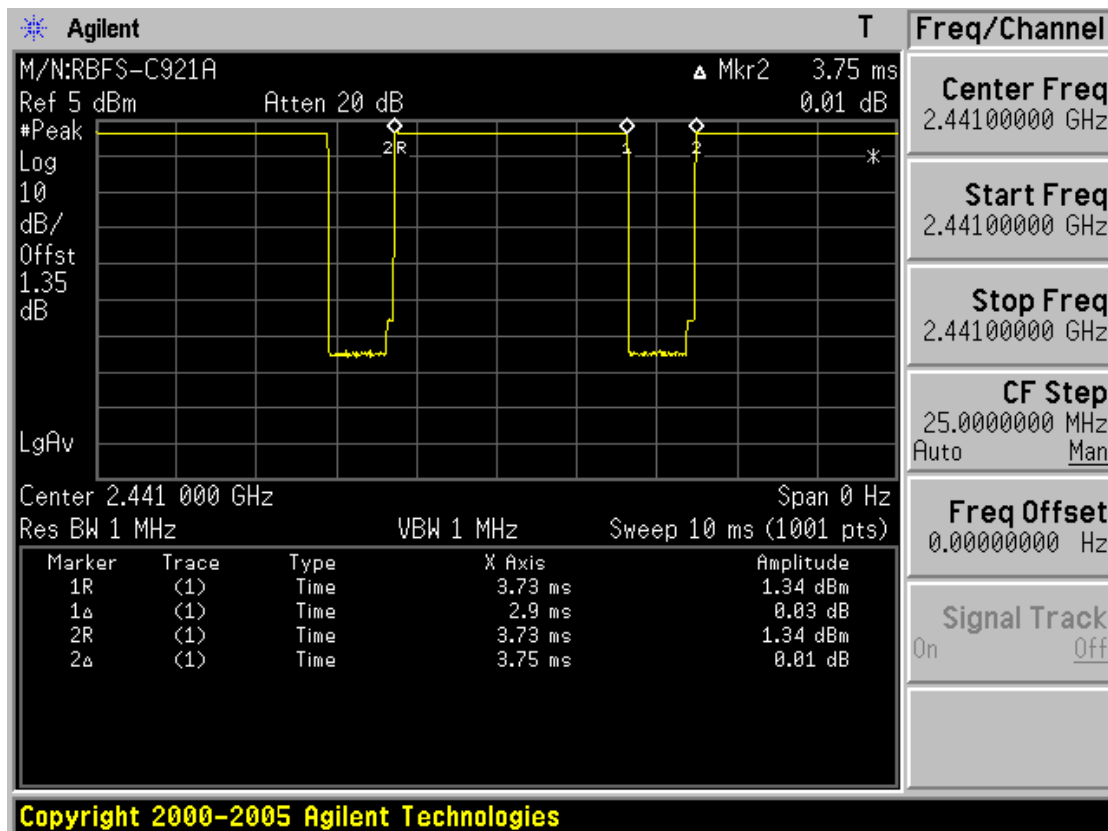
**- Minimum Standard:**

Less than 0.4 seconds
-----------------------

**Measurement Setup**

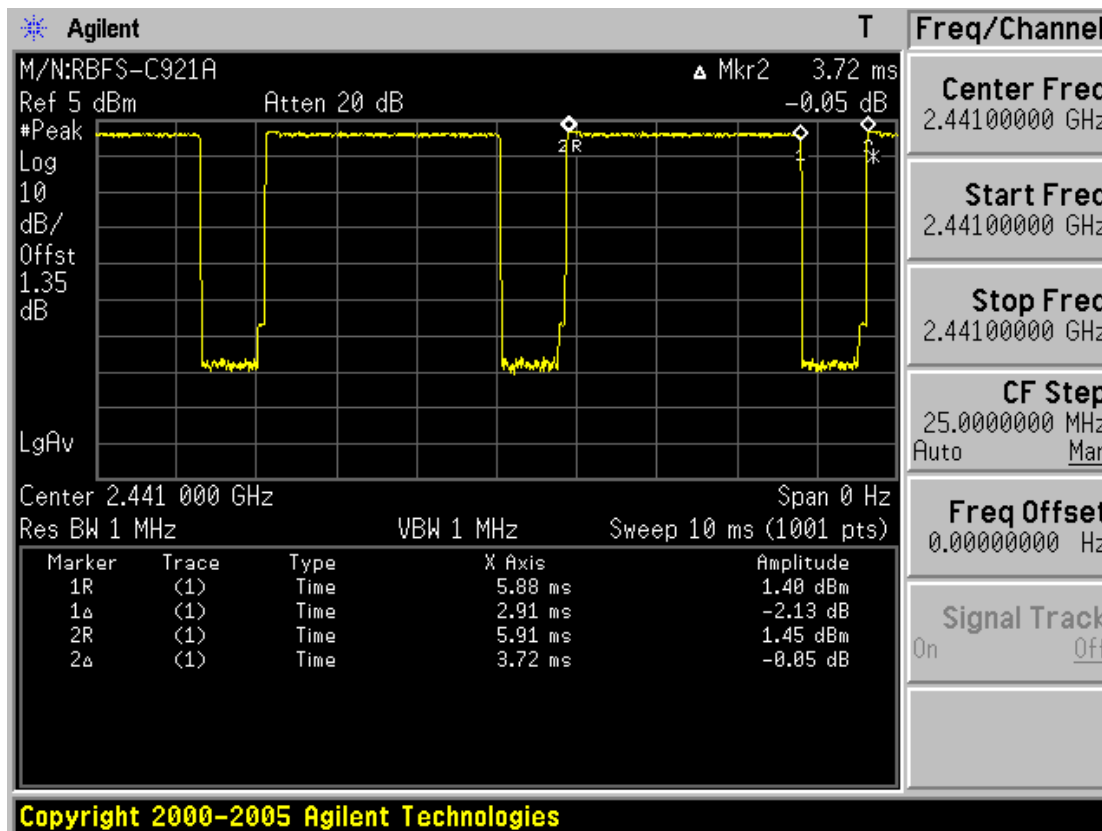
Same as the Chapter 3.2.1 (Figure 1)

**Time of Occupancy for Packet Type DH 5 (Normal 1Mbps)**

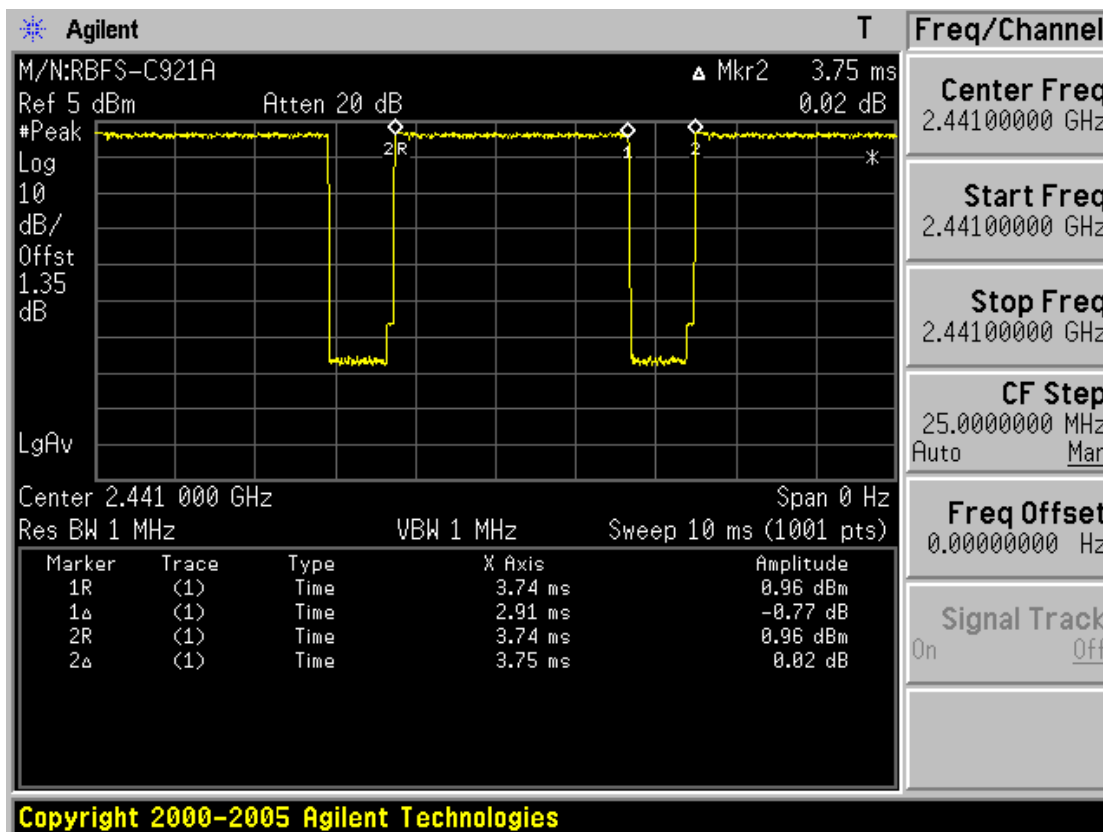


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**Time of Occupancy for Packet Type DH 5 (EDR 2Mbps)**



**Time of Occupancy for Packet Type DH 5 (EDR 3Mbps)**



### 3.2.5 Peak Output Power

**- Procedure:**

The peak output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

Span = 5 MHz (approximately 5 times of the 20 dB bandwidth)

RBW = 1 MHz (greater than the 20dB bandwidth of the emission being measured)

VBW = 1 MHz (VBW ≥ RBW)

Detector function = peak

Trace = max hold

Sweep = auto

**- Measurement Data:**

MODE	Frequency (MHz)	Ch.	Test Results		
			dBm	mW	Result
Normal 1Mbps	2402	1	1.42	1.39	<b>Comply</b>
	2441	40	1.57	1.44	<b>Comply</b>
	2480	<b>79</b>	<b>1.66</b>	<b>1.47</b>	<b>Comply</b>
EDR 2Mbps	2402	<b>1</b>	<b>1.75</b>	<b>1.50</b>	<b>Comply</b>
	2441	40	1.66	1.47	<b>Comply</b>
	2480	79	1.70	1.48	<b>Comply</b>
EDR 3Mbps	2402	1	1.73	1.49	<b>Comply</b>
	2441	40	1.69	1.48	<b>Comply</b>
	2480	<b>79</b>	<b>1.81</b>	<b>1.52</b>	<b>Comply</b>

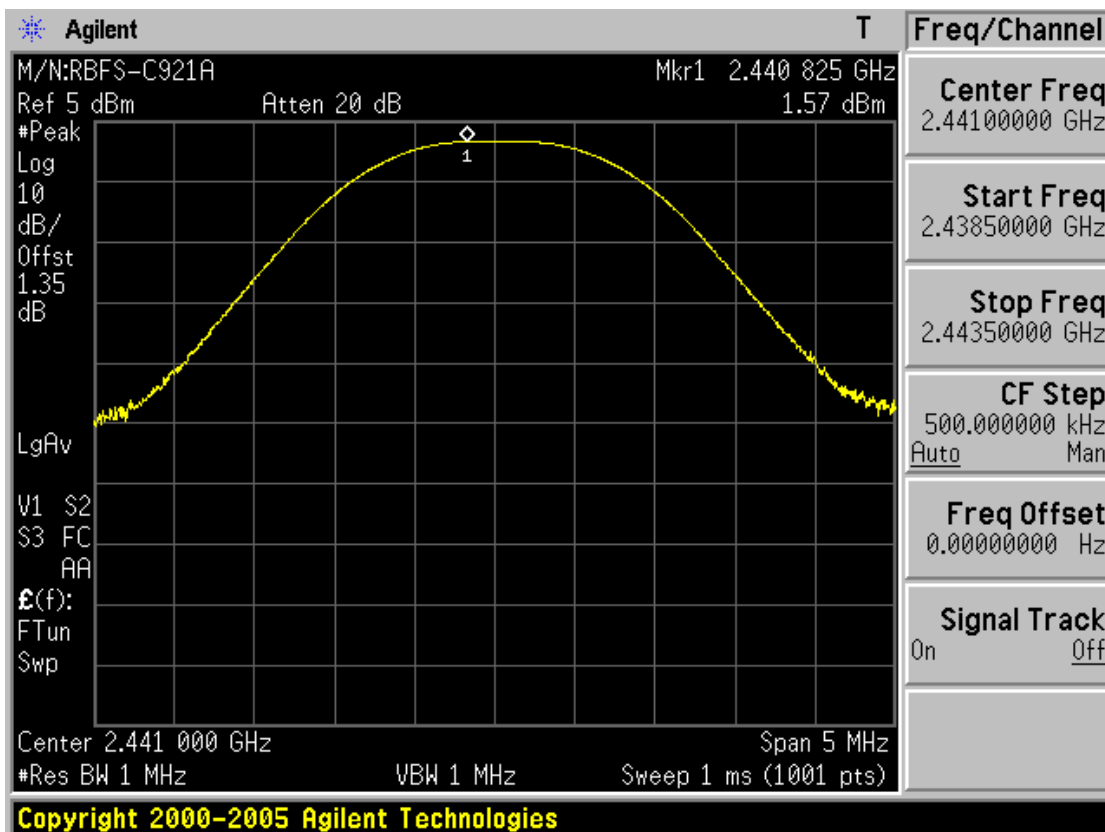
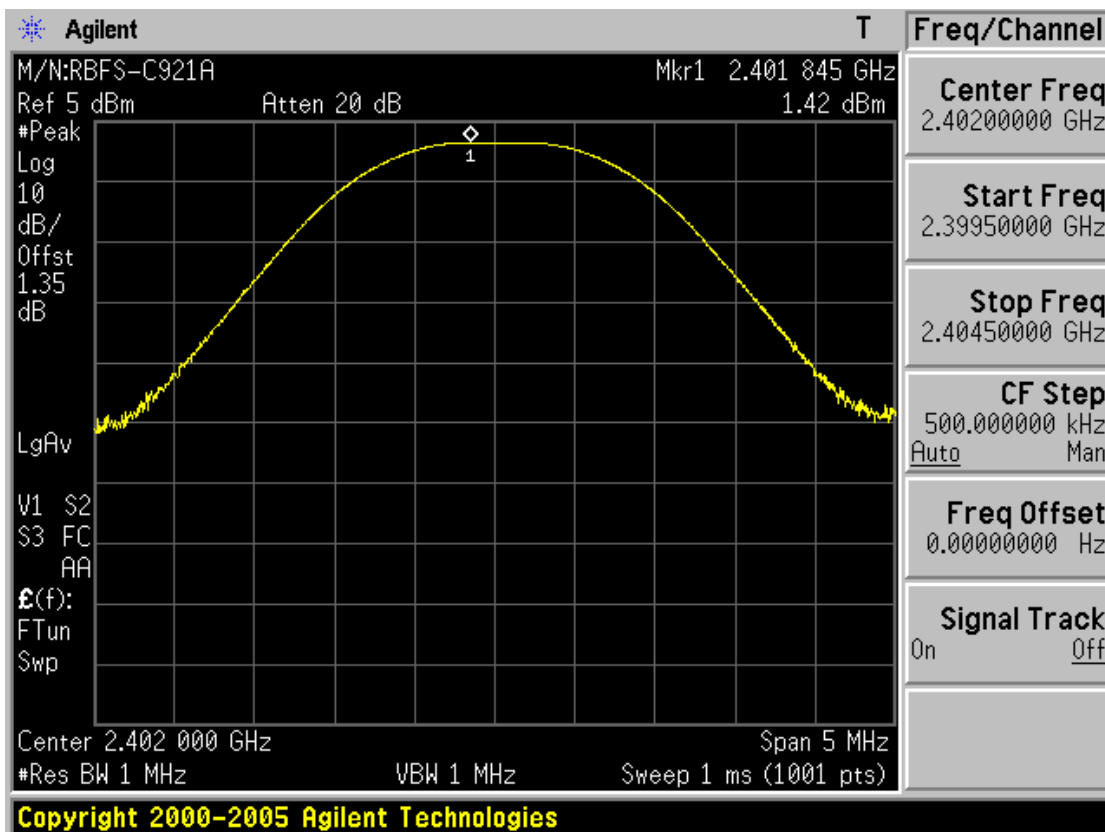
- See next pages for actual measured spectrum plots.

<b>Minimum Standard:</b>	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: <b>1 Watt</b> . For all other frequency hopping systems in the 2400-2483.5 MHz band: <b>0.125 Watts</b>
--------------------------	--

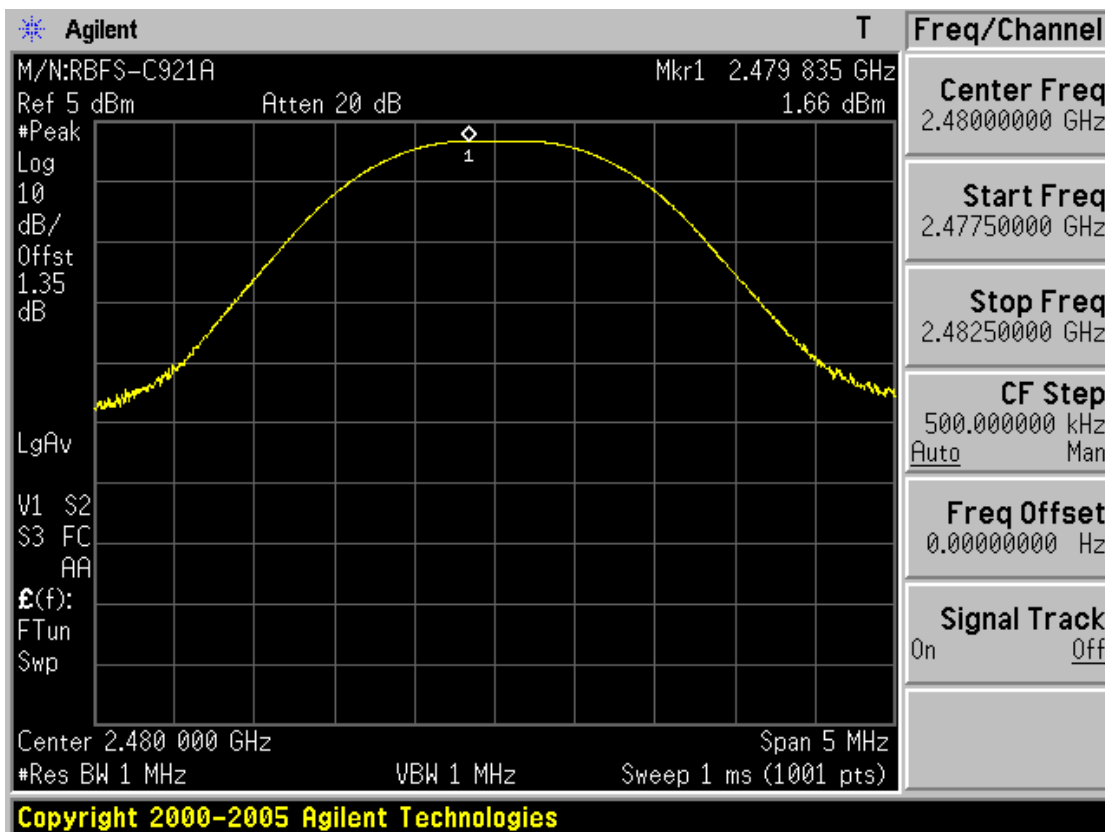
**- Measurement Setup**

Same as the Chapter 3.2.1 (Figure 1)

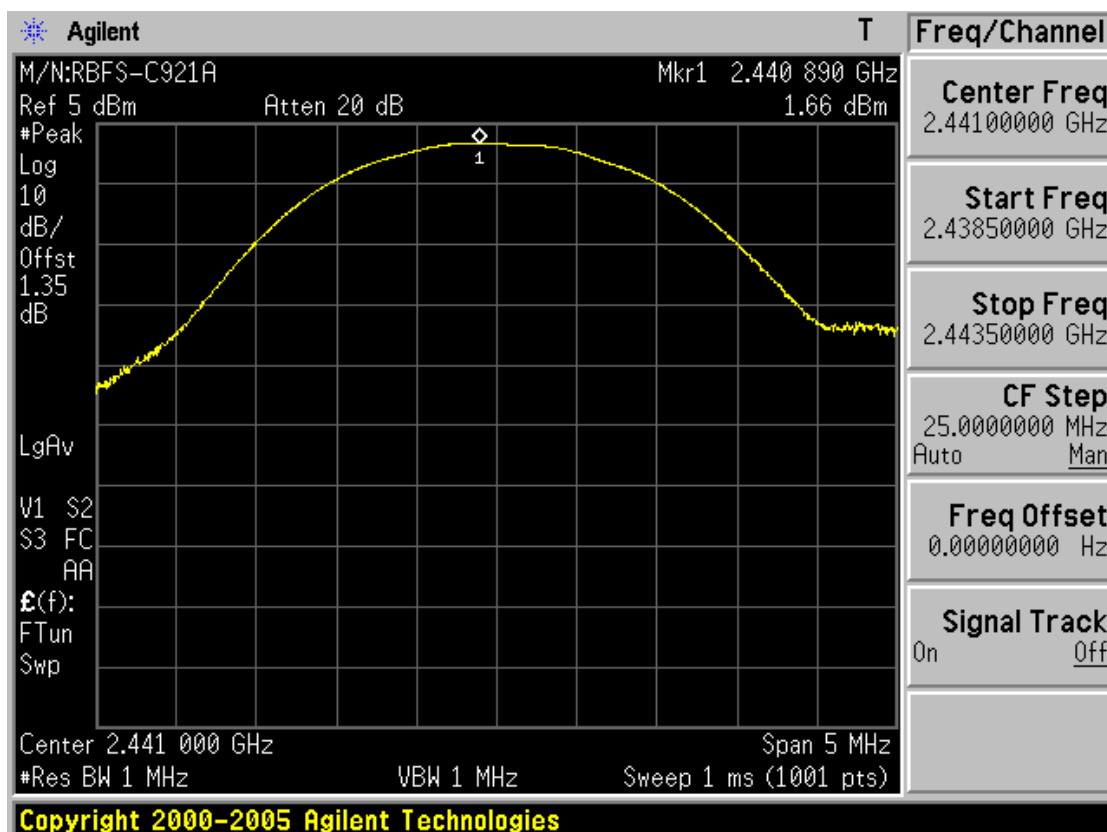
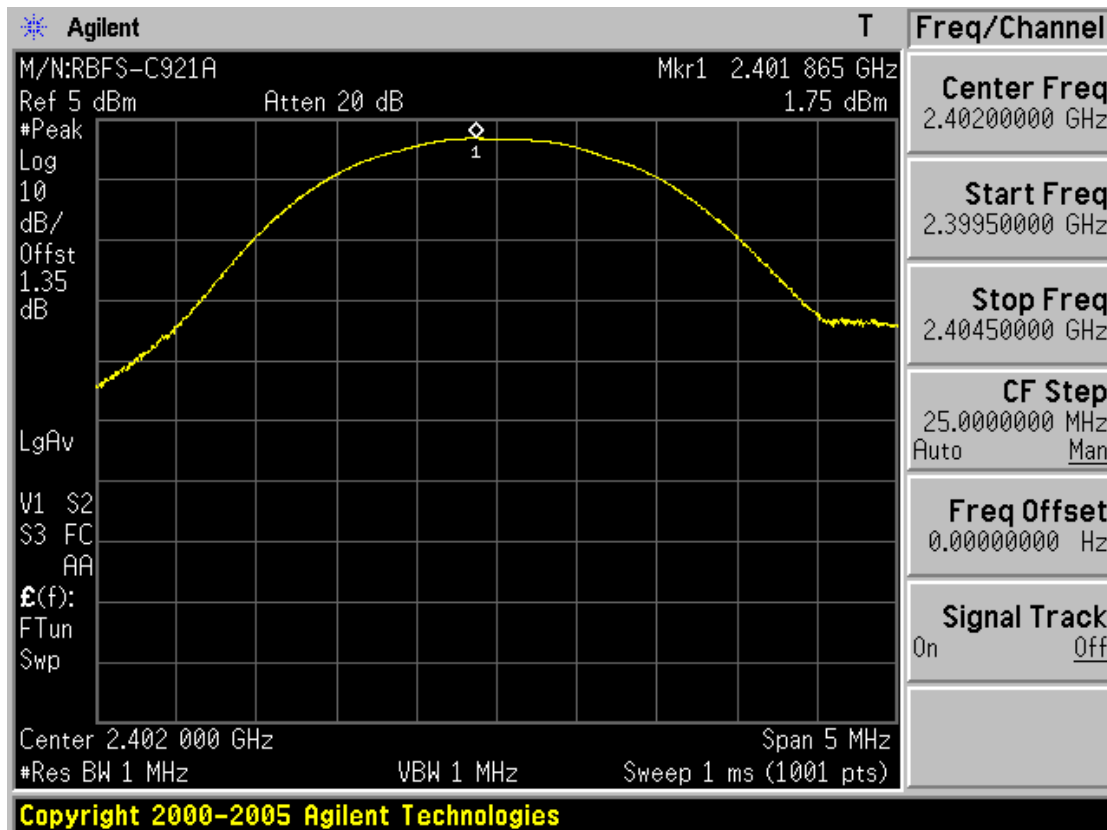
Peak Output Power (Normal 1Mbps)



