To: RFI Group  
From: Judd D. Bowman  
Subject: RFI Scout Trip to California and Nevada

A short expedition was conducted May 28 through May 31, 2006, to visit various locations in east-central California and central Nevada in order to acquire basic RFI measurements. The goal was to assess the general applicability of the locations as potential sites for the EOR global signature experiment, EDGES. The target frequencies were roughly 100-200 MHz. Over the three days, about 20 regions were visited for brief durations.

All locations were in remote regions, and in many cases were 10-100 miles from the nearest (even modestly) populated area. Valleys were targeted due to the hypothesis that the mountains surrounding them would offer natural RFI protection. In the case of at least three locations: Deep Springs CA, Monitor Valley NV, and Panamint Valley CA, the surrounding mountain ranges reached ~11,000 feet above sea level and were at least 5,000 feet above the valley floors. It was found that, even in these remote areas, radio and microwave repeater stations were present on the mountaintops around most of the valleys. Nevertheless, each location had better RFI characteristics than Haystack. The initial target of interest, Deep Springs CA, may not be the best site from an RFI perspective. Panamint Valley CA and Joshua Tree CA emerged as potentially better sites. Figures 1 – 3 show the locations of the sites and Figures 4-8 are photographs.

A portable spectrum analyzer (Spectrum Master) was used in conjunction with a small, handheld disc-cone antenna. In some cases, an additional single-pole antenna (∼1 m) was also used. At a minimum, spectra were acquired at each location from 50 to 250 MHz with 10 kHz resolution bandwidth. The spectra were saved to memory in the spectrum analyzer and downloaded to a laptop at a later time. Unfortunately, the bulk of the downloaded spectra appear to be decimated to ∼500 kHz resolution. The Joshua Tree CA data, however, were saved in 30 MHz windows and offer a good example of the RFI properties of these sites at better than 500 kHz resolution bandwidth. Plots of all spectra are attached.

I believe it remains unclear whether a location in this region will be sufficient for the final EDGES measurement.

Additional images and raw data can be found at:
http://web.mit.edu/jdbowman/www/eor/edges/

A summary of the sites follows:
Death Valley, CA

- **Site 1 (2006-05-30, 10:30 AM):** Along HWY 190 W at mile marker 93. By dunes, a few miles from Stove-pipe Wells.

  Data:

  DEATH VALLEY 1 -- disc-cone antenna
  DEATH VALLEY 2 -- single-pole antenna

- **Site 2 (2006-05-30, 1:40 PM):** About 2 miles south of Mormon Point.

  Data: DEATH VALLEY 3 -- disc-cone antenna

- **Site 3 (2006-05-30, 2:20 PM):** Leaving Death Valley on HWY 178 at intersection with Furnace Creek Wash Road (dirt), shortly before intersection with HWY 127.

  Data: DEATH VALLEY 4 -- disc-cone antenna

Deep Springs, CA

- **Site 1 (2006-05-28, 5:45 PM):** Located on the southwest side of the valley. Somewhat above the valley floor, at mile marker 39 along HWY 168. An electric fence was about 100 ft away.

  Data: Deep Springs 1

- **Site 2 (2006-05-28, 6:00 PM):** Located on the floor of the valley at mile marker 42