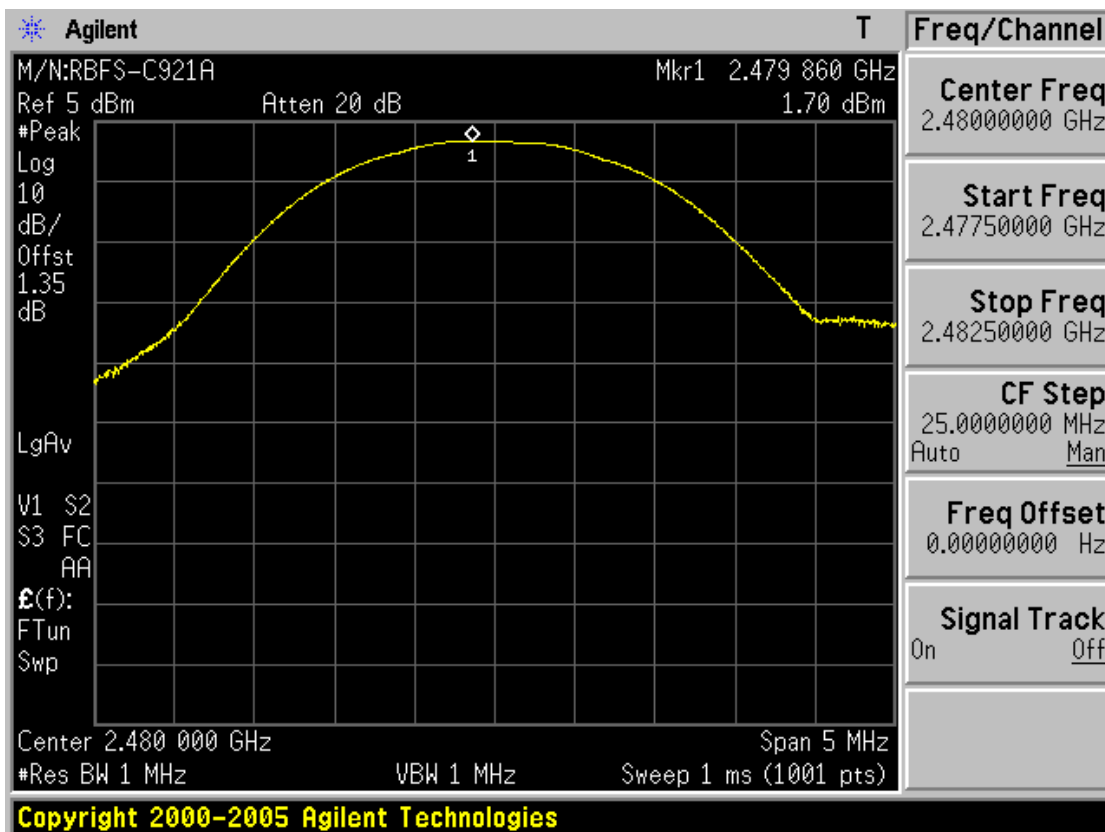
Peak Output Power (Normal 1Mbps)



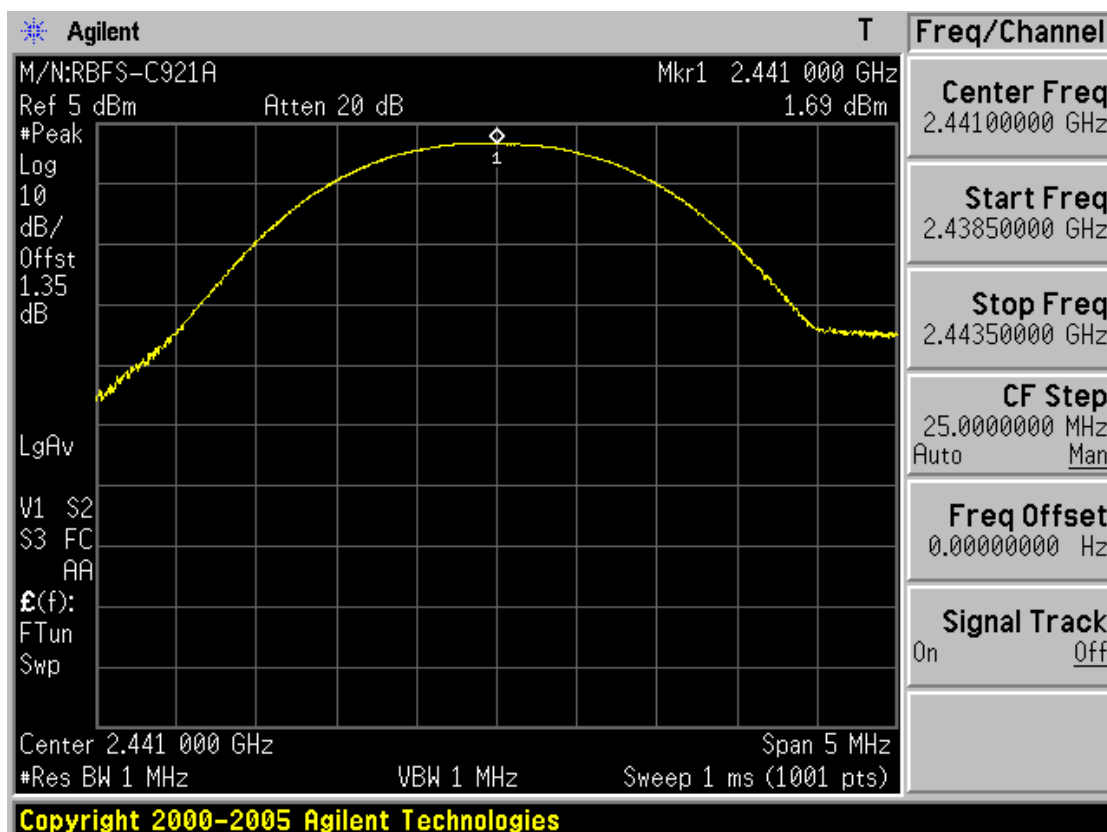
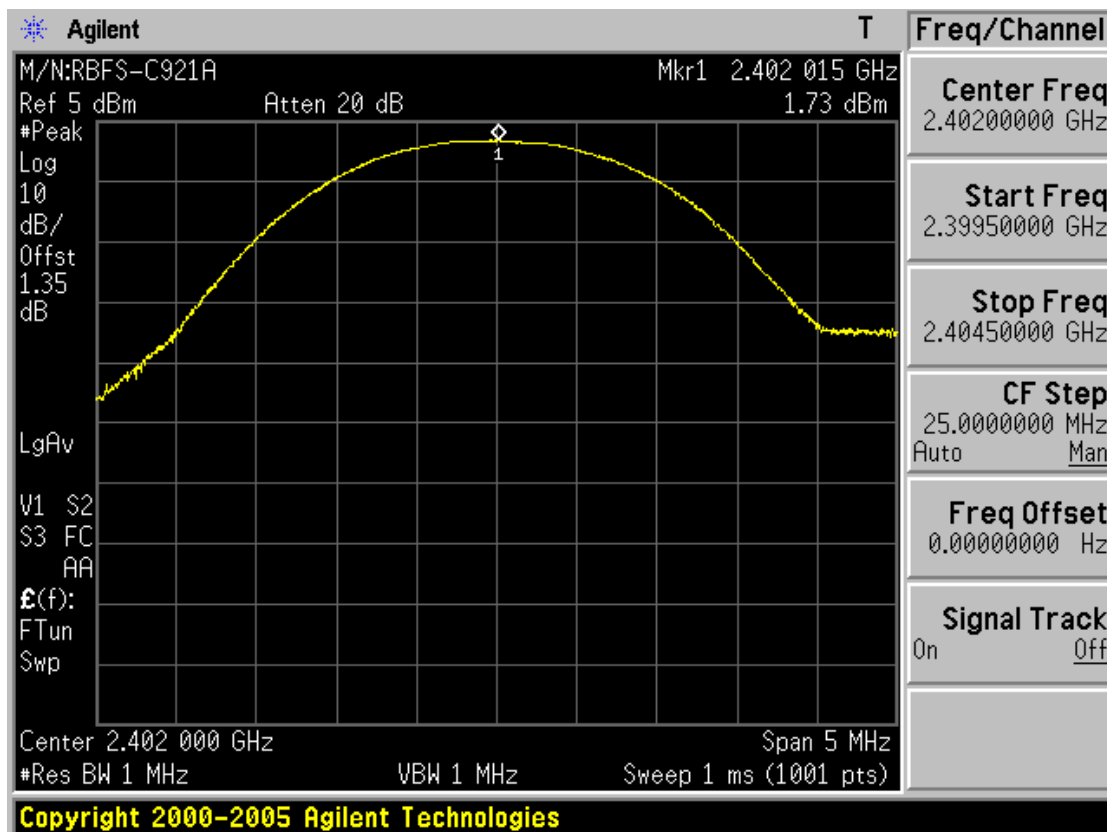
### Peak Output Power (EDR 2Mbps)



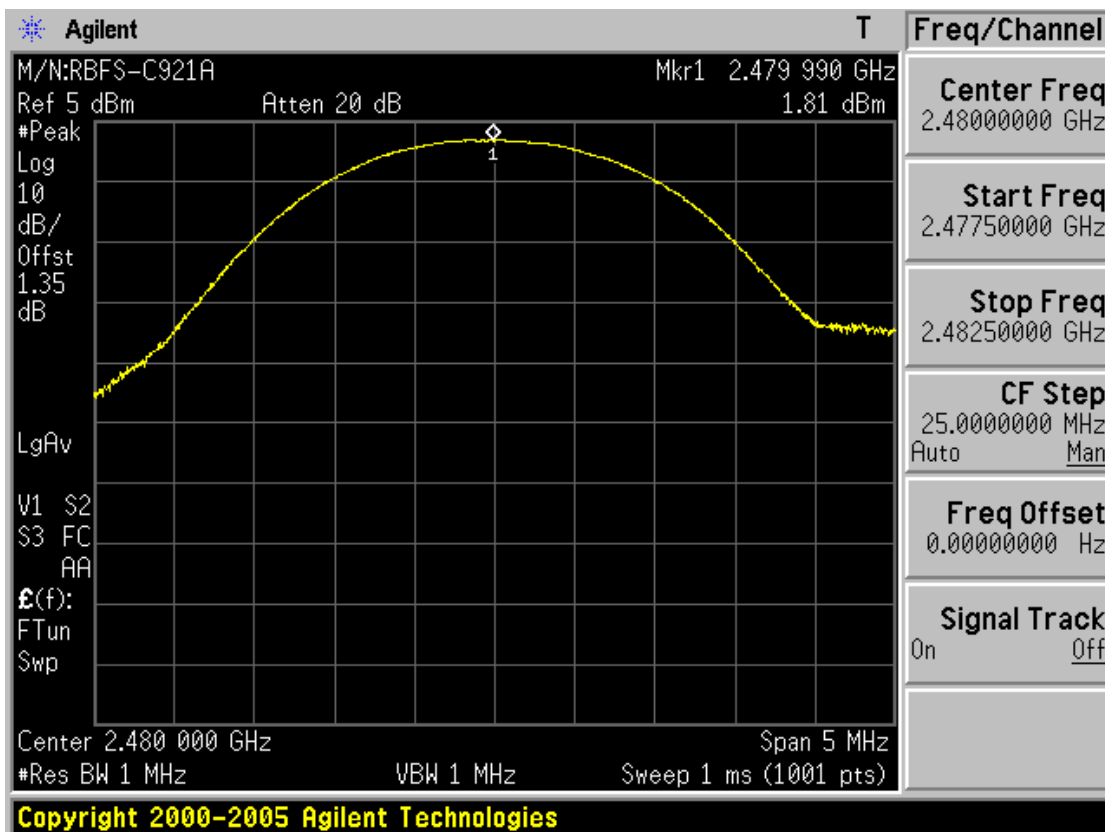
### Peak Output Power (EDR 2Mbps)



### Peak Output Power (EDR 3Mbps)

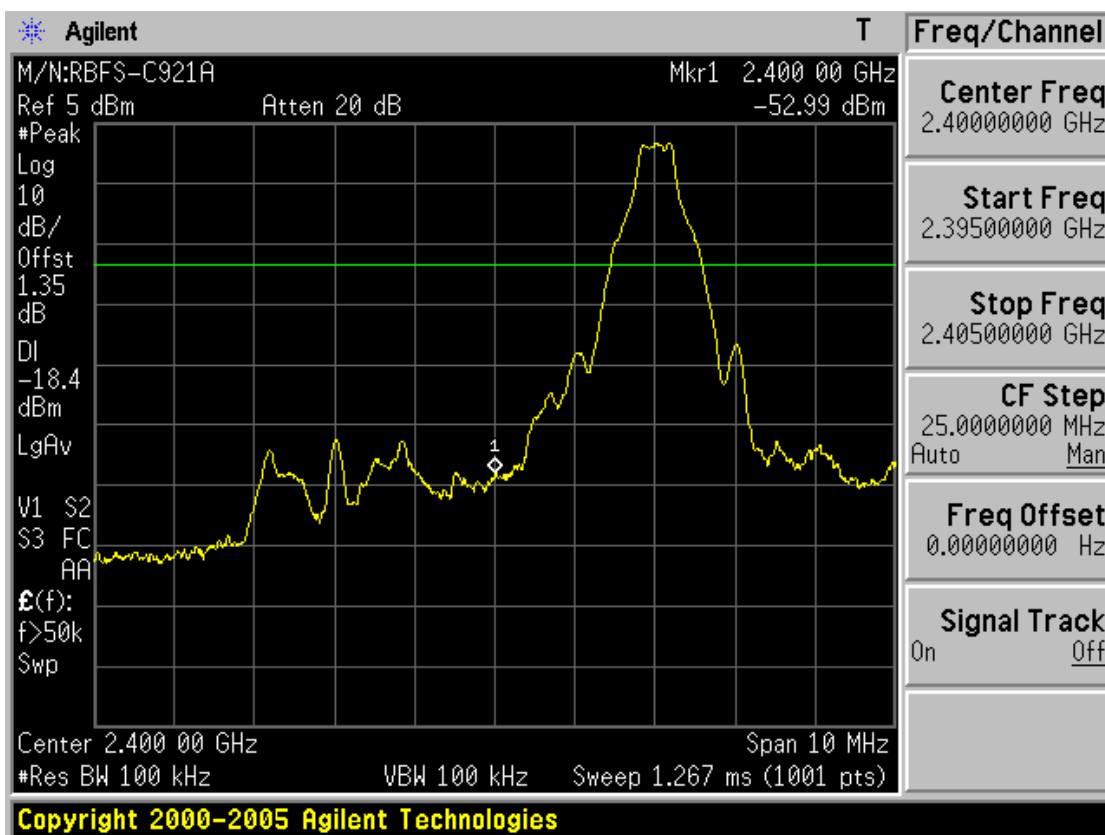


### Peak Output Power (EDR 3Mbps)

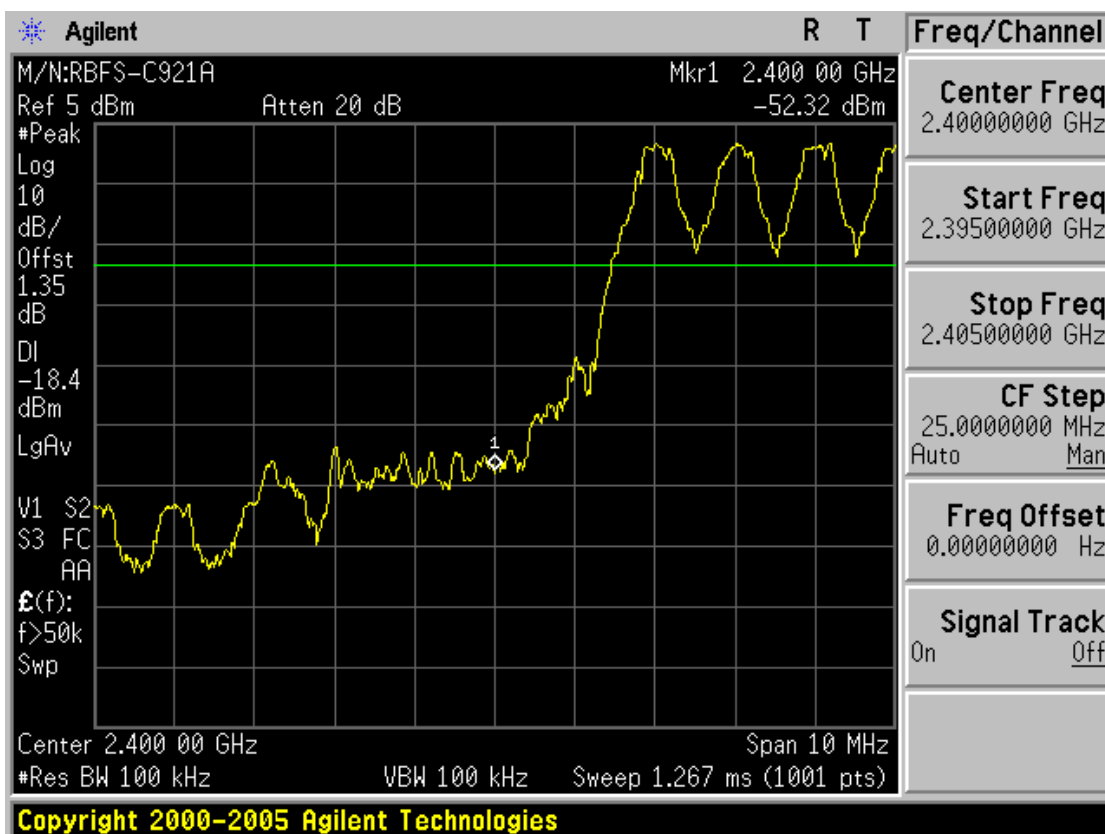




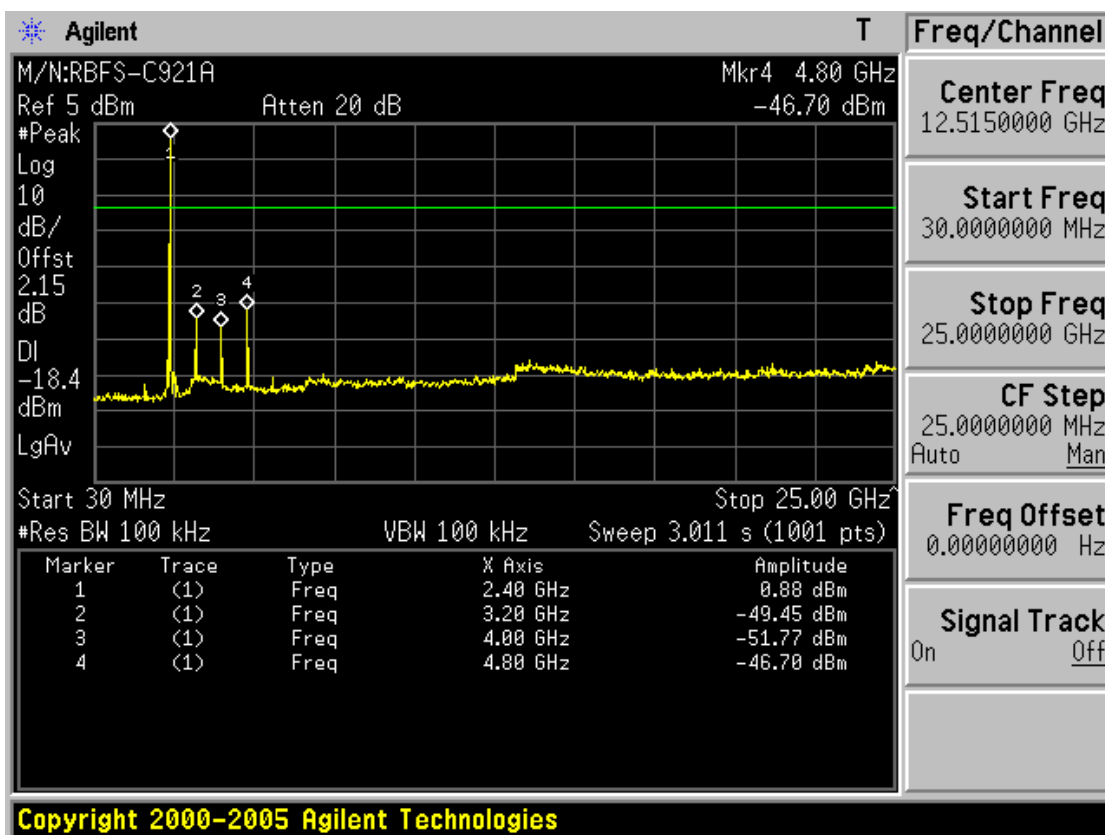
Low band with hopping disabled (Normal 1Mbps)



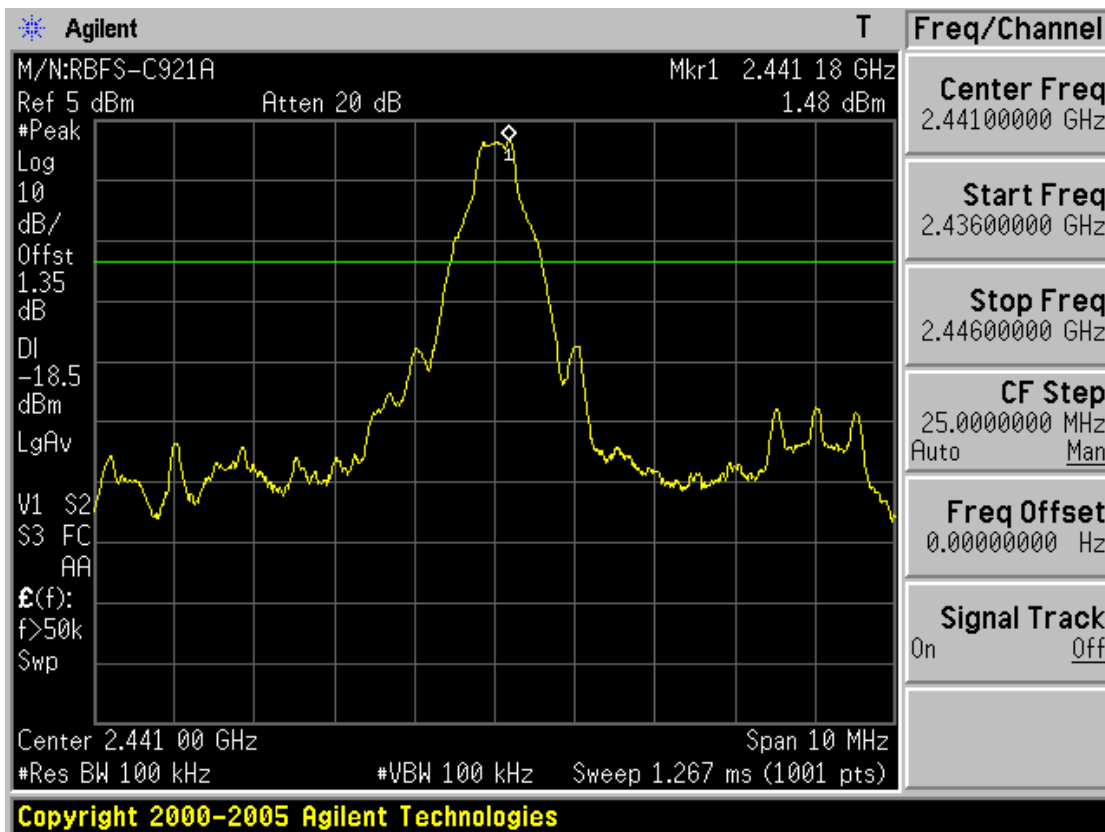
Low band with hopping enabled (Normal 1Mbps)



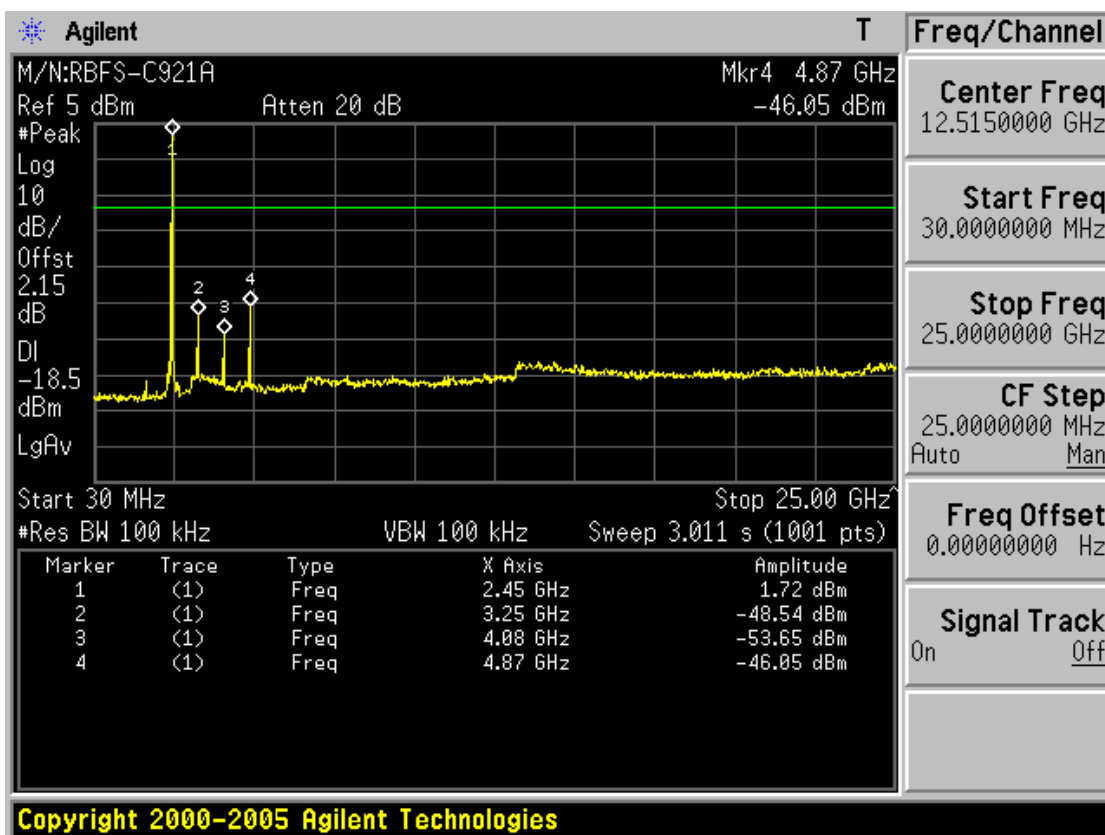
Low channel spurious (Normal 1Mbps)



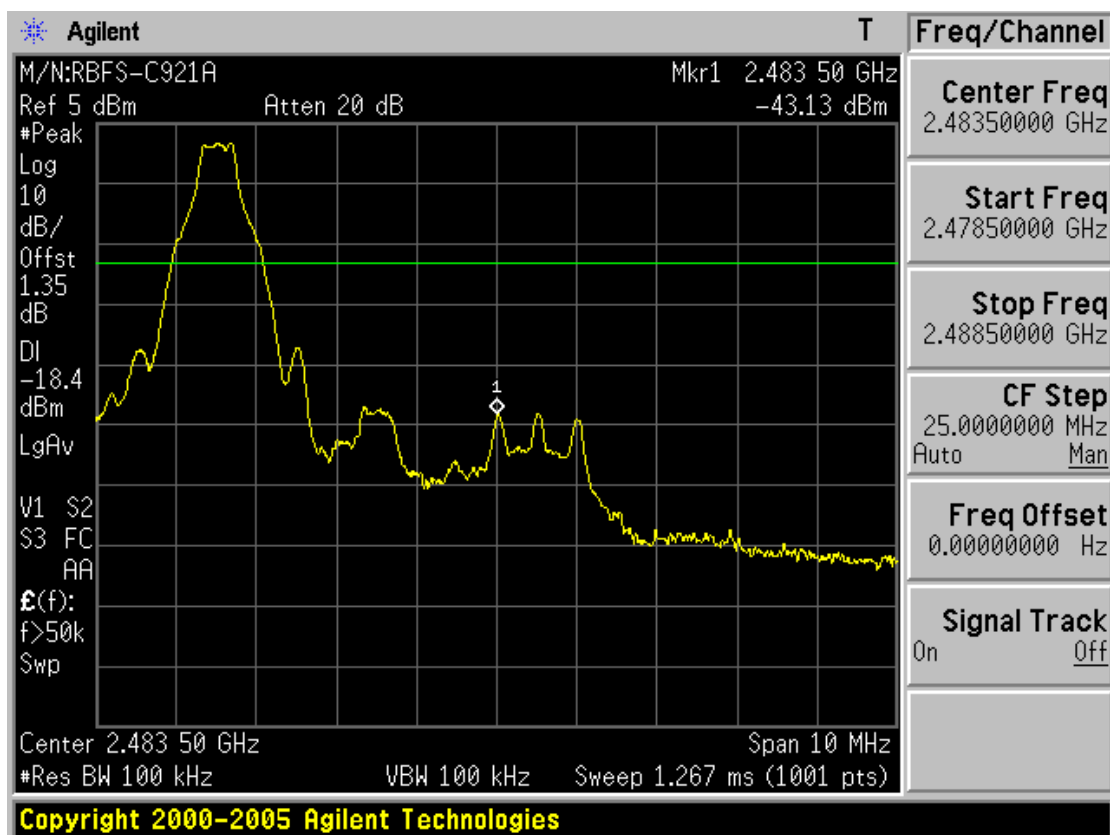
Mid channel ref (Normal 1Mbps)



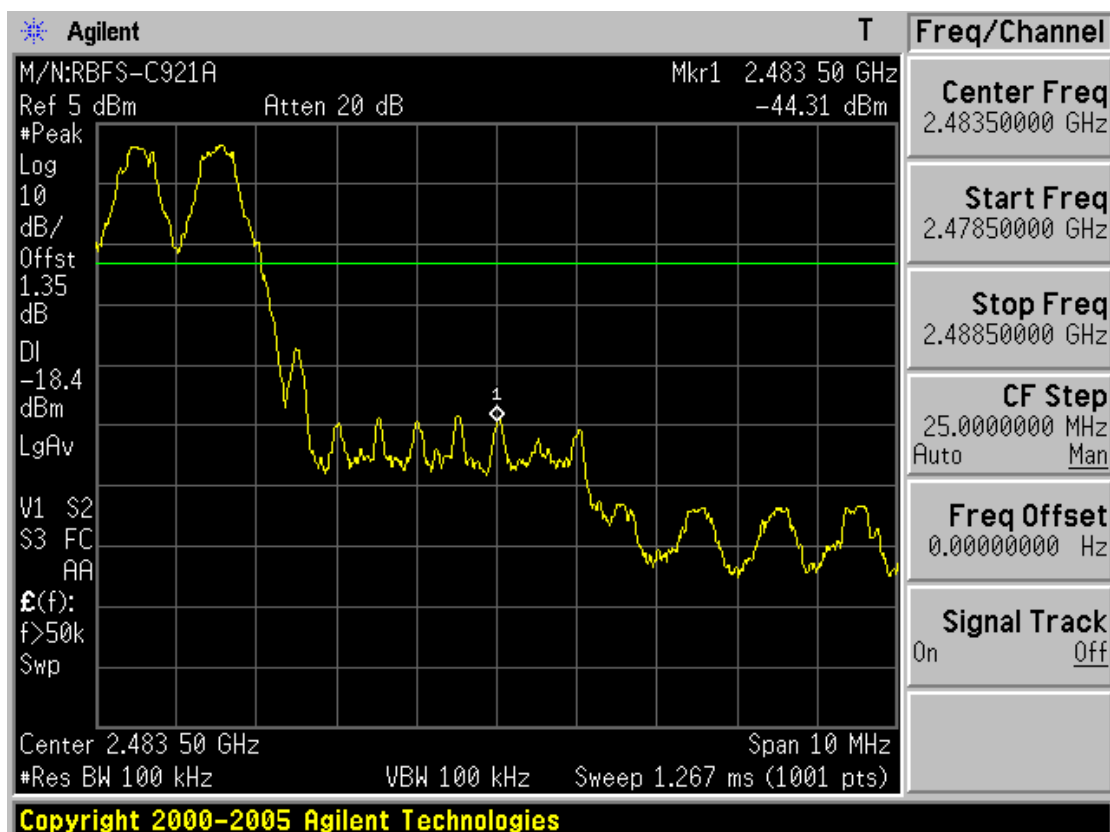
Mid channel spurious (Normal 1Mbps)



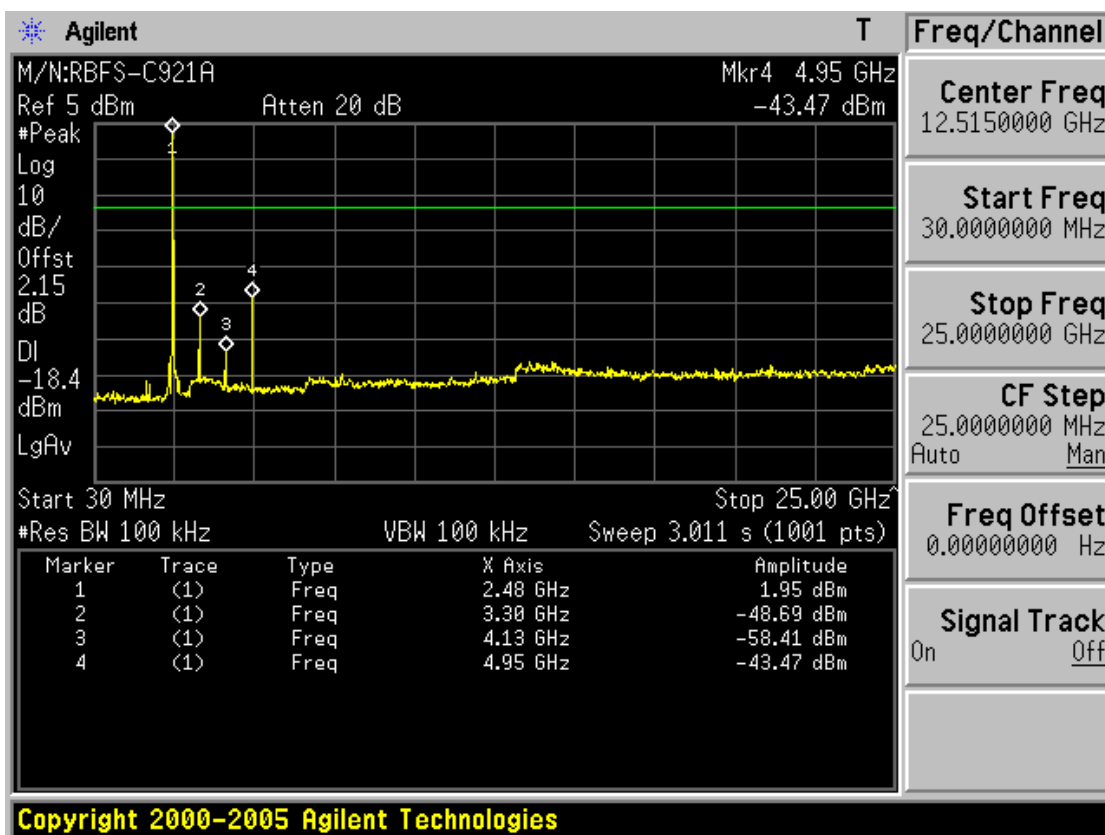
### High band with hopping disabled (Normal 1Mbps)



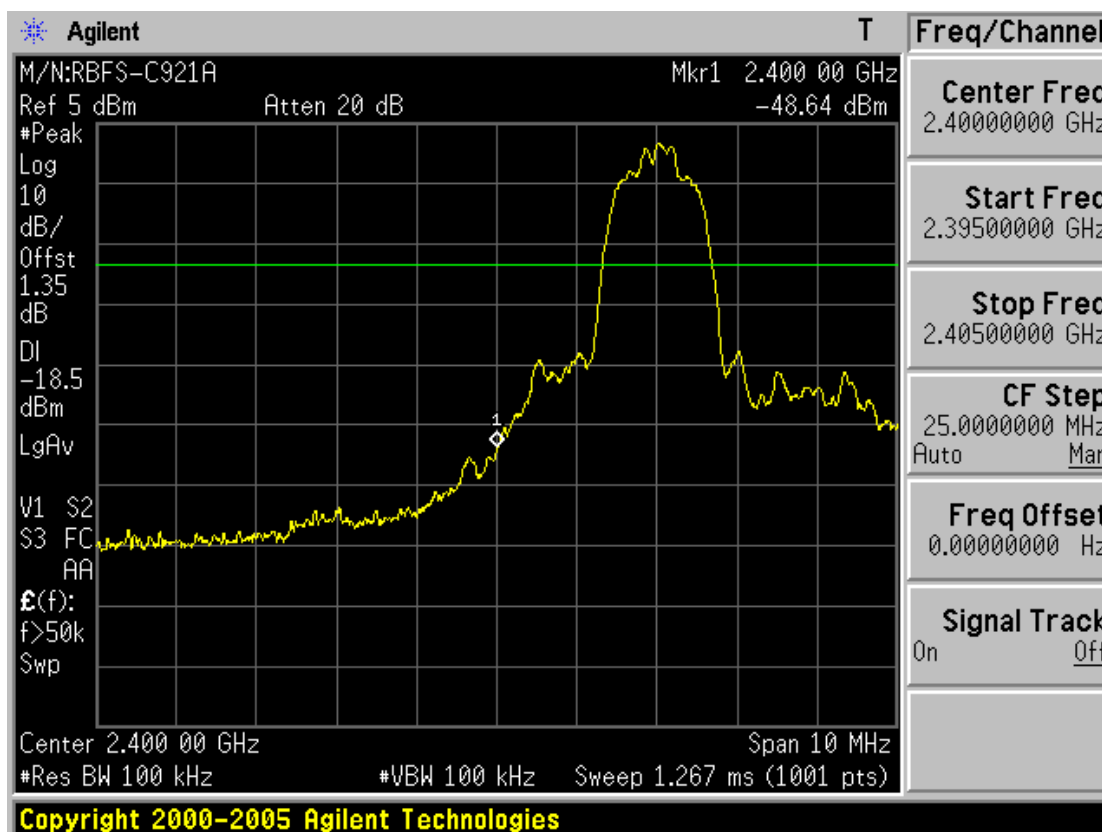
### High band with hopping enabled (Normal 1Mbps)



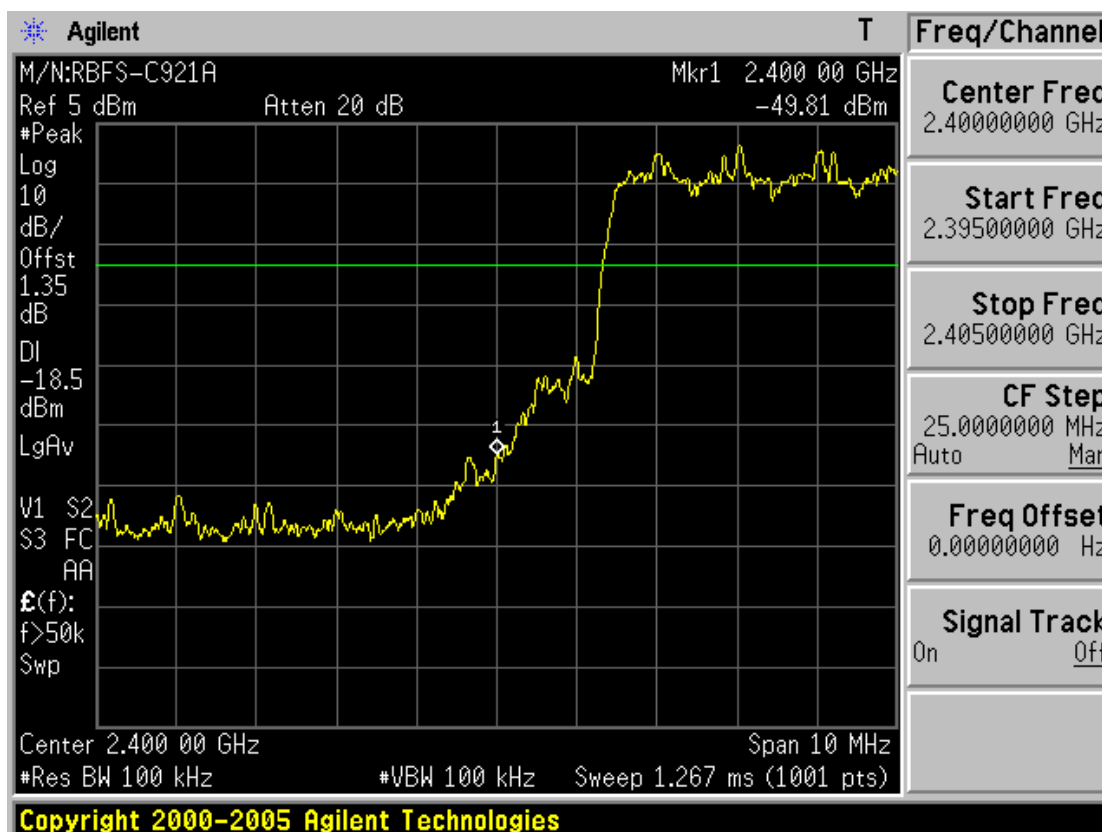
### High channel spurious (Normal 1Mbps)



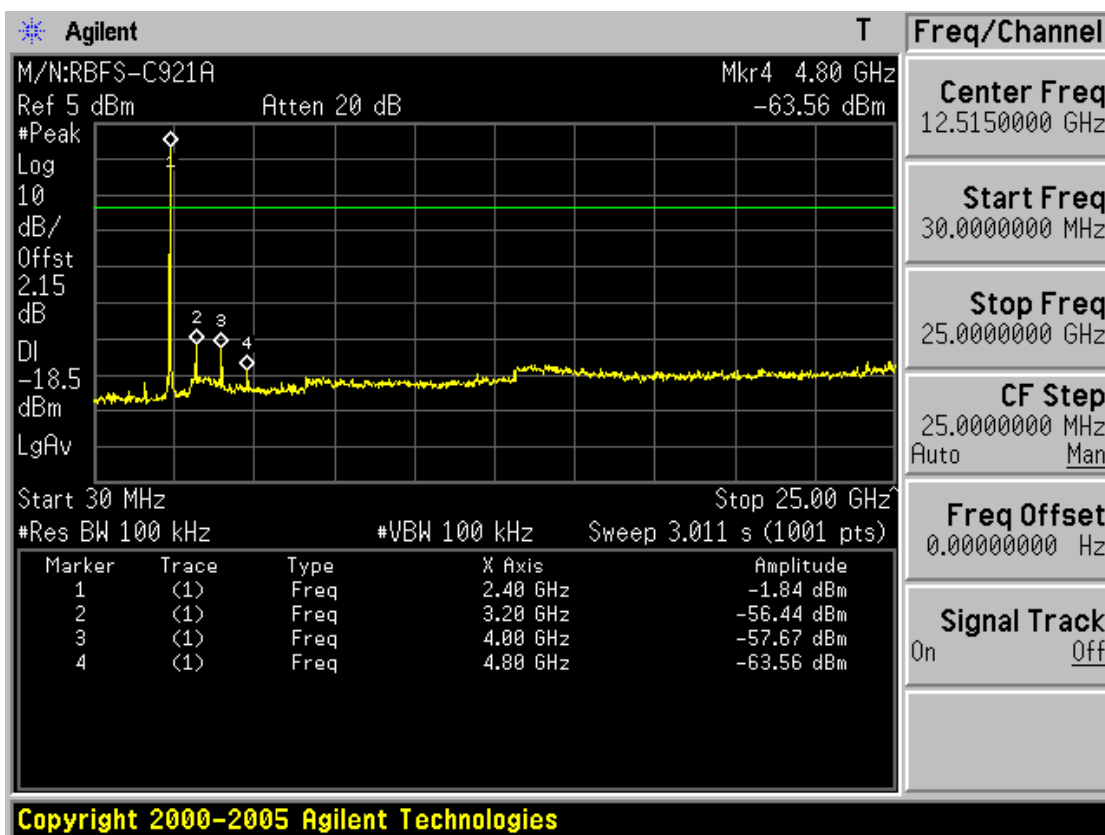
Low band with hopping disabled (EDR 2Mbps)



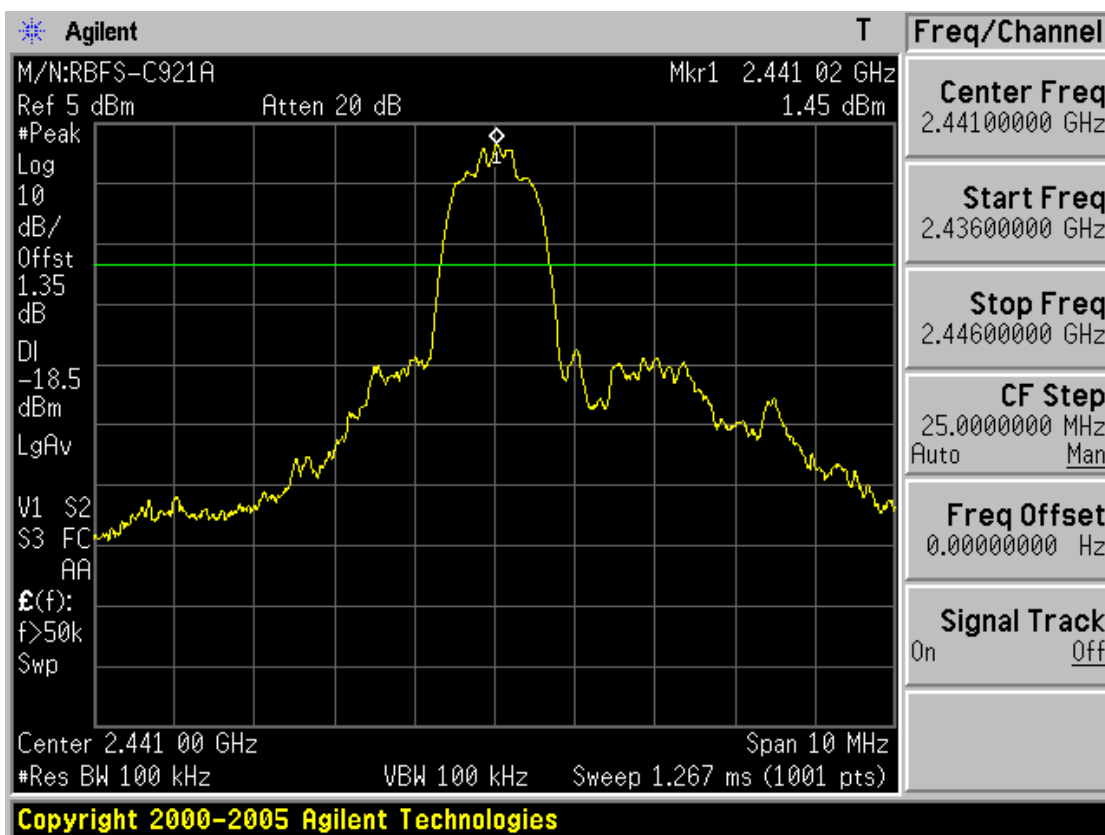
Low band with hopping enabled (EDR 2Mbps)



### Low channel spurious (EDR 2Mbps)

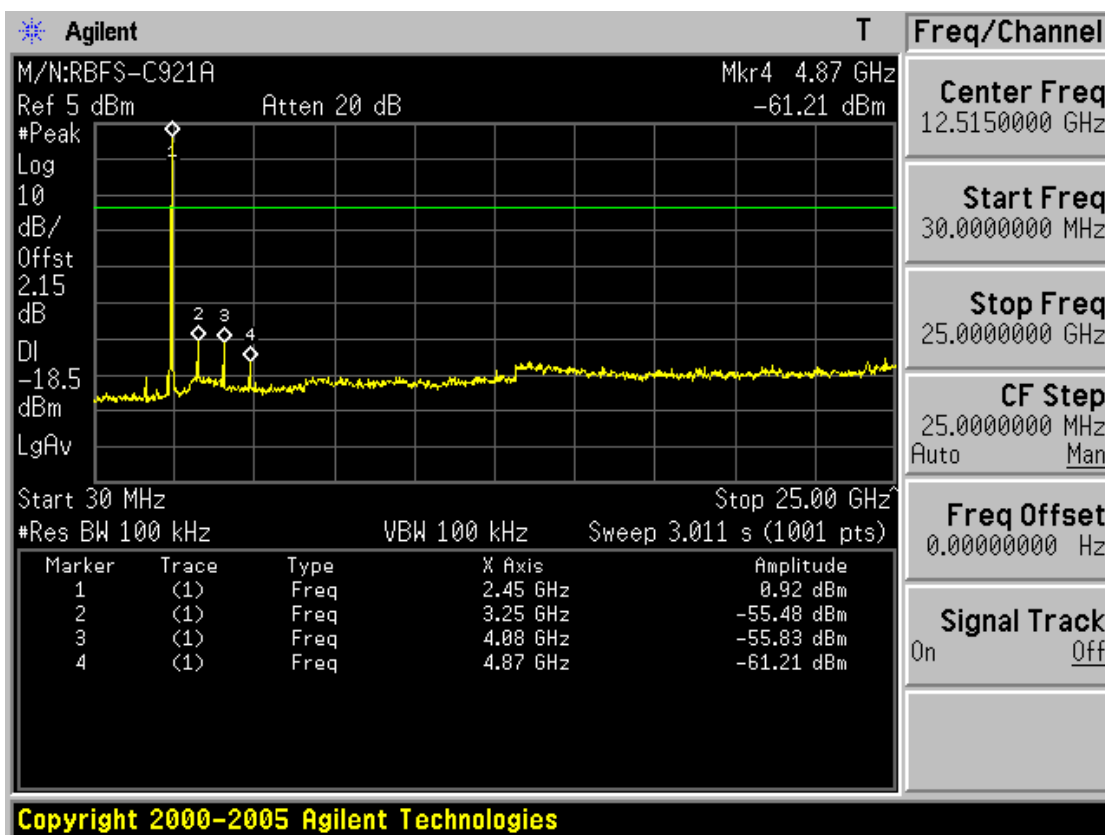


Mid channel ref (EDR 2Mbps)

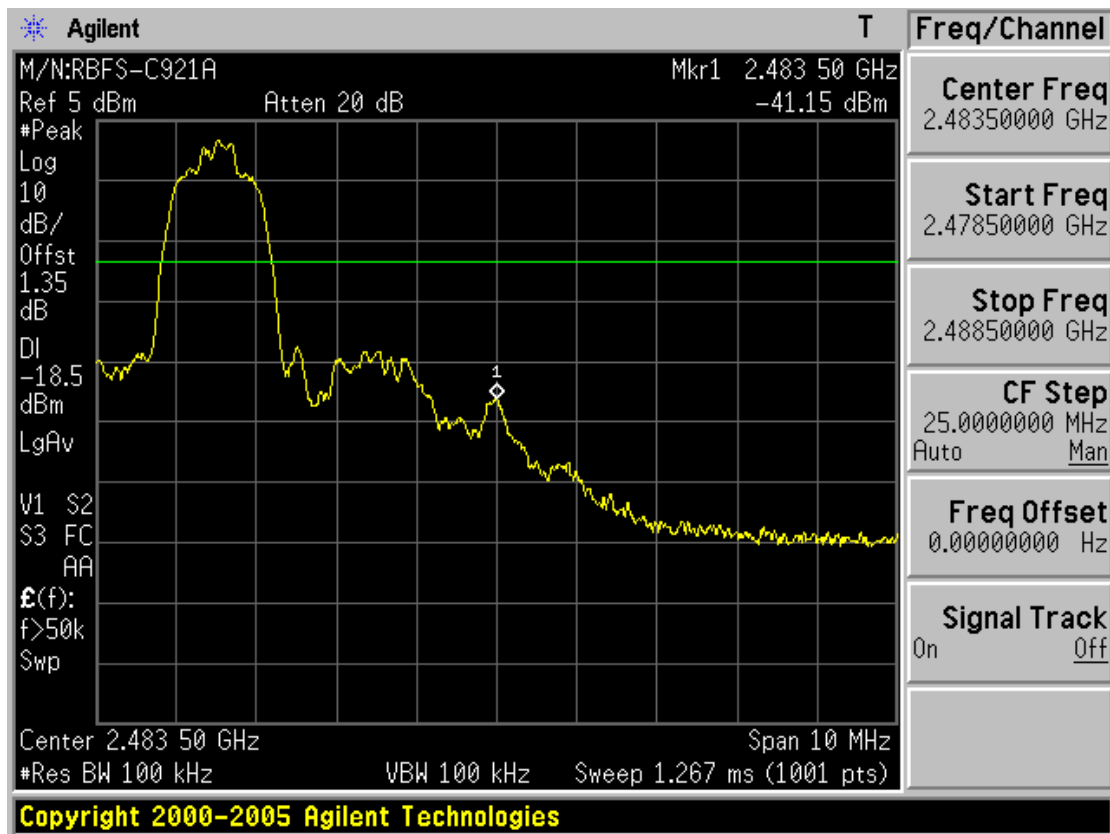


Copyright 2000-2005 Agilent Technologies

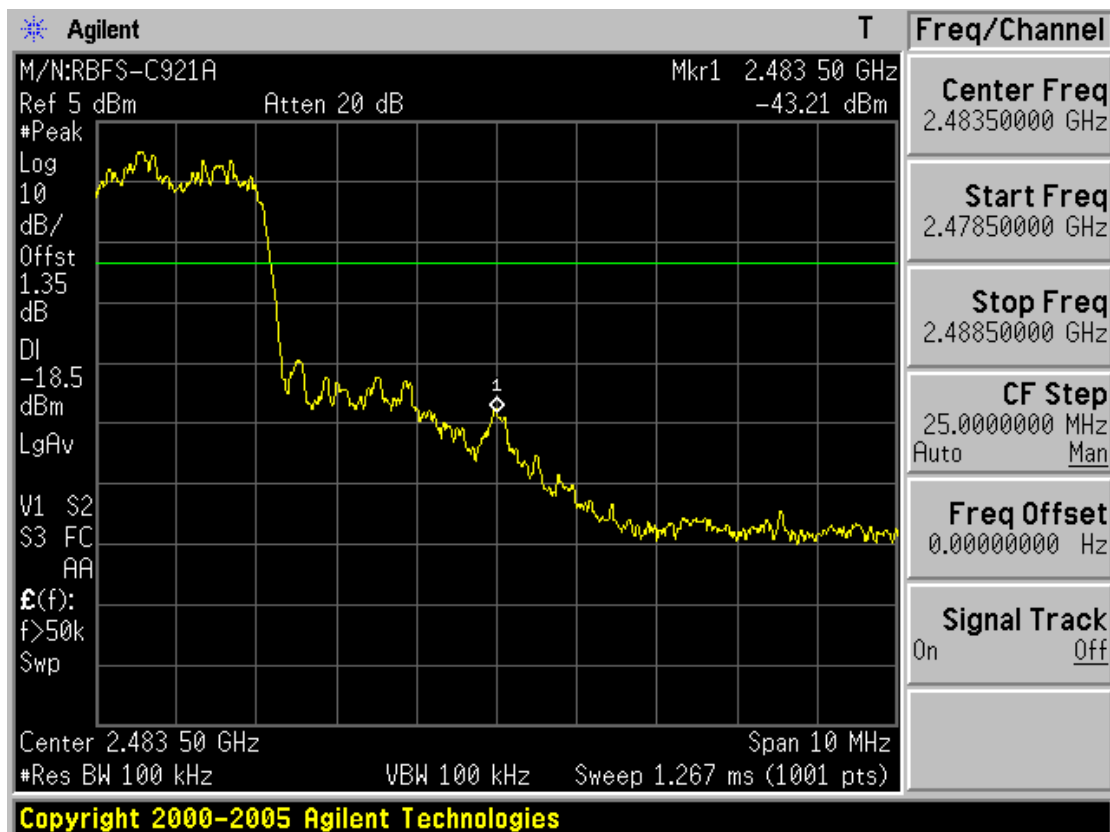
Mid channel spurious (EDR 2Mbps)



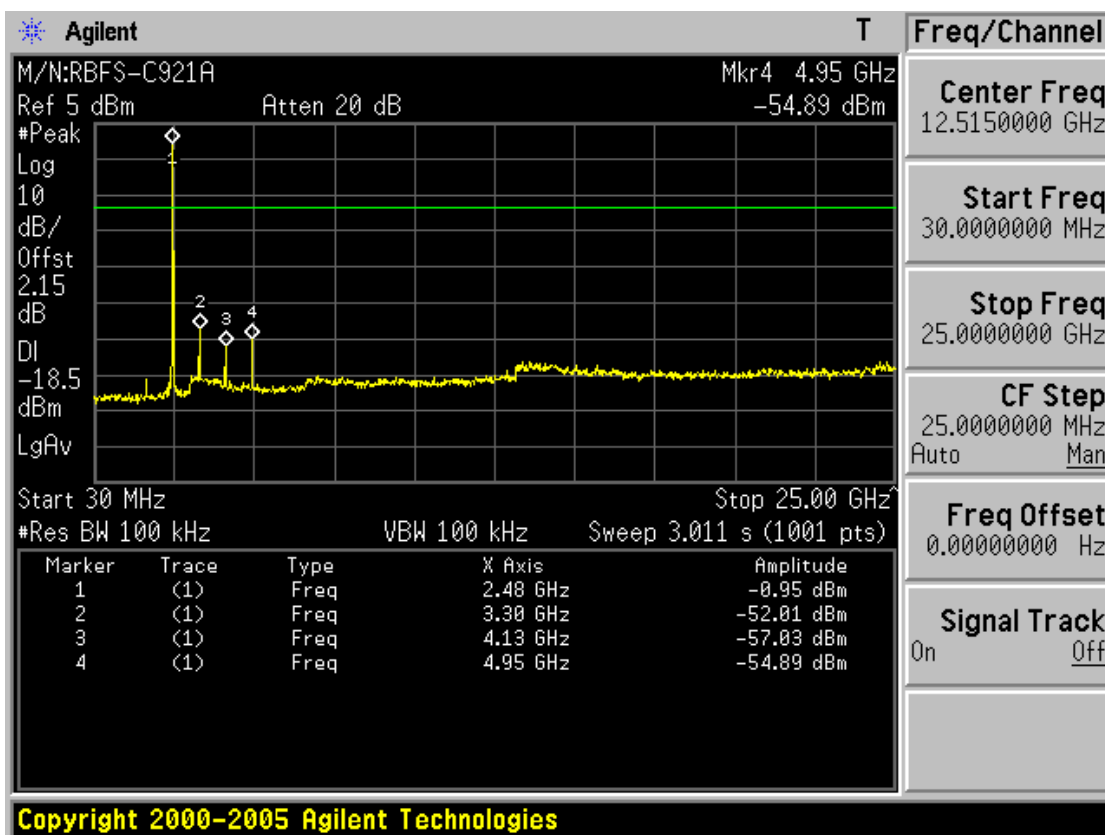
### High band with hopping disabled (EDR 2Mbps)



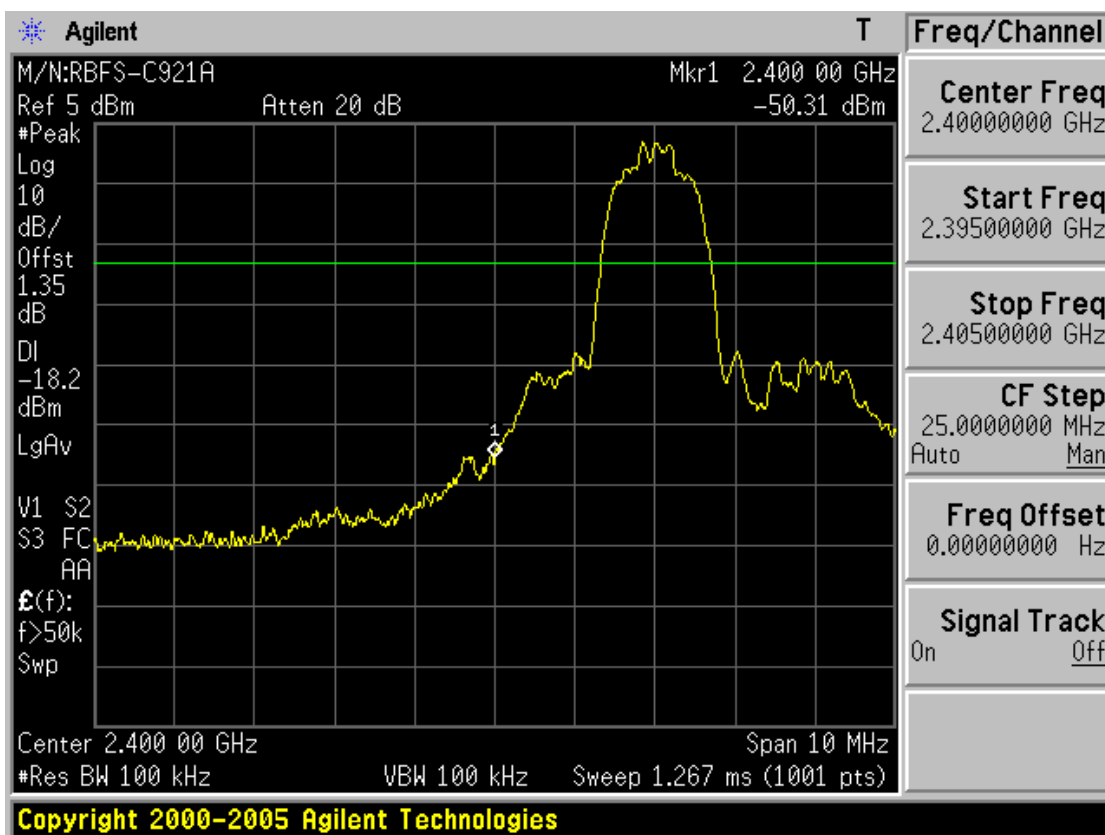
### High band with hopping enabled (EDR 2Mbps)



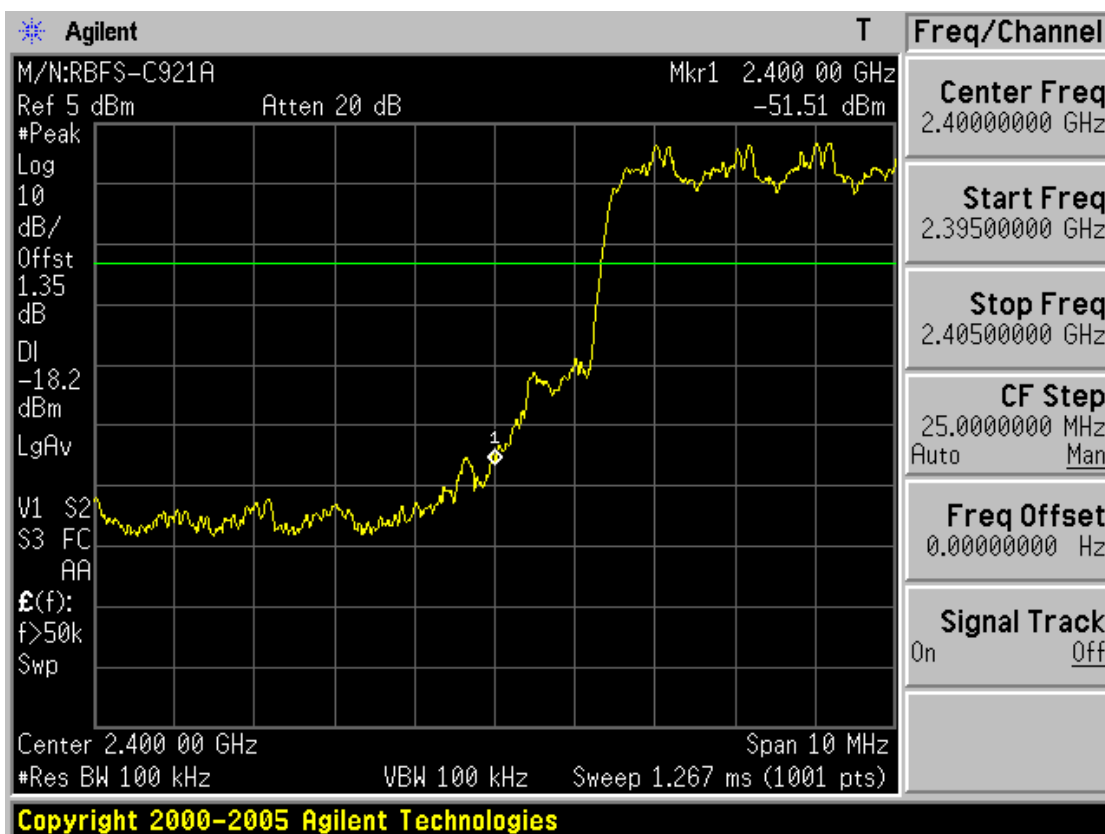
### High channel spurious (EDR 2Mbps)



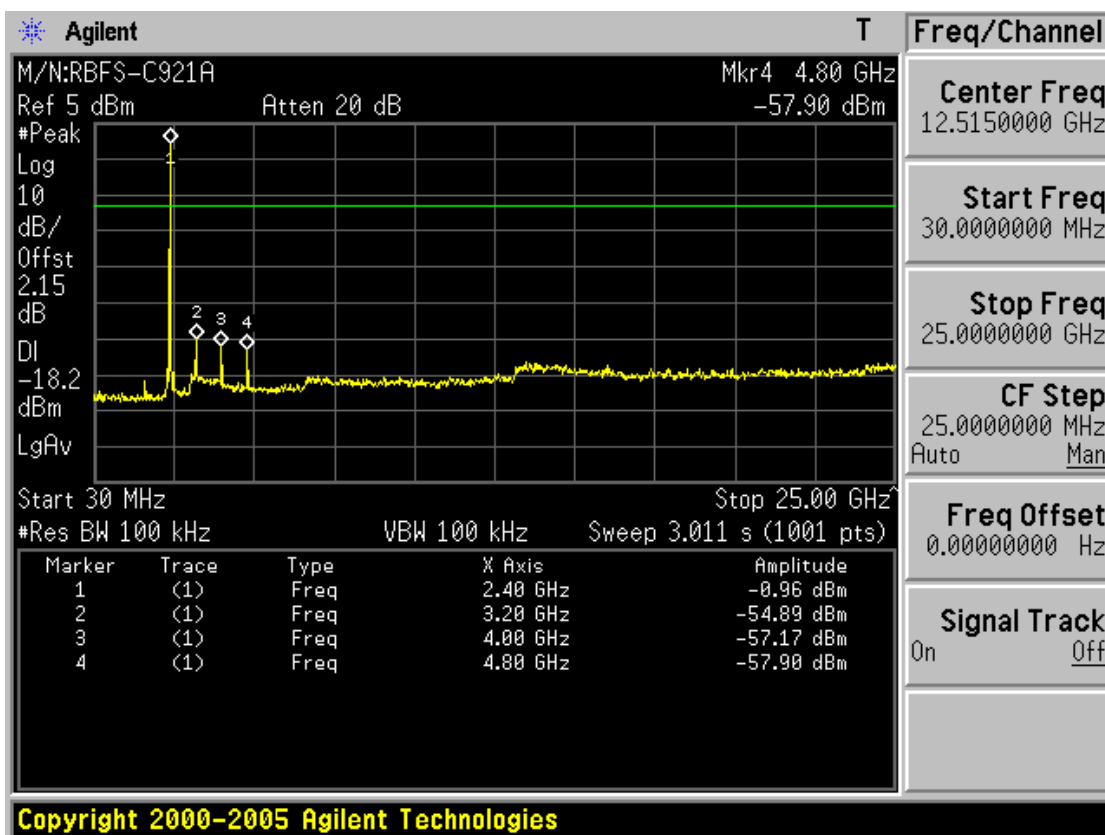
Low band with hopping disabled (EDR 3Mbps)



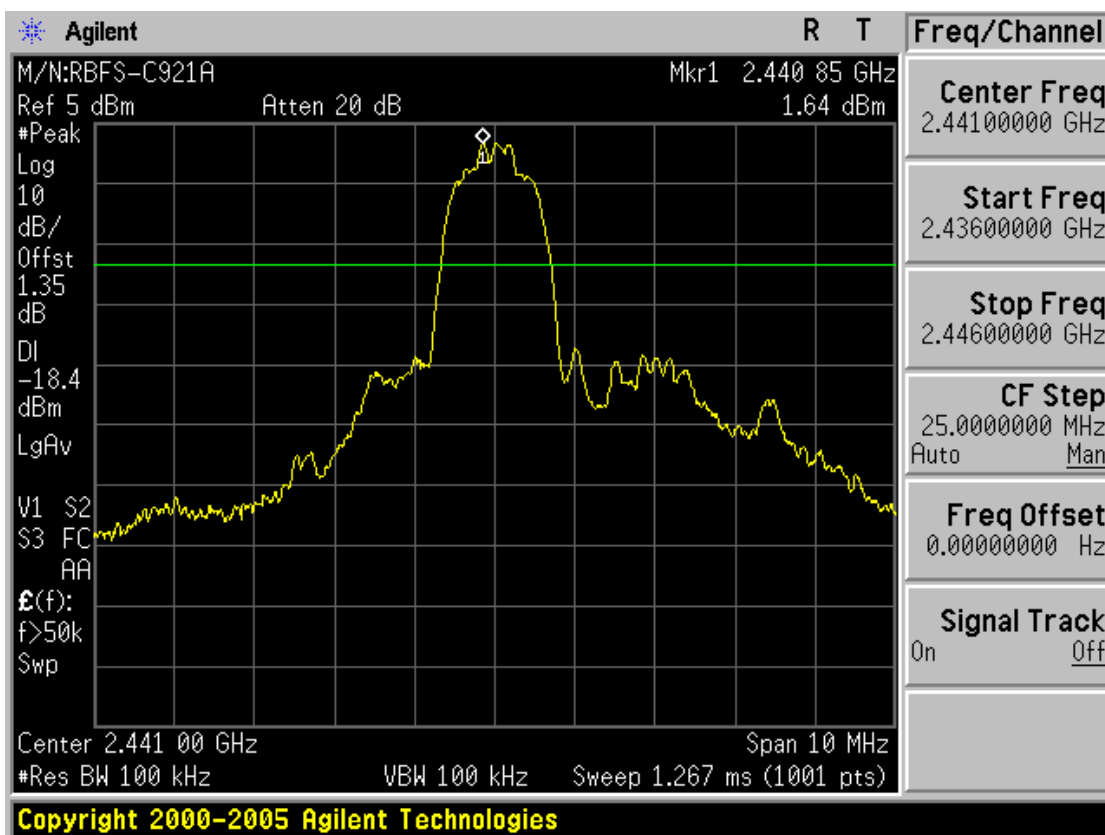
Low band with hopping enabled (EDR 3Mbps)



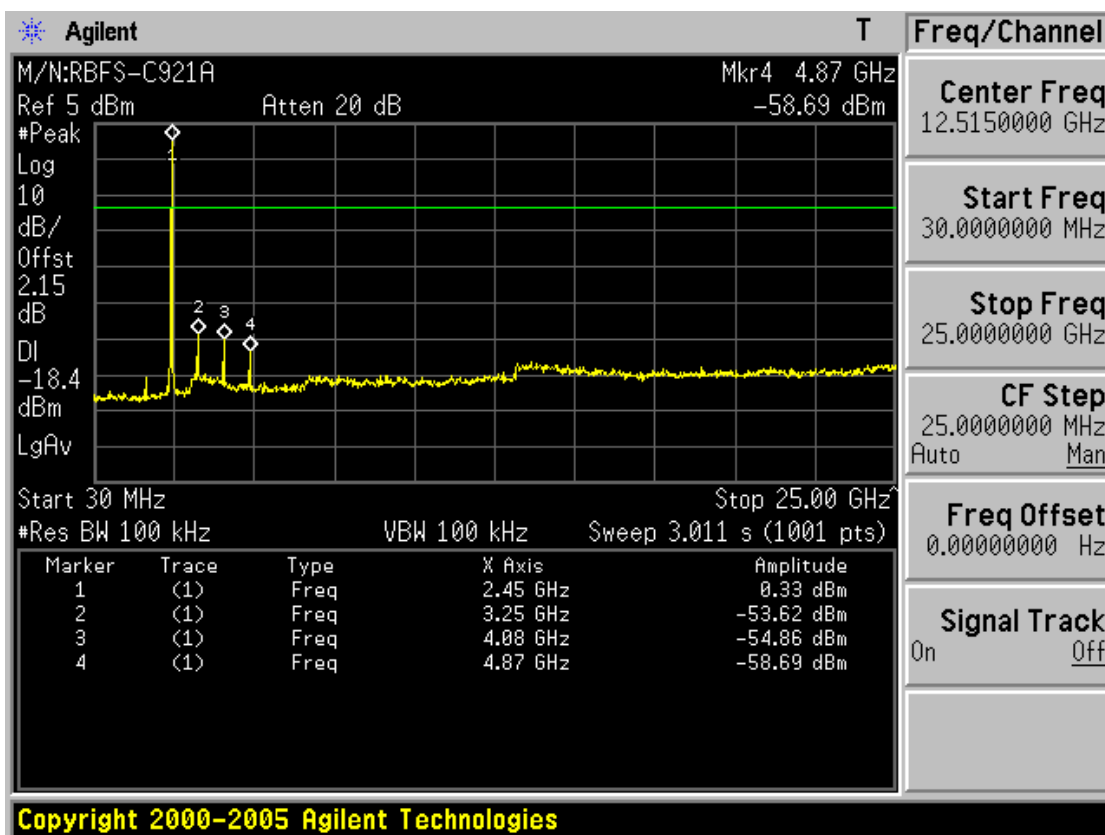
Low channel spurious (EDR 3Mbps)



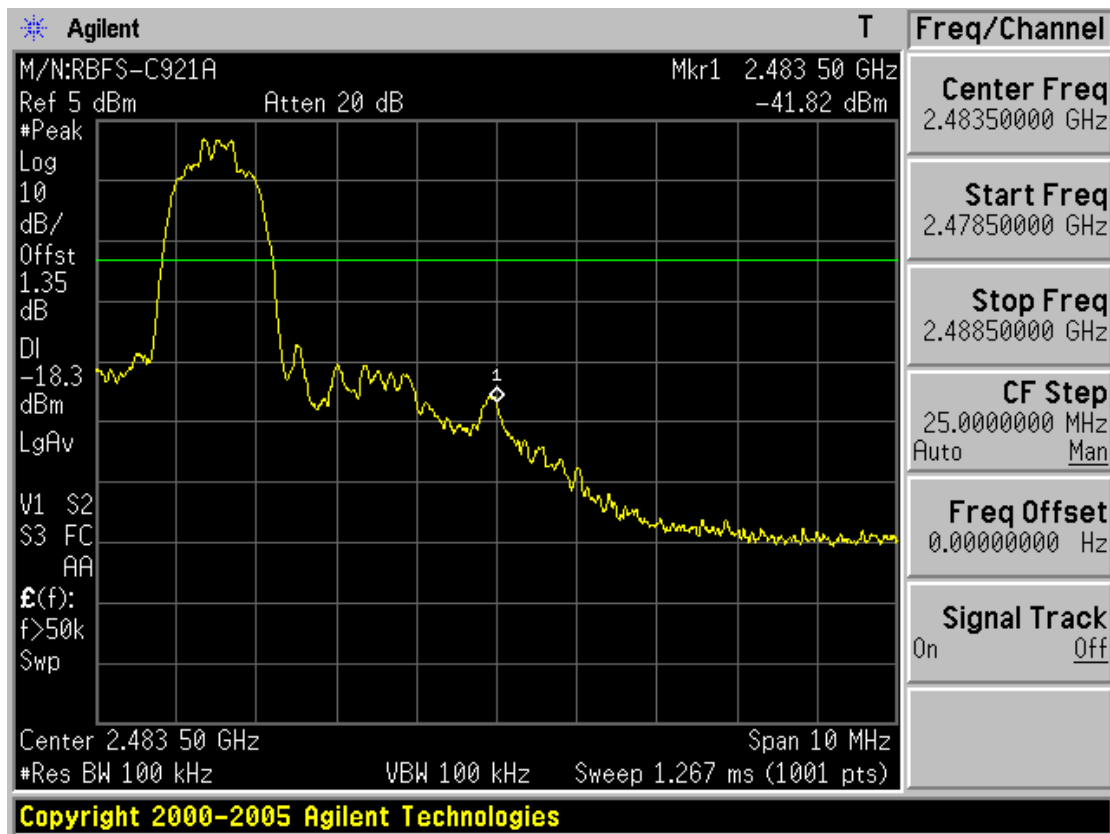
Mid channel ref (EDR 3Mbps)



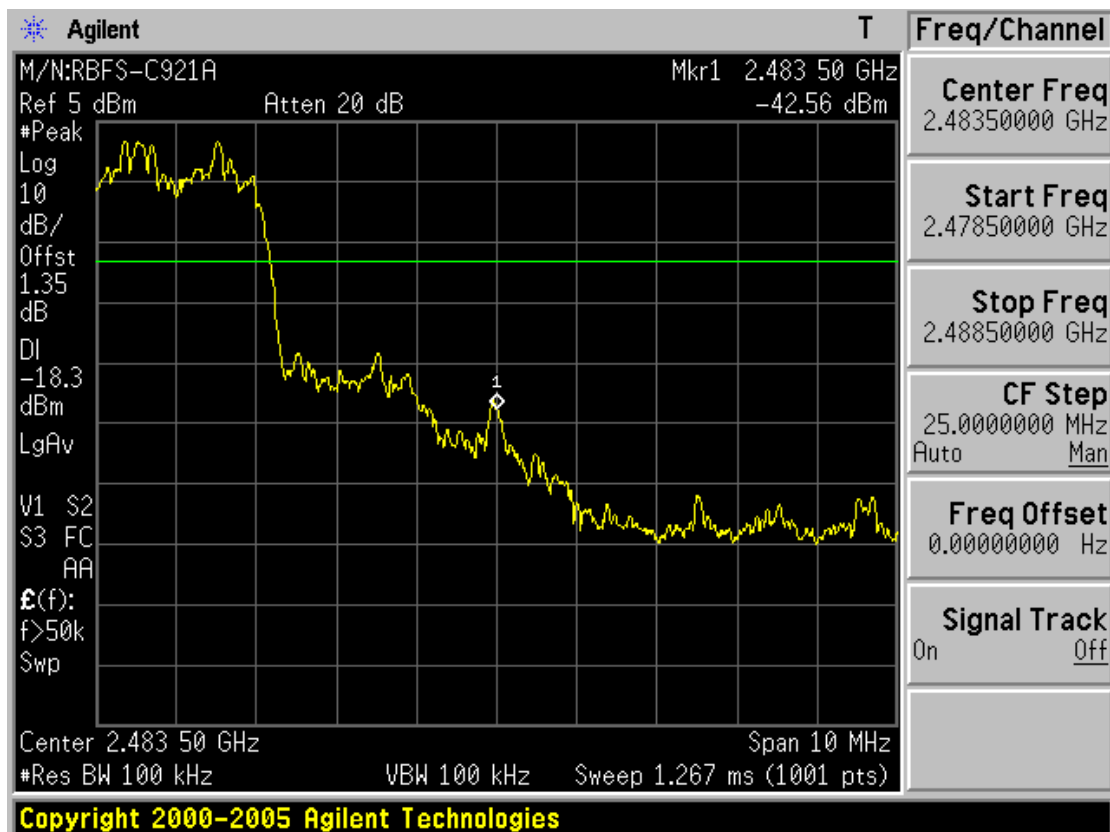
Mid channel spurious (EDR 3Mbps)



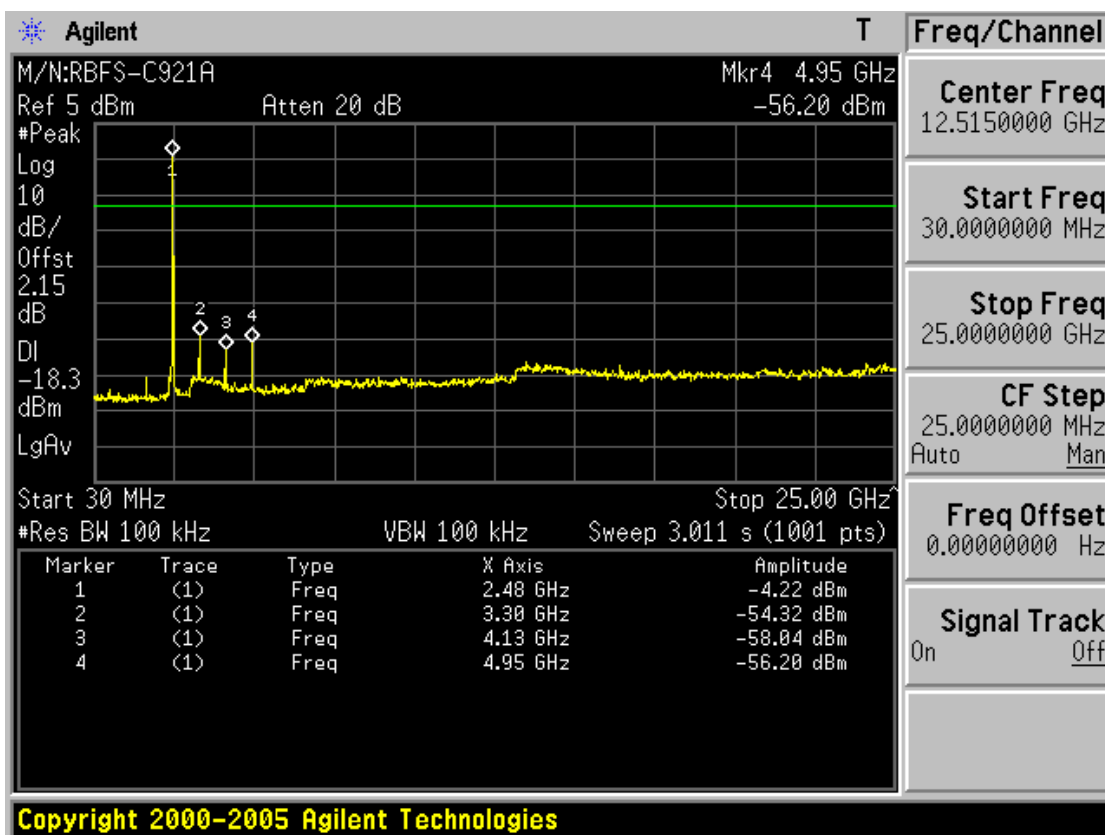
### High band with hopping disabled (EDR 3Mbps)



### High band with hopping enabled (EDR 3Mbps)



### High channel spurious (EDR 3Mbps)



### 3.2.7 Radiated Emissions

**- Procedure:**

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = Low, Middle, High Channel

Frequency Range = 30 MHz ~ 10<sup>th</sup> harmonic.

RBW = 120 kHz ( 30MHz ~ 1 GHz)

Quasi-Peak

= 1 MHz (1 GHz ~ 10<sup>th</sup> harmonic )

VBW ≥ RBW ( Peak) / VBW = 10Hz (Average)

Trace = max hold

Sweep = auto

**- Measurement Data: Comply**

- Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.
- Refer to the next page.

**- Minimum Standard:**

▪ **FCC Part 15.209(a) and (b)**

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

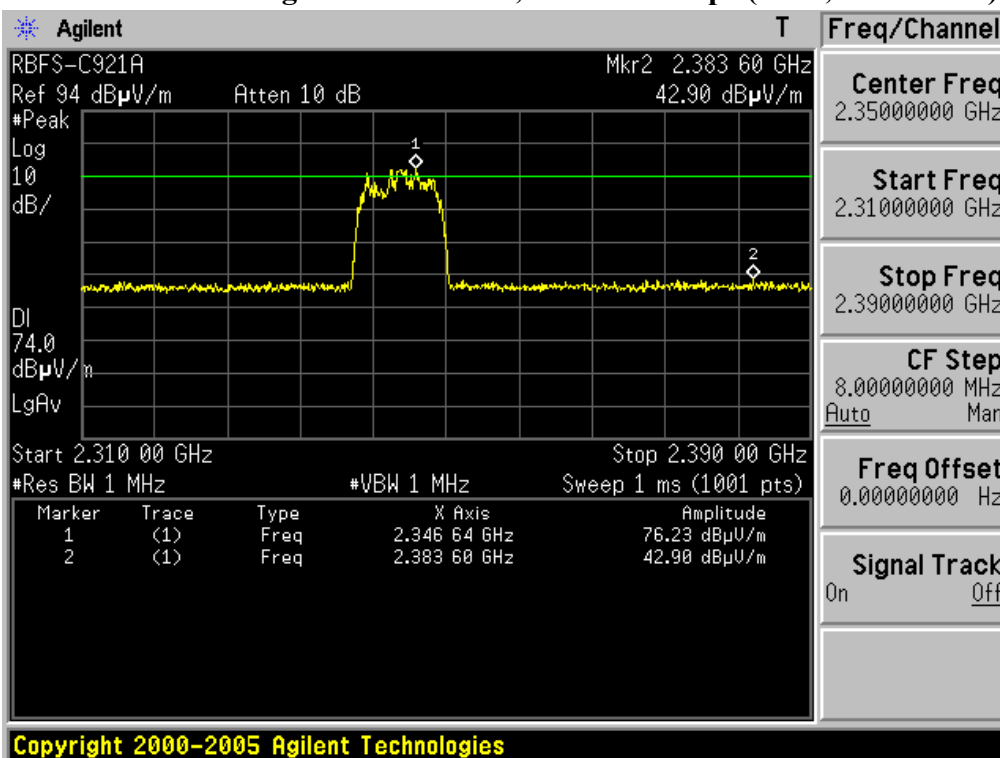
\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ **FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	12.29 ~ 12.293	149.9 ~ 150.05	1645.5 ~ 1646.5	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.51975 ~ 12.52025	156.52475 ~ 156.52525	1660 ~ 1710	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.57675 ~ 12.57725	156.7 ~ 156.9	1718.8 ~ 1722.2	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	13.36 ~ 13.41	162.0125 ~ 167.17	2200 ~ 2300	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	16.42 ~ 16.423	167.72 ~ 173.2	2310 ~ 2390	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.69475 ~ 16.69525	240 ~ 285	2483.5 ~ 2500	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.80425 ~ 16.80475	322 ~ 335.4	2655 ~ 2900	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	25.5 ~ 25.67	399.90 ~ 410	3260 ~ 3267	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	37.5 ~ 38.25	608 ~ 614	3332 ~ 3339		
8.291 ~ 8.294	73 ~ 74.6	960 ~ 1240	3345.8 ~ 3358		
8.362 ~ 8.366	74.8 ~ 75.2	1300 ~ 1427	3600 ~ 4400		
8.37625 ~ 8.38675	108 ~ 121.94	1435 ~ 1626.5			
8.41425 ~ 8.41475	123 ~ 138				

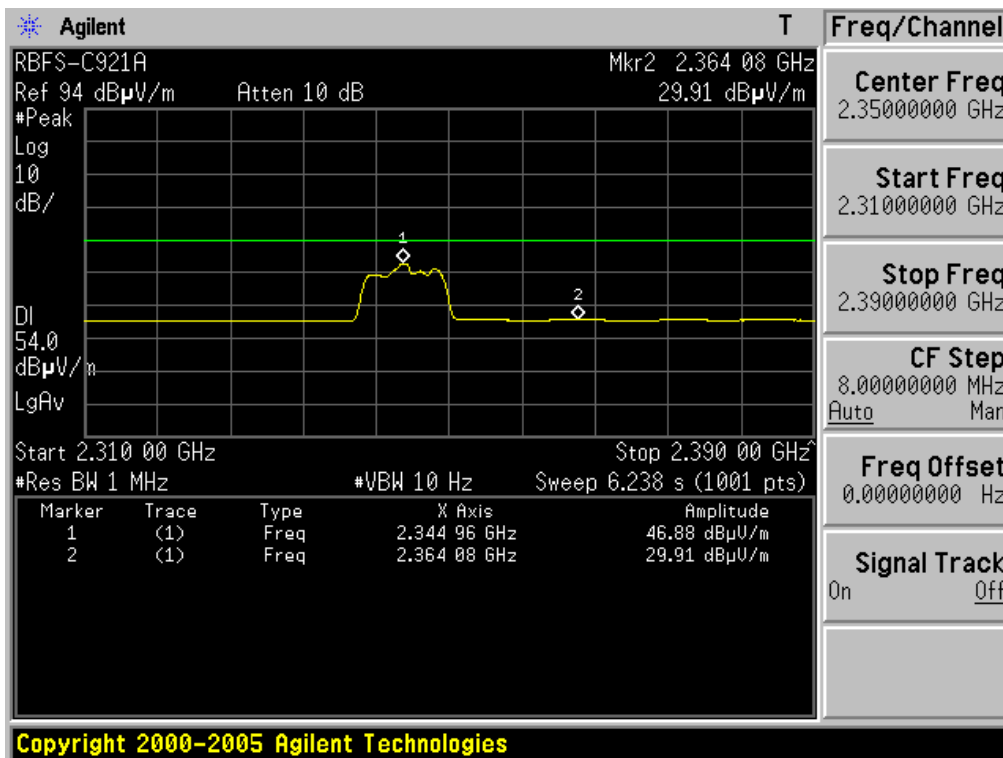
▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

**Restricted Band Edge: Low Channel, Normal 1Mbps (Peak, Horizontal)**



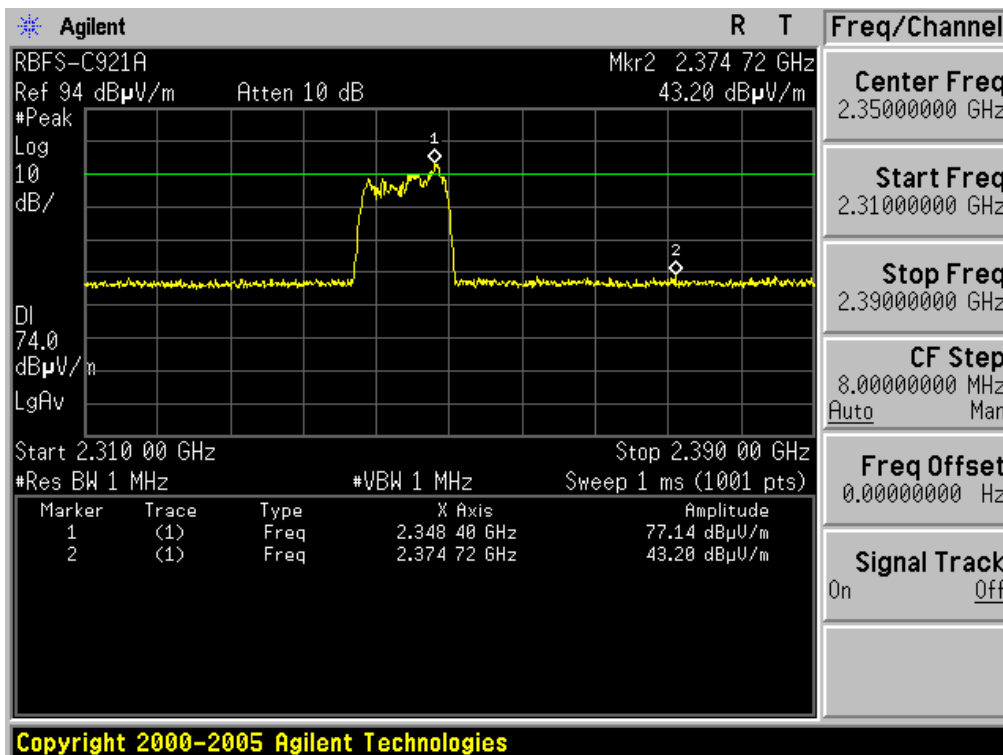
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea.

**Restricted Band Edge: Low Channel, Normal 1Mbps (Average, Horizontal)**



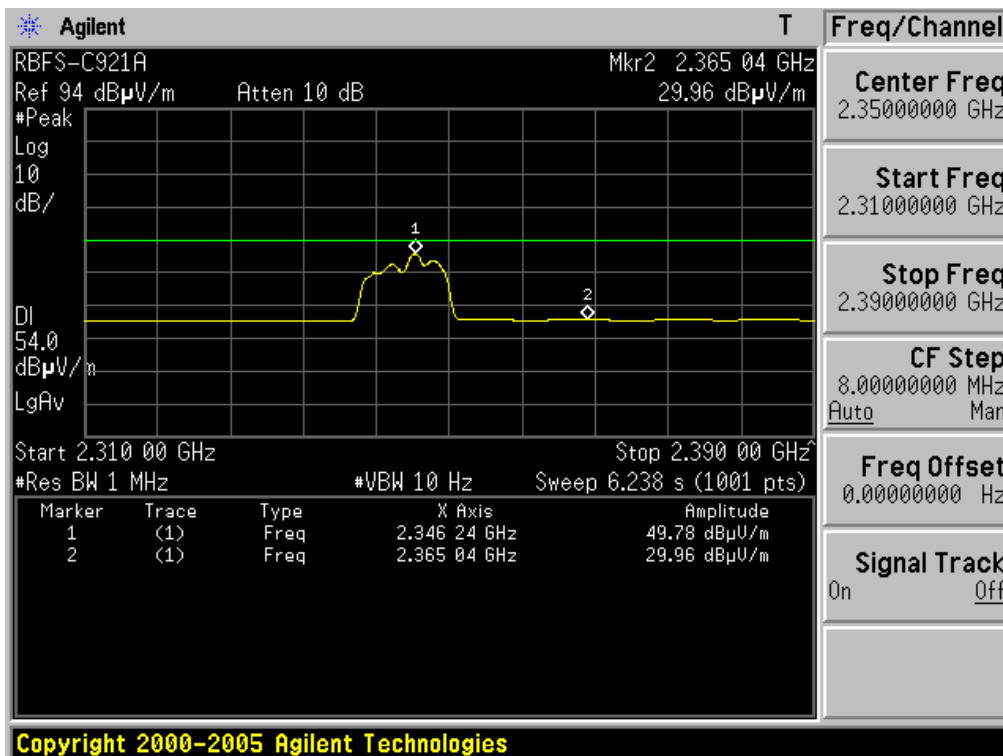
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

**Restricted Band Edge: Low Channel, Normal 1Mbps (Peak, Vertical)**



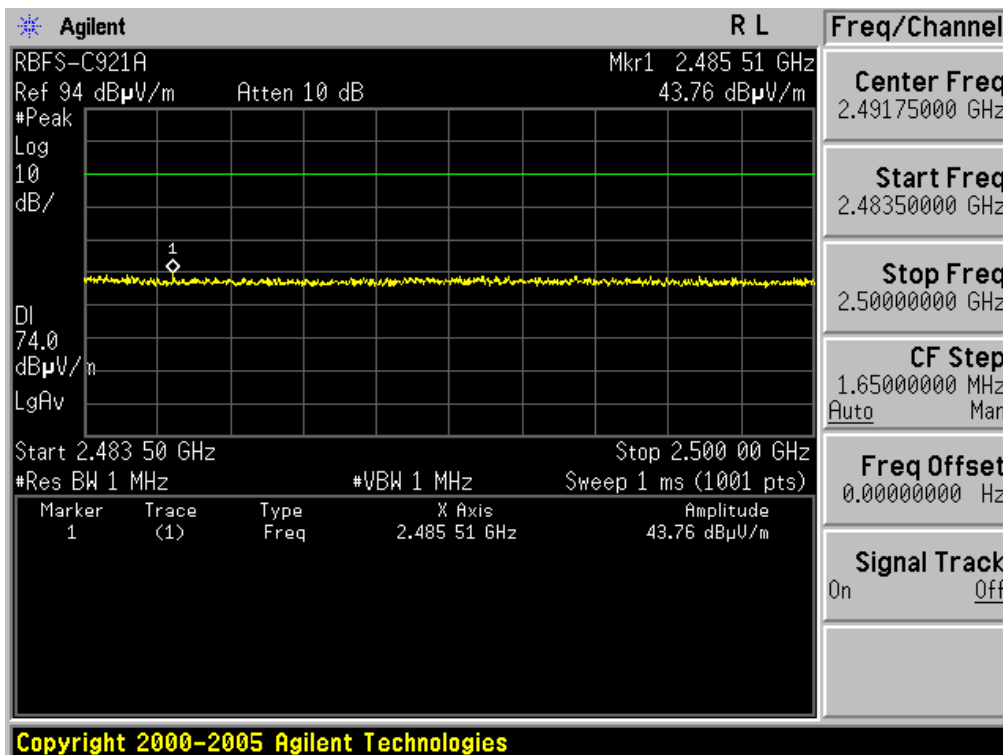
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

**Restricted Band Edge: Low Channel, Normal 1Mbps (Average, Vertical)**

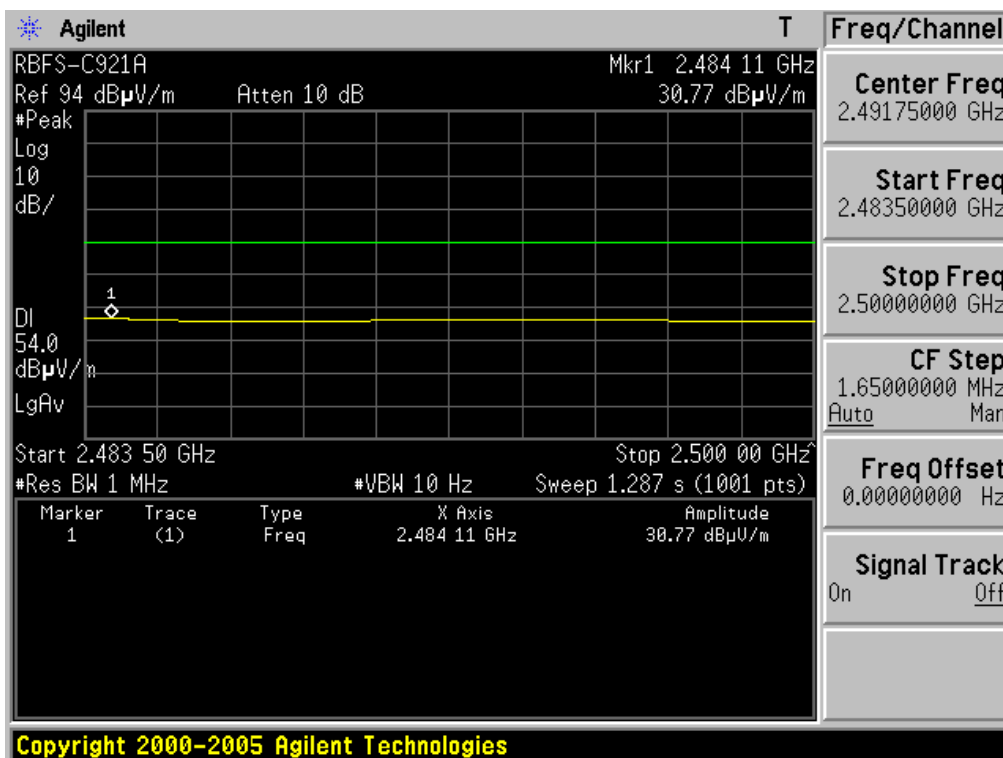


Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

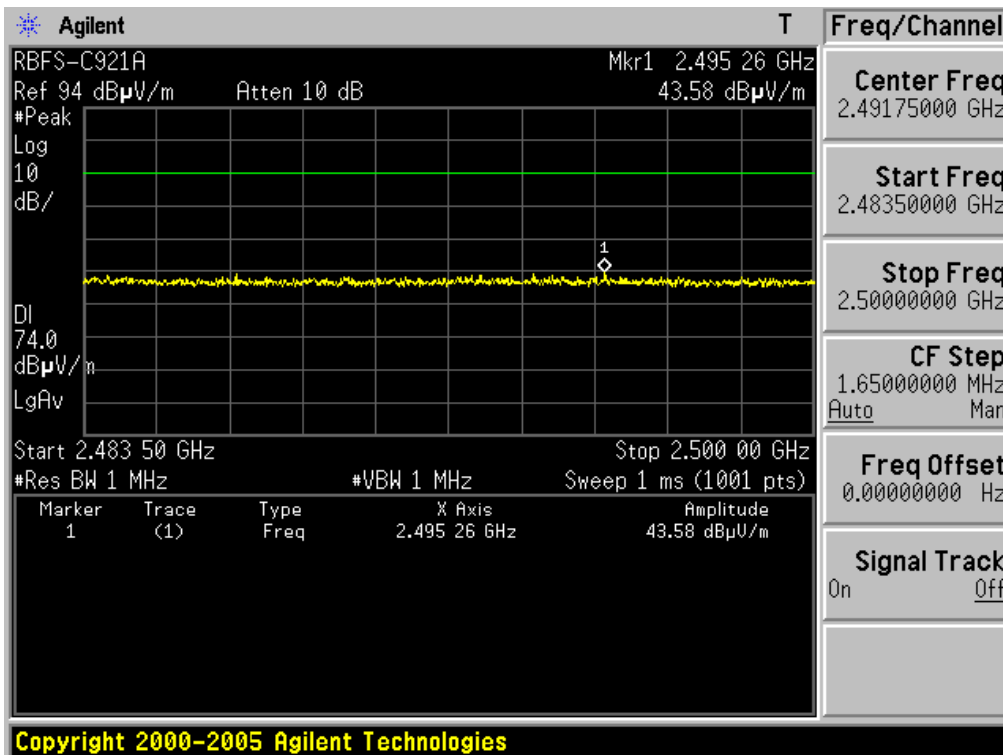
**Restricted Band Edge: High Channel, Normal 1Mbps (Peak, Horizontal)**



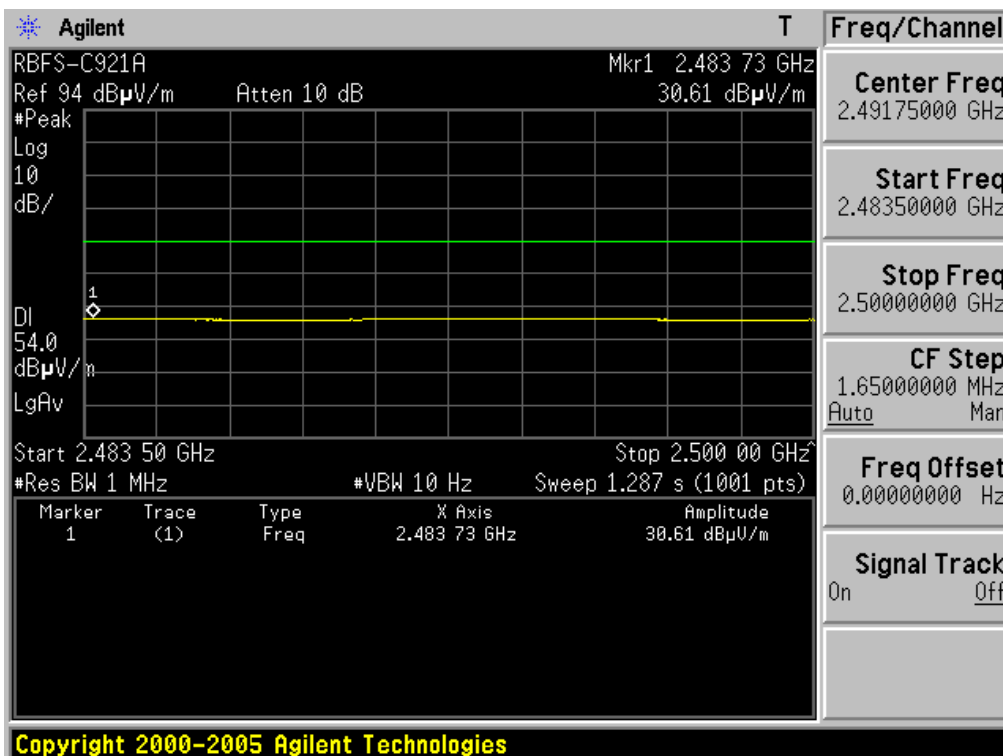
**Restricted Band Edge: High Channel, Normal 1Mbps (Average, Horizontal)**



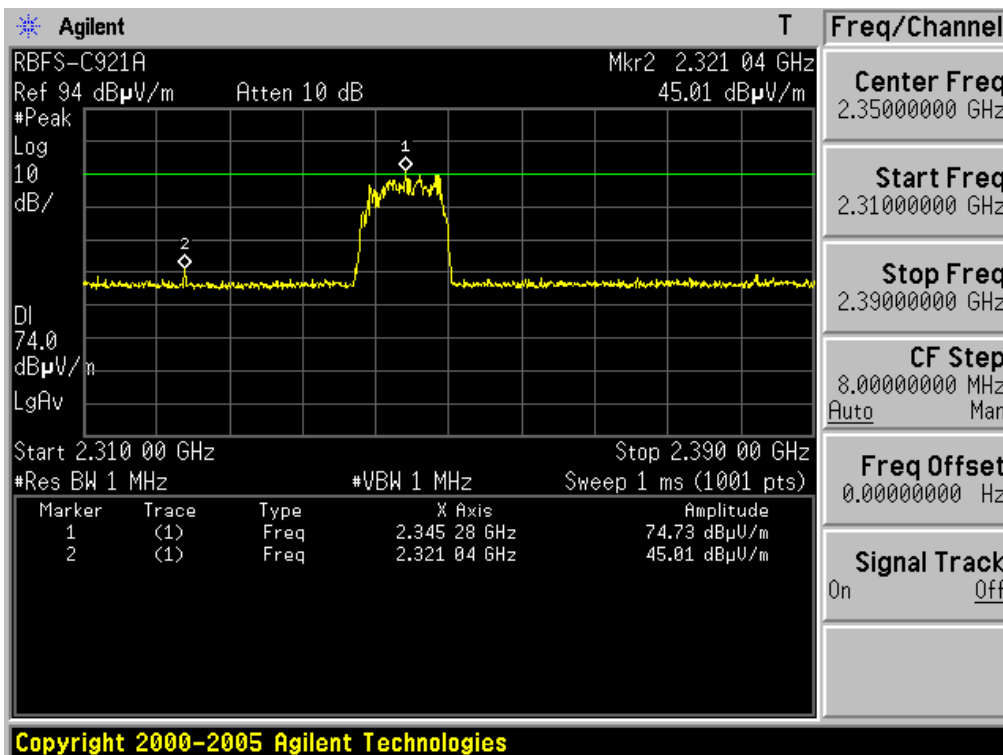
**Restricted Band Edge: High Channel, Normal 1Mbps (Peak, Vertical)**



**Restricted Band Edge: High Channel, Normal 1Mbps (Average, Vertical)**

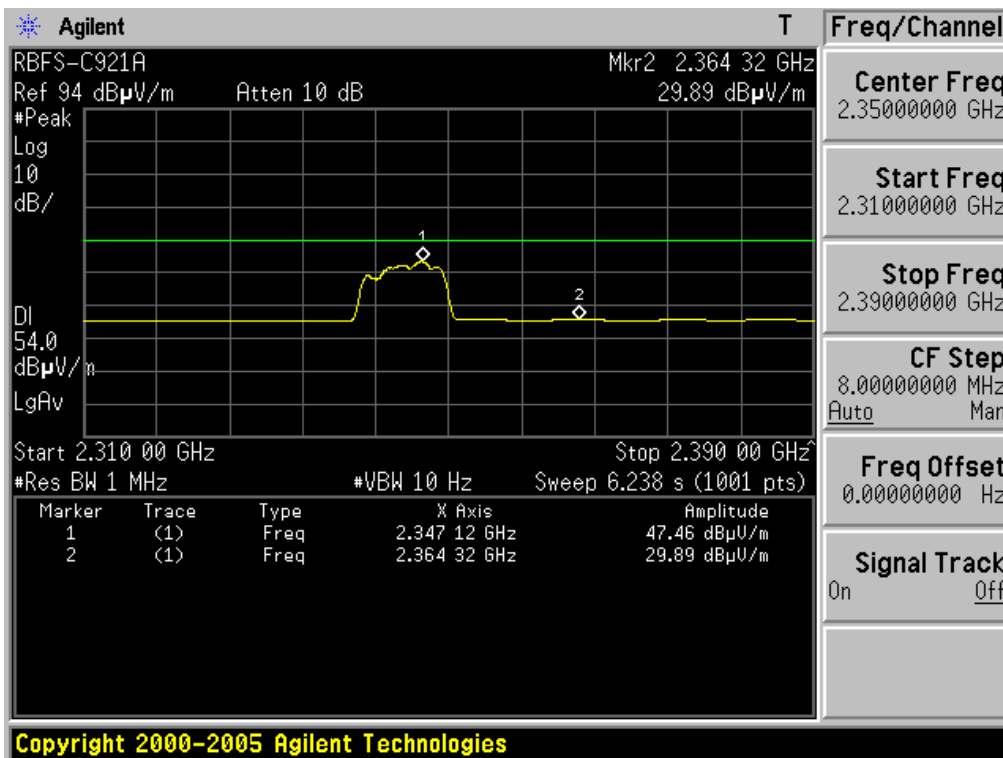


**Restricted Band Edge: Low Channel, EDR 2Mbps (Peak, Horizontal)**



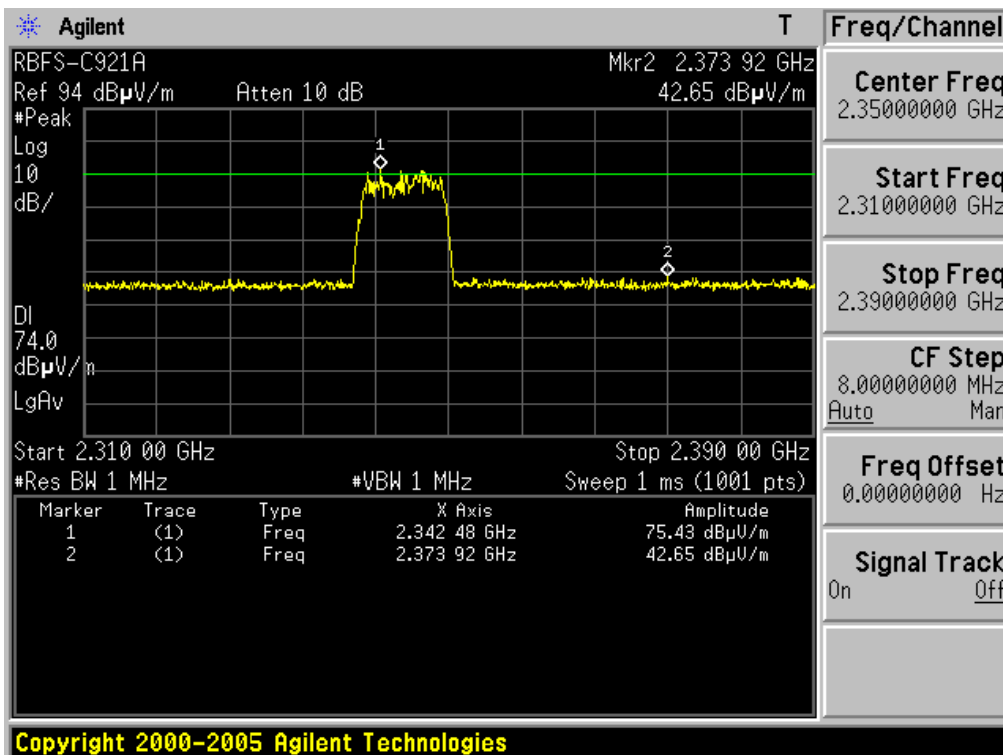
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

**Restricted Band Edge: Low Channel, EDR 2Mbps (Average, Horizontal)**



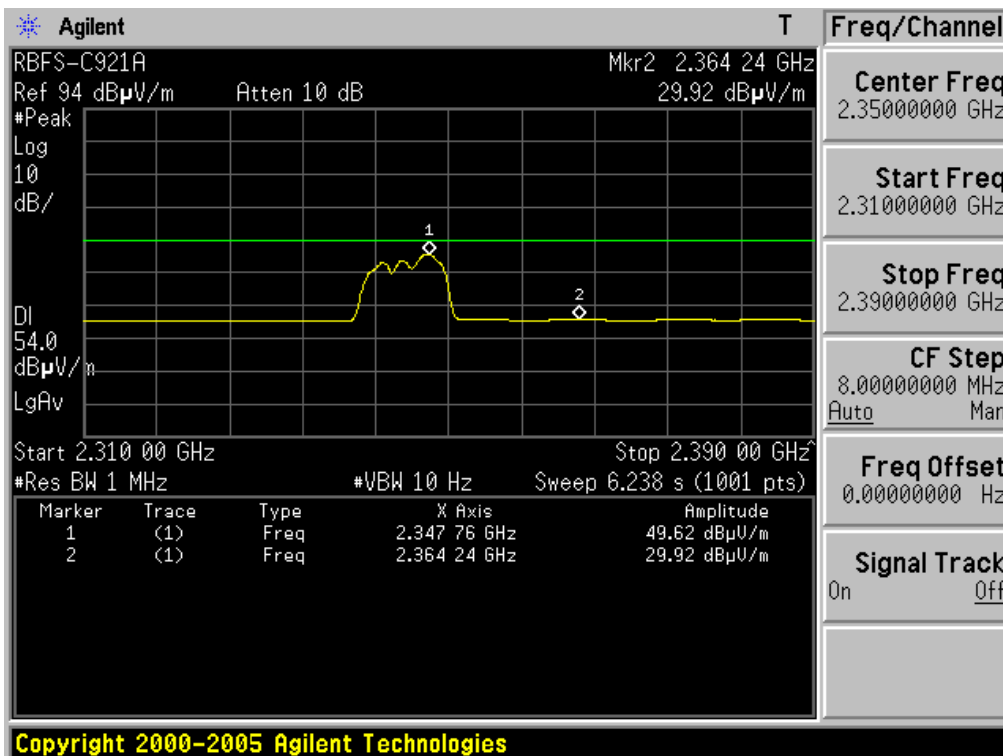
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

**Restricted Band Edge: Low Channel, EDR 2Mbps (Peak, Vertical)**



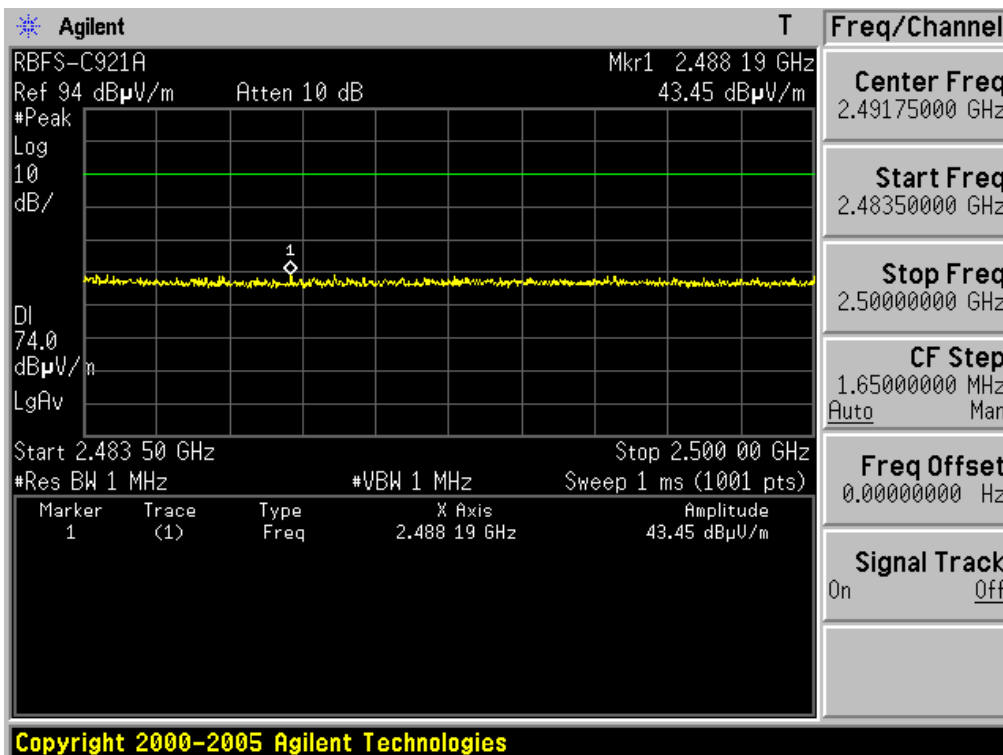
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

**Restricted Band Edge: Low Channel, EDR 2Mbps (Average, Vertical)**

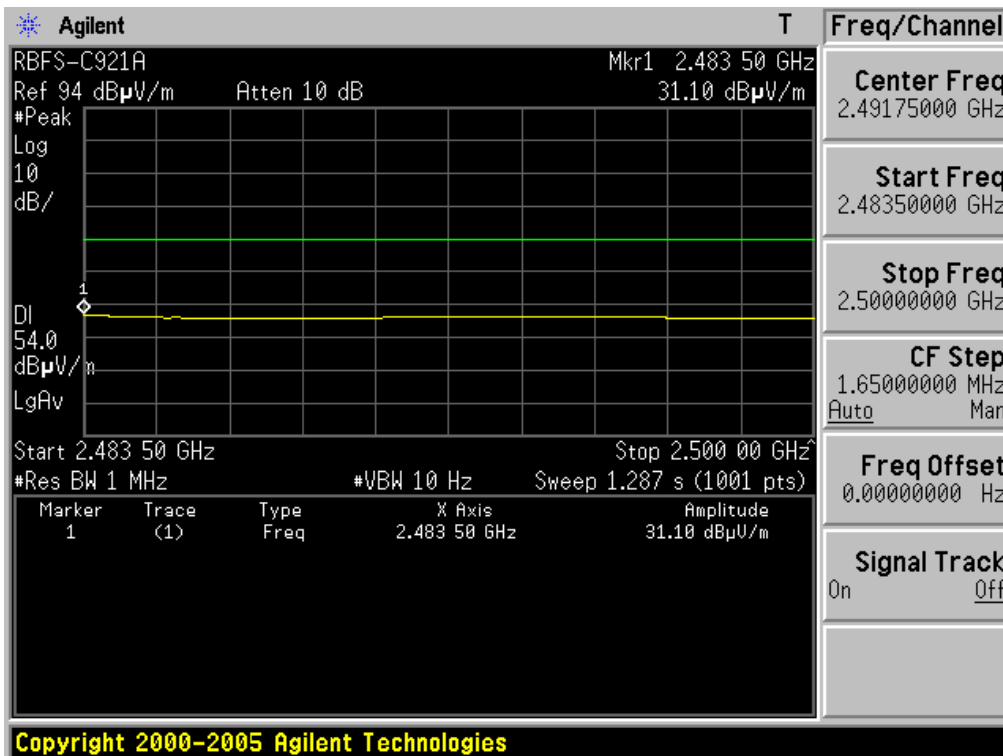


Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

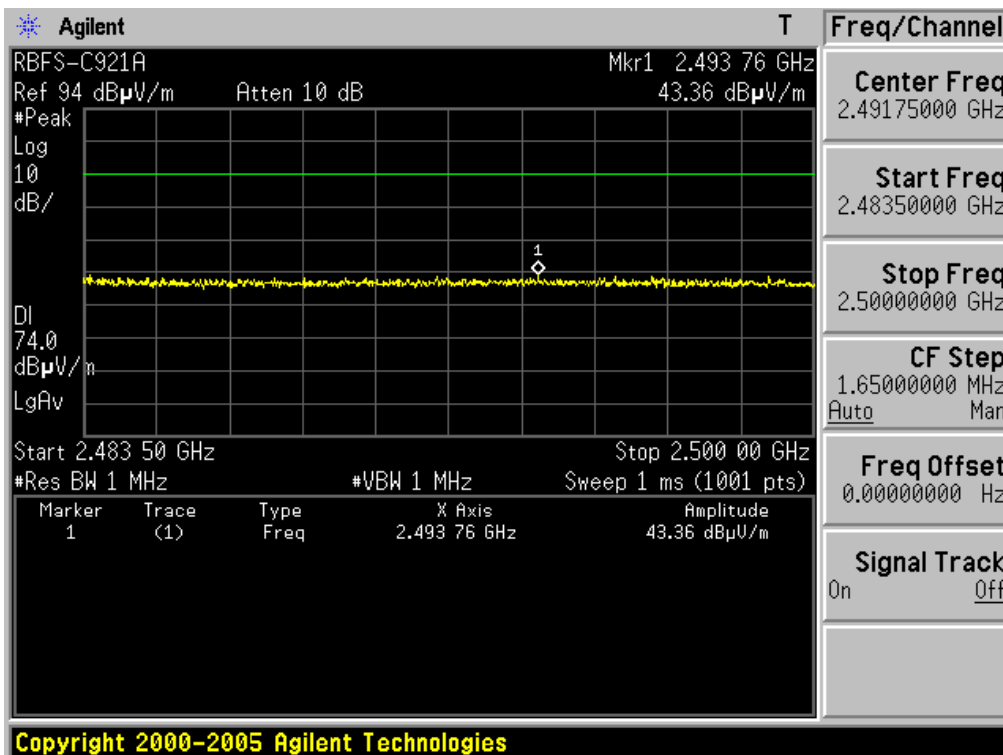
**Restricted Band Edge: High Channel, EDR 2Mbps (Peak, Horizontal)**



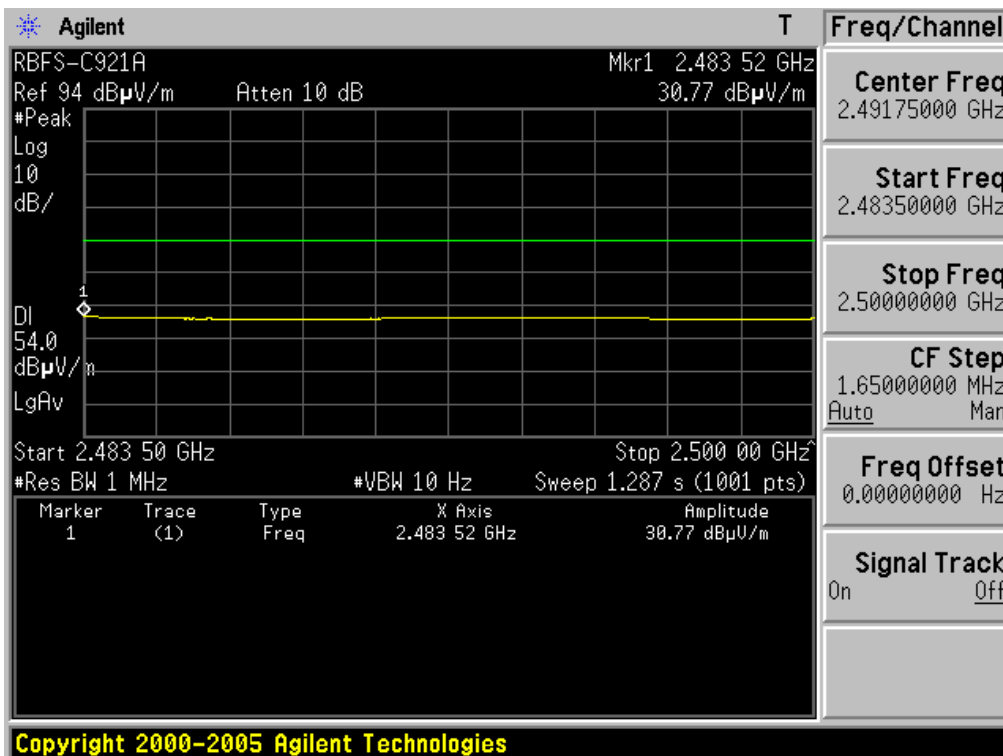
**Restricted Band Edge: High Channel, EDR 2Mbps (Average, Horizontal)**



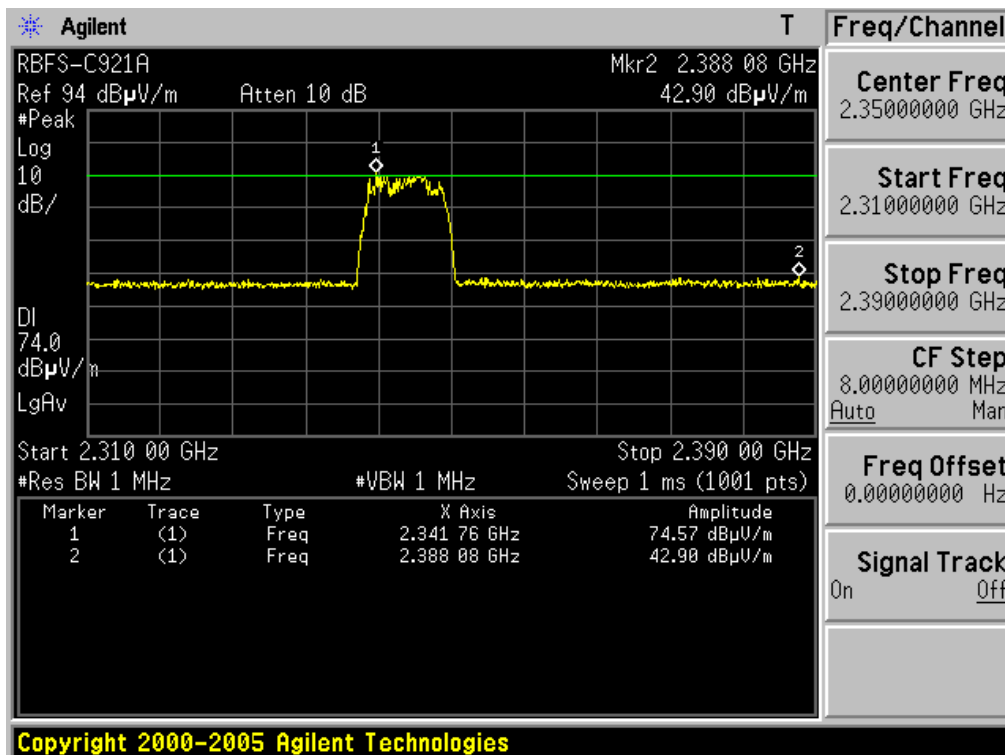
**Restricted Band Edge: High Channel, EDR 2Mbps (Peak, Vertical)**



**Restricted Band Edge: High Channel, EDR 2Mbps (Average, Vertical)**

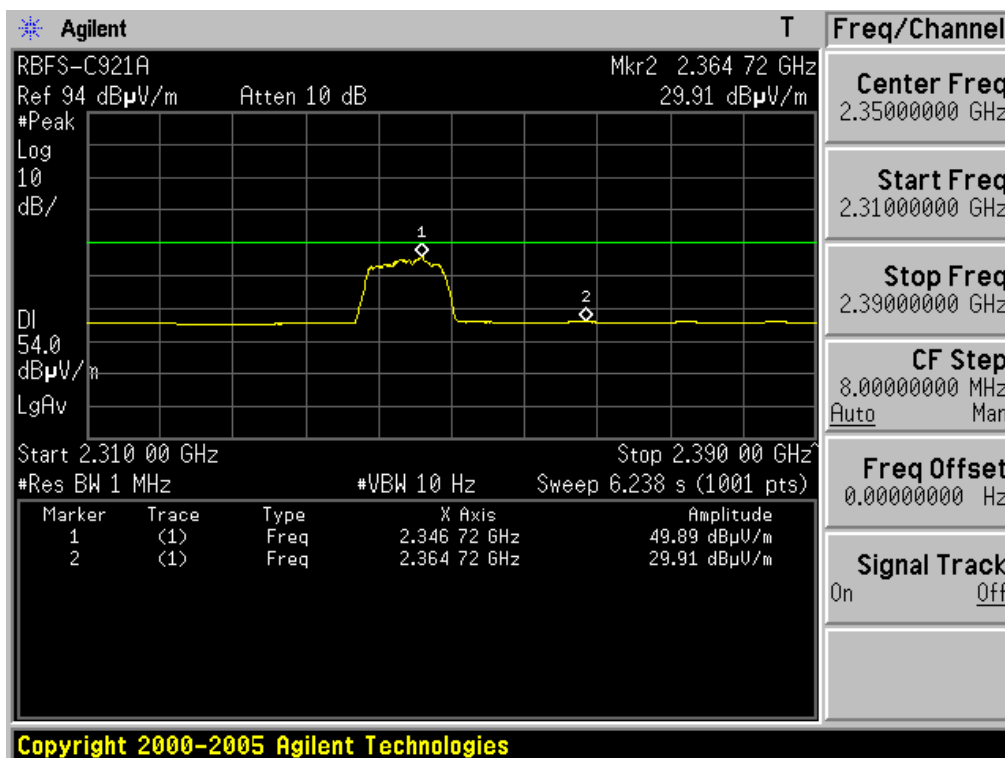


**Restricted Band Edge: Low Channel, EDR 3Mbps (Peak, Horizontal)**



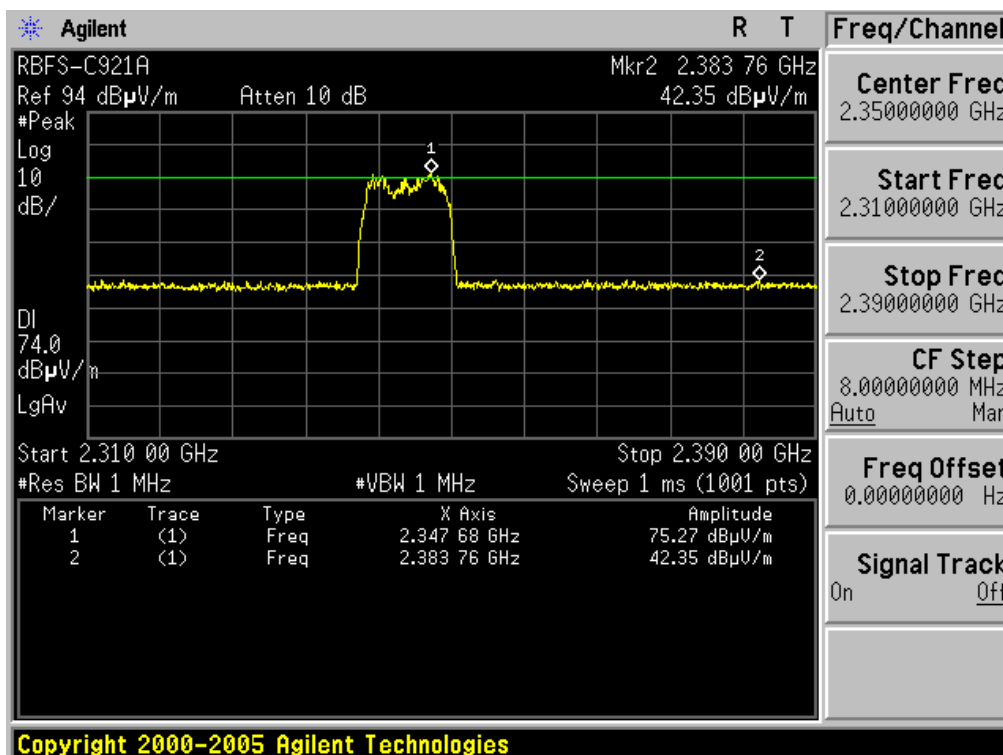
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

**Restricted Band Edge: Low Channel, EDR 3Mbps (Average, Horizontal)**



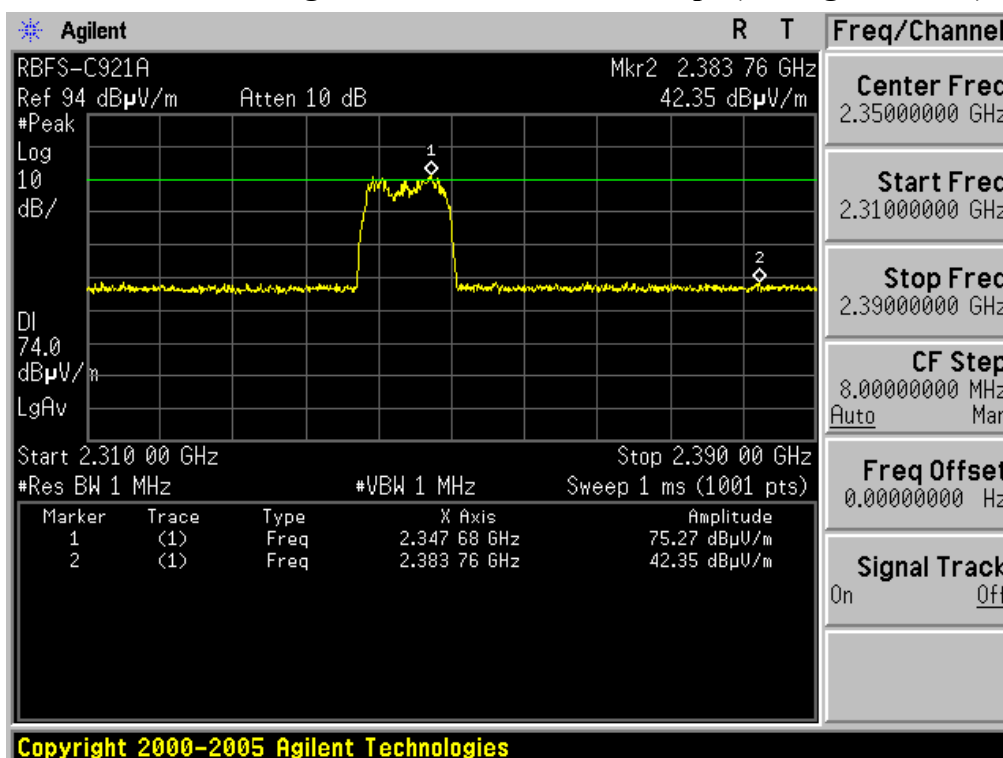
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

### Restricted Band Edge: Low Channel, EDR 3Mbps (Peak, Vertical)



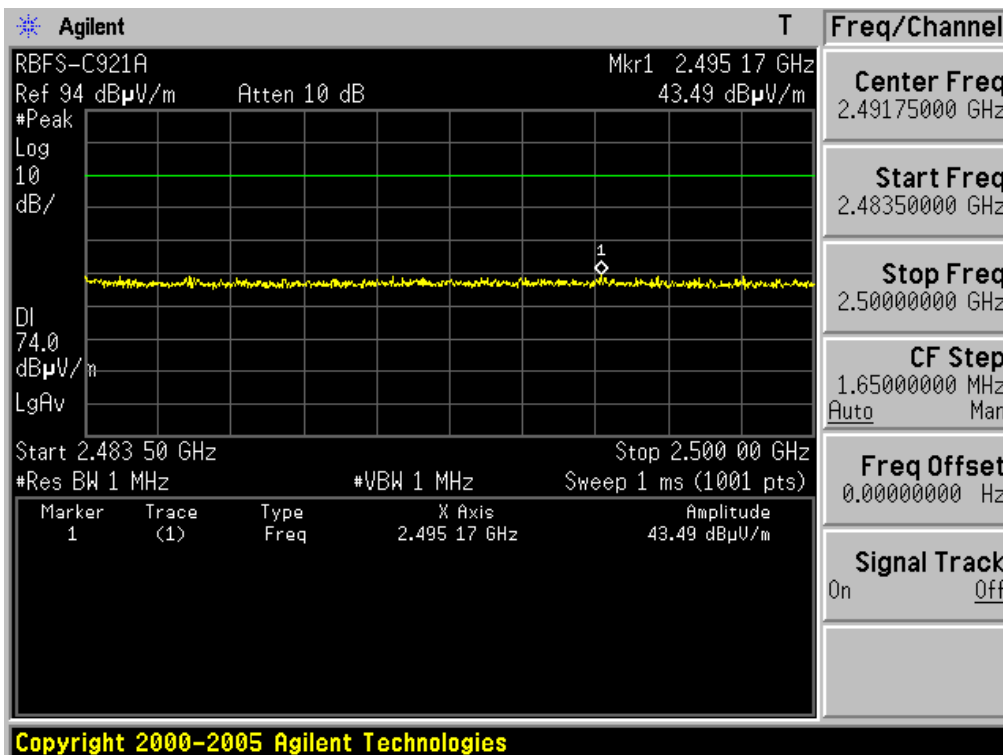
Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

### Restricted Band Edge: Low Channel, EDR 3Mbps (Average, Vertical)

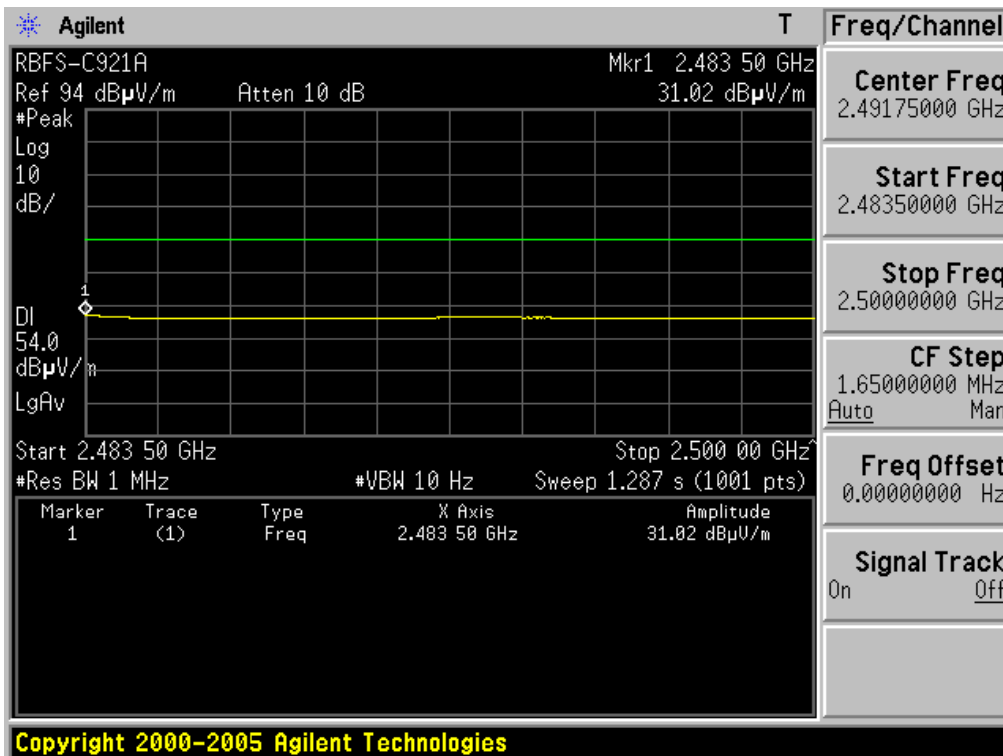


Marker 1's emissions of the low band edge test plots are emissions from WIMAX downlink signal in Korea

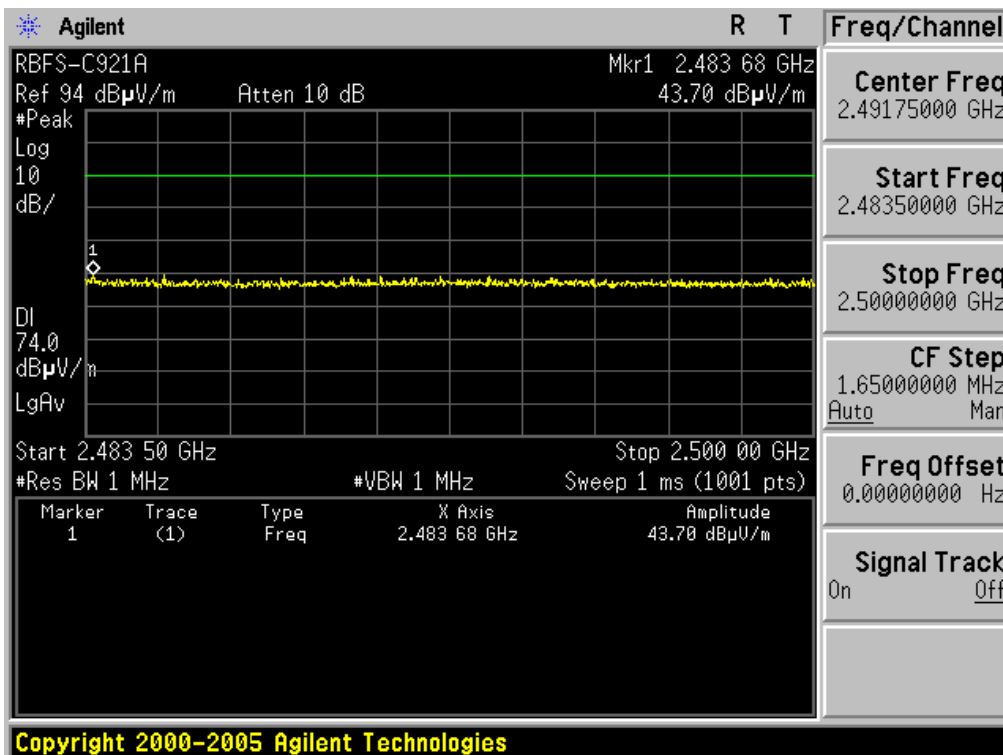
**Restricted Band Edge: High Channel, EDR 3Mbps (Peak, Horizontal)**



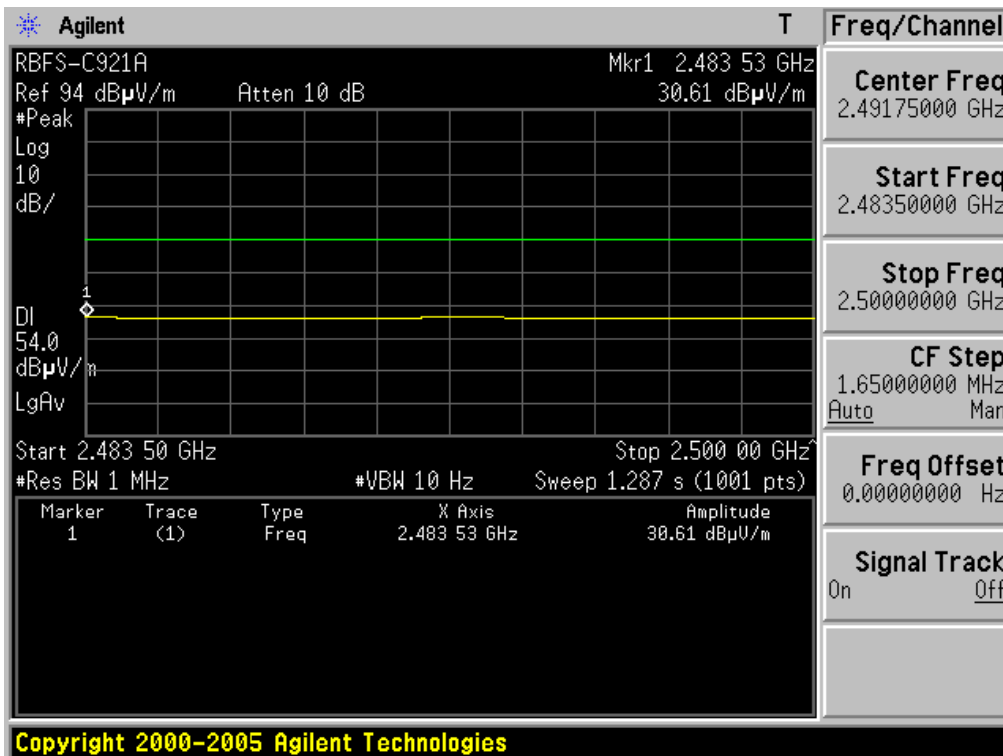
**Restricted Band Edge: High Channel, EDR 3Mbps (Average, Horizontal)**



**Restricted Band Edge: High Channel, EDR 3Mbps (Peak, Vertical)**



**Restricted Band Edge: High Channel, EDR 3Mbps (Average, Vertical)**



- Normal, 1Mbps

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2402MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
80.537	V	47.40	-	-	-13.90	33.50	-	-	40.00	-	-	6.50	-	-
95.995	V	45.10	-	-	-11.30	33.80	-	-	43.50	-	-	9.70	-	-
192.001	V	55.40	-	-	-10.70	44.70	-	-	43.50	-	-	1.20	-	-
768.008	H	37.70	-	-	-0.20	37.50	-	-	46.00	-	-	8.50	-	-
959.988	H	33.50	-	-	2.60	36.10	-	-	46.00	-	-	9.90	-	-
4804	H	-	45.12	31.89	6.37	-	51.49	38.26	-	74	54	-	22.51	15.74
4804	V	-	45.11	31.18	6.37	-	51.48	37.55	-	74	54	-	22.52	16.45

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2441MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
80.540	V	47.20	-	-	-13.90	33.30	-	-	40.00	-	-	6.70	-	-
191.999	V	52.10	-	-	-10.70	41.40	-	-	43.50	-	-	2.10	-	-
768.003	H	37.50	-	-	-0.20	37.30	-	-	46.00	-	-	8.70	-	-
4882	H	-	43.50	30.20	6.69	-	50.19	36.89	-	74	54	-	23.81	17.11
4882	V	-	44.54	31.21	6.69	-	51.23	37.90	-	74	54	-	22.77	16.10

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2480MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
80.540	V	47.00	-	-	-13.90	33.10	-	-	40.00	-	-	6.90	-	-
192.003	V	52.20	-	-	-10.70	41.50	-	-	43.50	-	-	2.00	-	-
767.998	H	37.50	-	-	-0.20	37.30	-	-	46.00	-	-	8.70	-	-
4960	H	-	44.09	30.73	7.18	-	51.27	37.91	-	74	54	-	22.73	16.09
4960	V	-	44.22	31.57	7.18	-	51.40	38.75	-	74	54	-	22.60	15.25

Note.

1. No other spurious were detected at a level greater than 10dB below limit.
2. If peak result meet AV limit, AV measurement is omitted.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

- EDR, 2Mbps

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2402MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB/m)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
80.543	V	47.10	-	-	-13.90	33.20	-	-	40.00	-	-	6.80	-	-
84.558	V	45.10	-	-	-13.20	31.90	-	-	40.00	-	-	8.10	-	-
96.013	V	45.00	-	-	-11.30	33.70	-	-	43.50	-	-	9.80	-	-
192.002	V	51.60	-	-	-10.70	40.90	-	-	43.50	-	-	2.60	-	-
768.007	H	36.60	-	-	-0.20	36.40	-	-	46.00	-	-	9.60	-	-
4804	H	-	43.63	29.51	6.37	-	50.00	35.88	-	74	54	-	24.00	18.12
4804	V	-	43.61	29.36	6.37	-	49.98	35.73	-	74	54	-	24.02	18.27

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2441MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB/m)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
80.529	V	47.40	-	-	-13.90	33.50	-	-	40.00	-	-	6.50	-	-
96.000	V	45.20	-	-	-11.30	33.90	-	-	43.50	-	-	9.60	-	-
192.001	V	51.80	-	-	-10.70	41.10	-	-	43.50	-	-	2.40	-	-
768.004	H	37.20	-	-	-0.20	37.00	-	-	46.00	-	-	9.00	-	-
4882	H	-	43.39	29.37	6.69	-	50.08	36.06	-	74	54	-	23.92	17.94
4882	V	-	43.69	29.25	6.69	-	50.38	35.94	-	74	54	-	23.62	18.06

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2480MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB/m)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
78.513	V	47.10	-	-	-14.20	32.90	-	-	40.00	-	-	7.10	-	-
192.000	V	52.00	-	-	-10.70	41.30	-	-	43.50	-	-	2.20	-	-
768.008	H	37.50	-	-	-0.20	37.30	-	-	46.00	-	-	8.70	-	-
4960	H	-	42.60	28.45	7.18	-	49.78	35.63	-	74	54	-	24.22	18.37
4960	V	-	42.48	28.42	7.18	-	49.66	35.60	-	74	54	-	24.34	18.40

Note.

4. No other spurious were detected at a level greater than 10dB below limit.
5. If peak result meet AV limit, AV measurement is omitted.
6. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

- EDR, 3Mbps

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2402MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB/m)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
78.521	V	46.70	-	-	-14.20	32.50	-	-	40.00	-	-	7.50	-	-
96.000	V	45.10	-	-	-11.30	33.80	-	-	43.50	-	-	9.70	-	-
191.995	V	52.00	-	-	-10.70	41.30	-	-	43.50	-	-	2.20	-	-
768.014	H	37.30	-	-	-0.20	37.10	-	-	46.00	-	-	8.90	-	-
4804	H	-	43.40	29.48	6.37	-	49.77	35.85	-	74	54	-	24.23	18.15
4804	V	-	43.34	29.43	6.37	-	49.71	35.80	-	74	54	-	24.29	18.20

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2441MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB/m)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
78.527	V	46.90	-	-	-14.20	32.70	-	-	40.00	-	-	7.30	-	-
95.991	V	45.10	-	-	-11.30	33.80	-	-	43.50	-	-	9.70	-	-
191.998	V	52.10	-	-	-10.70	41.40	-	-	43.50	-	-	2.10	-	-
768.004	H	37.60	-	-	-0.20	37.40	-	-	46.00	-	-	0.60	-	-
4882	H	-	43.76	28.91	6.69	-	50.45	35.60	-	74	54	-	23.55	18.40
4882	V	-	43.56	29.08	6.69	-	50.2	35.77	-	74	54	-	23.75	18.23

Harmonic and other emissions Measurement Data: Fundamental Frequency = 2480MHz

Frequency (MHz)	ANT Pol	Reading(dBuV)			T.F (dB/m)	Result(dBuV/m)			Limit(dBuV/m)			Margin(dB)		
		QP	PK	AV		QP	PK	AV	QP	PK	AV	QP	PK	AV
80.337	V	47.20	-	-	-13.90	33.30	-	-	40.00	-	-	6.70	-	-
95.989	V	45.00	-	-	-11.30	33.70	-	-	43.50	-	-	9.80	-	-
192.000	V	52.20	-	-	-10.70	41.50	-	-	43.50	-	-	2.00	-	-
768.006	H	37.50	-	-	-0.20	37.30	-	-	46.00	-	-	8.70	-	-
4960	H	-	42.60	28.45	7.18	-	49.78	35.63	-	74	54	-	24.22	18.37
4960	V	-	42.48	28.42	7.18	-	49.66	35.60	-	74	54	-	24.23	18.40

Note.

7. No other spurious were detected at a level greater than 10dB below limit.
8. If peak result meet AV limit, AV measurement is omitted.
9. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

### 3.2.8 AC Line Conducted Emissions

**- Procedure:**

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak and average detector mode with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

**- Measurement Data: Comply**

**- Minimum Standard: FCC Part 15.207(a)/EN 55022**

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

\* Decreases with the logarithm of the frequency

**- Measurement Setup**

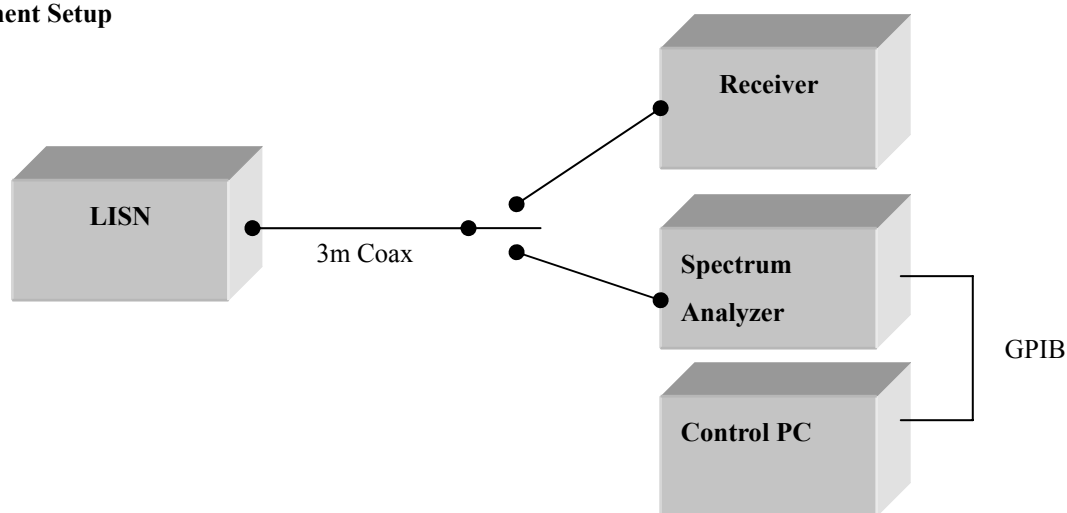
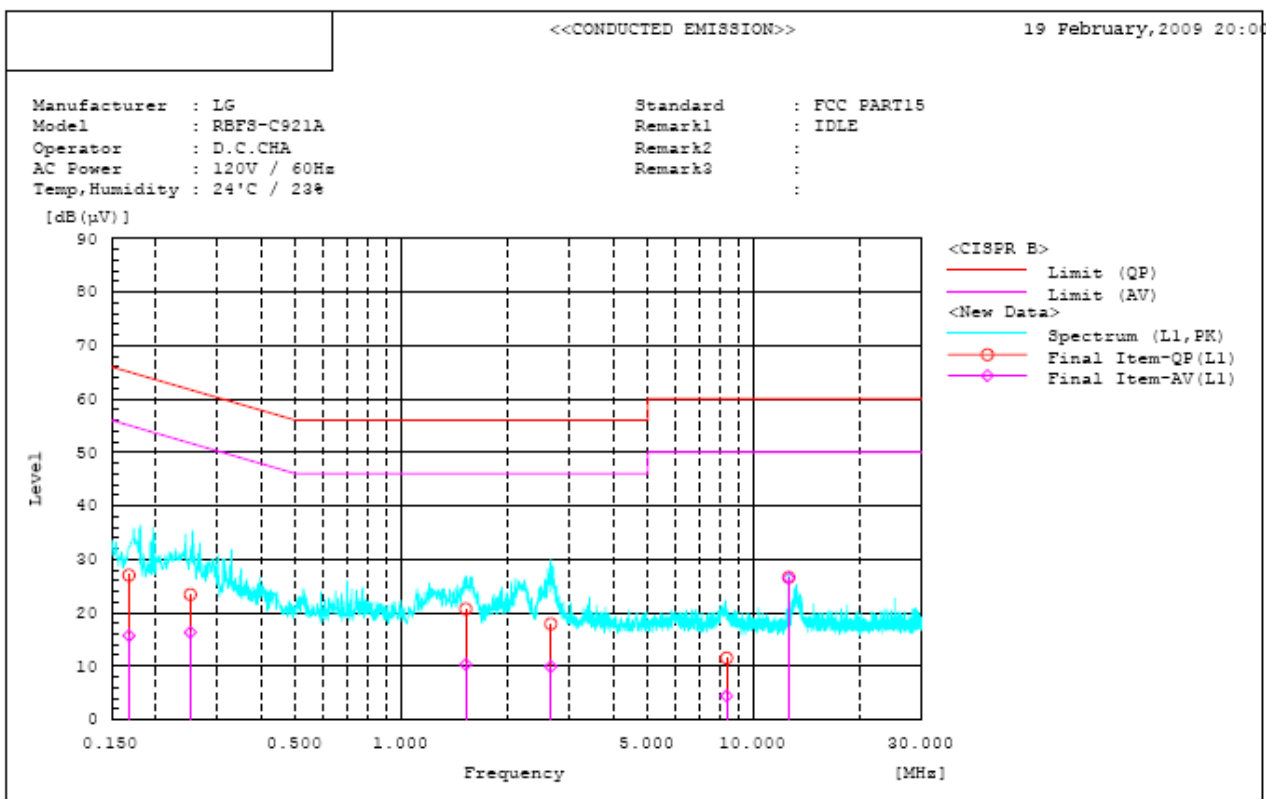
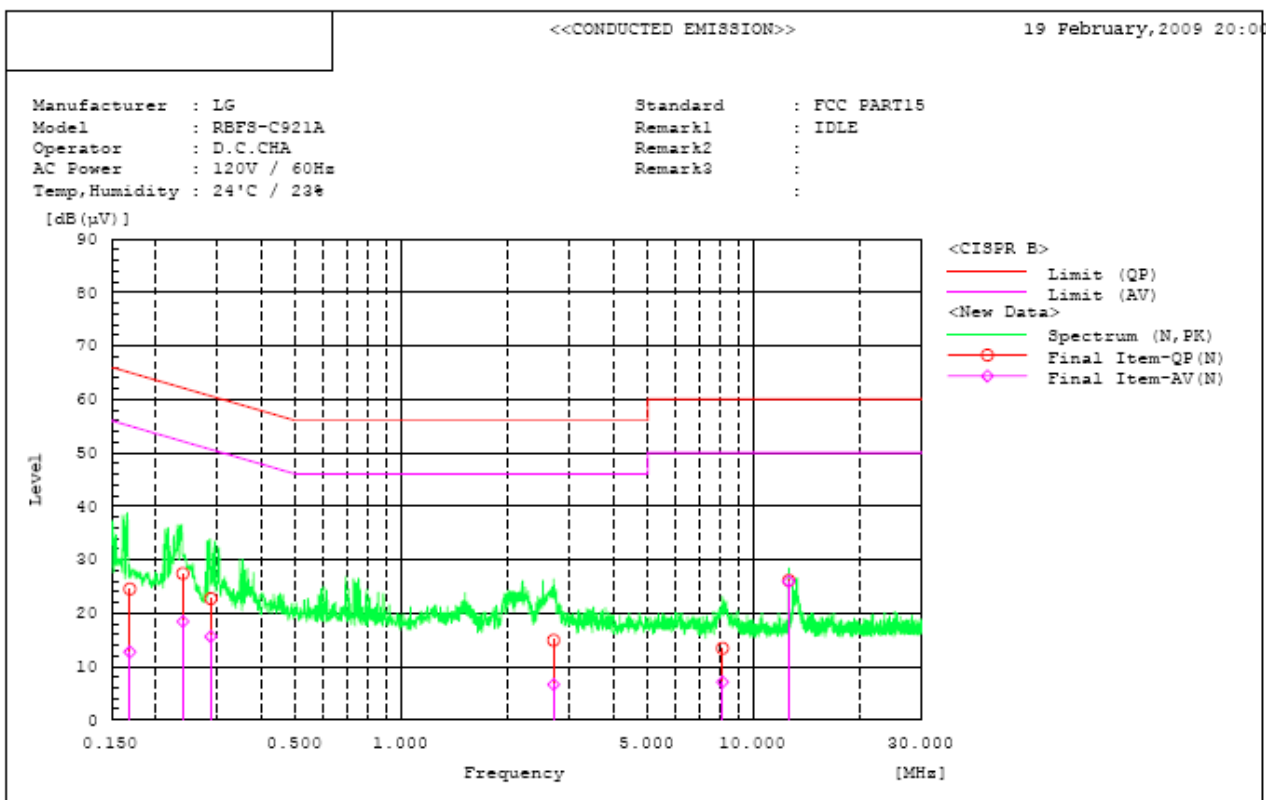


Figure 1: Measurement setup for AC Conducted Emission

- Conducted Emission Graph -



- Conducted Emission List -

<<CONDUCTED EMISSION>>

19 February, 2009 20:00

Standard : FCC PART15  
 Manufacturer : LG  
 Model : RBFS-C921A  
 Operator : D.C.CHA  
 AC Power : 120V / 60Hz  
 Temp, Humidity : 24°C / 23%  
 Remark1 : IDLE  
 Remark2 :  
 Remark3 :

Final Result

--- N Phase ---

No.	Frequency [MHz]	Reading		c.f	Result		Limit		Margin		Remark
		QP [dB(µV)]	AV [dB(µV)]		QP [dB(µV)]	AV [dB(µV)]	QP [dB(µV)]	AV [dB(µV)]	QP [dB]	AV [dB]	
1	0.169	24.4	12.6	0.1	24.6	12.7	65.0	55.0	40.5	42.3	
2	0.239	27.2	18.2	0.2	27.4	18.4	62.1	52.1	34.7	33.7	
3	0.297	22.5	15.4	0.2	22.7	15.6	60.6	50.6	37.9	35.0	
4	2.699	14.6	6.3	0.3	14.9	6.6	56.0	46.0	41.1	39.4	
5	8.141	12.9	6.6	0.5	13.4	7.1	60.0	50.0	46.6	42.9	
6	12.549	25.5	25.3	0.6	26.1	25.9	60.0	50.0	33.9	24.1	

--- L1 Phase ---

No.	Frequency [MHz]	Reading		c.f	Result		Limit		Margin		Remark
		QP [dB(µV)]	AV [dB(µV)]		QP [dB(µV)]	AV [dB(µV)]	QP [dB(µV)]	AV [dB(µV)]	QP [dB]	AV [dB]	
1	0.168	26.6	15.3	0.4	27.0	15.7	65.1	55.1	38.1	39.4	
2	0.251	23.0	15.9	0.4	23.4	16.3	61.7	51.7	38.3	35.4	
3	1.518	20.2	9.8	0.5	20.7	10.3	56.0	46.0	35.3	35.7	
4	2.649	17.3	9.3	0.6	17.9	9.9	56.0	46.0	38.1	36.1	
5	8.362	10.8	3.7	0.7	11.5	4.4	60.0	50.0	48.5	45.6	
6	12.549	25.9	25.7	0.8	26.6	26.5	60.0	50.0	33.4	23.5	

APPENDIX  
TEST EQUIPMENT FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
<input checked="" type="checkbox"/>	Spectrum Analyzer	Agilent	E4440A	06/11/08	06/11/09	MY45304199
<input type="checkbox"/>	Spectrum Analyzer(RE)	H.P	8563E	13/10/08	13/10/09	3551A04634
<input type="checkbox"/>	Spectrum Analyzer	Rohde Schwarz	FSP	09/09/08	09/09/09	100385
<input type="checkbox"/>	Power Meter	H.P	EMP-442A	10/07/08	10/07/09	GB37170413
<input type="checkbox"/>	Power Sensor	H.P	8481A	14/07/08	14/07/09	3318A96332
<input type="checkbox"/>	Power Divider	Agilent	11636B	04/12/08	04/12/09	56471
<input type="checkbox"/>	Power Splitter	Anritsu	K241B	14/10/08	14/10/09	020611
<input type="checkbox"/>	Frequency Counter	H.P	5342A	16/09/08	16/09/09	2119A04450
<input type="checkbox"/>	TEMP & HUMIDITY Chamber	JISCO	KR-100/J-RHC2	10/10/08	10/10/09	30604493/021031
<input type="checkbox"/>	Digital Multimeter	H.P	34401A	20/03/08	20/03/09	3146A13475
<input type="checkbox"/>	Thermo hygrometer	BODYCOM	BJ5478	06/02/09	06/02/10	090205-3
<input checked="" type="checkbox"/>	Thermo hygrometer	BODYCOM	BJ5478	06/02/09	06/02/10	090205-2
<input type="checkbox"/>	Thermo hygrometer	BODYCOM	BJ5478	06/02/09	06/02/10	090205-4
<input type="checkbox"/>	Multifunction Synthesizer	HP	8904A	06/10/08	06/10/09	3633A08404
<input checked="" type="checkbox"/>	Signal Generator	Rohde Schwarz	SMR20	02/04/08	02/04/09	101251
<input checked="" type="checkbox"/>	Signal Generator	H.P	ESG-3000A	09/07/08	09/07/09	US37230529
<input type="checkbox"/>	Vector Signal Generator	Rohde Schwarz	SMJ100A	02/02/09	02/02/10	100148
<input type="checkbox"/>	Audio Analyzer	H.P	8903B	09/07/08	09/07/09	3011A09448
<input type="checkbox"/>	Modulation Analyzer	H.P	8901B	18/07/08	18/07/09	3028A03029
<input type="checkbox"/>	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	31/07/08	31/07/09	GB43461134
<input type="checkbox"/>	Universal Radio communication Tester	Rohde Schwarz	CMU 200	02/04/08	02/04/09	107631
<input type="checkbox"/>	Bluetooth Tester	TESCOM	TC-3000A	16/12/08	16/12/09	3000A4A0121
<input type="checkbox"/>	BAND Reject Filter	Microwave Circuits	N0308372	06/10/08	06/10/09	3125-01DC0352
<input type="checkbox"/>	BAND Reject Filter	Wainwright	WRCG1750	06/10/08	06/10/09	2
<input type="checkbox"/>	High-Pass Filter	ANRITSU	MP526D	06/10/08	06/10/09	MP27756
<input type="checkbox"/>	High-pass filter	Wainwright	WHKX2.1	N/A	N/A	1
<input checked="" type="checkbox"/>	High-Pass Filter	Wainwright	WHKX3.0	N/A	N/A	9
<input type="checkbox"/>	Tunable Notch Filter	Wainwright	WRCT800.0 /960.0-0.2/40-8SSK	N/A	N/A	10
<input type="checkbox"/>	Tunable Notch Filter	Wainwright	WRCD1700.0 /2000.0-0.2/40-10SSK	N/A	N/A	27
<input type="checkbox"/>	Tunable Notch Filter	Wainwright	WRCT1900.0/ 2200.0-5/40-10SSK	N/A	N/A	7
<input type="checkbox"/>	AC Power supply	DAEKWANG	5KVA	20/03/08	20/03/09	20060321-1
<input checked="" type="checkbox"/>	DC Power Supply	HP	6622A	20/03/08	20/03/09	3448A03760
<input checked="" type="checkbox"/>	DC Power Supply	HP	6633A	20/03/08	20/03/09	3524A06634
<input type="checkbox"/>	HORN ANT	ETS	3115	13/06/08	13/06/09	6419
<input checked="" type="checkbox"/>	HORN ANT	ETS	3115	10/09/08	10/09/09	21097
<input type="checkbox"/>	HORN ANT	A.H.Systems	SAS-574	13/06/08	13/06/09	154
<input type="checkbox"/>	HORN ANT	A.H.Systems	SAS-574	13/06/08	13/06/09	155

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	VHA9103	25/11/08	25/11/09	2116
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	VHA9103	25/11/08	25/11/09	2117
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	UHA9105	25/11/08	25/11/09	2261
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	UHA9105	25/11/08	25/11/09	2262
<input type="checkbox"/>	Coaxial Fixed Attenuators	Agilent	8491B	01/08/08	01/08/09	MY39260700
<input type="checkbox"/>	Coaxial Fixed Attenuators	Agilent	8491B	15/07/08	15/07/09	MY39260699
<input type="checkbox"/>	Attenuator (10dB)	WEINSCHL	23-10-34	01/10/08	01/10/09	BP4386
<input type="checkbox"/>	Attenuator (20dB)	WEINSCHL	86-20-11	06/10/08	06/10/09	432
<input type="checkbox"/>	Attenuator (10dB)	WEINSCHL	86-10-11	06/10/08	06/10/09	446
<input type="checkbox"/>	Attenuator (10dB)	WEINSCHL	86-10-11	06/10/08	06/10/09	408
<input type="checkbox"/>	Attenuator (40dB)	WEINSCHL	57-40-33	01/10/08	01/10/09	NN837
<input type="checkbox"/>	Attenuator (30dB)	JFW	50FH-030-300	24/03/08	24/03/09	060320-1
<input type="checkbox"/>	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0088CAN	11/07/08	11/07/09	788
<input type="checkbox"/>	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0185CAN	11/07/08	11/07/09	790
<input type="checkbox"/>	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0215CAN	11/07/08	11/07/09	112
<input checked="" type="checkbox"/>	Amplifier (30dB)	Agilent	8449B	13/10/08	13/10/09	3008A01590
<input type="checkbox"/>	RF Power Amplifier	OPHIRRF	5069F	09/07/08	09/07/09	1006
<input type="checkbox"/>	Software	Agilent	Benchlink	N/A	N/A	A.01.09 021211
<input type="checkbox"/>	EMI TEST RECEIVER	R&S	ESU	02/02/09	02/02/10	100014
<input checked="" type="checkbox"/>	BILOG ANTENNA	SCHAFFNER	CBL6112B	13/06/08	13/06/09	2737
<input checked="" type="checkbox"/>	Amplifier (22dB)	H.P	8447E	05/02/09	05/02/10	2945A02865
<input checked="" type="checkbox"/>	Position Controller	TOKIN	5905A	N/A	N/A	N/A
<input type="checkbox"/>	Software	ToYo EMI	EP5/RE	N/A	N/A	Ver 2.0.800
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	R&S	ESCI	13/05/08	13/05/09	100364
<input type="checkbox"/>	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	30/09/08	30/09/09	1098
<input type="checkbox"/>	Biconical Antenna	Schwarzbeck	VHA9103	13/06/08	13/06/09	2233
<input type="checkbox"/>	Amplifier (25dB)	Agilent	8447D	18/08/08	18/08/09	2648A04922
<input type="checkbox"/>	Low Noise Pre Amplifer	TSJ	MLA-100K01-B01-2	24/03/08	24/03/09	1252741
<input checked="" type="checkbox"/>	Position Controller	TOKIN	5901T	N/A	N/A	14173
<input checked="" type="checkbox"/>	Software	AUDIX	e3	N/A	N/A	Ver 3.0
<input checked="" type="checkbox"/>	Driver	TOKIN	5902T2	N/A	N/A	14174
<input type="checkbox"/>	Spectrum Analyzer(CE)	H.P	8591E	26/04/08	26/04/09	3649A05889
<input type="checkbox"/>	LISN	Kyorits	KNW-407	04/08/08	04/08/09	8-317-8
<input type="checkbox"/>	LISN	Kyorits	KNW-242	11/09/08	11/09/09	8-654-15
<input type="checkbox"/>	CVCF	NF Electronic	4420	21/03/08	21/03/09	304935/337980
<input type="checkbox"/>	Software	ToYo EMI	EP5/CE	N/A	N/A	Ver 2.0.801
<input type="checkbox"/>	DC BLOCK	Hyuplip	KEL-007	N/A	N/A	7-1581-5
<input type="checkbox"/>	50 ohm Terminator	HME	CT-01	22/01/09	22/01/10	N/A
<input type="checkbox"/>	RFI/FIELD Intensity Meter	Kyorits	KNW-2402	11/09/08	11/09/09	4N-170-3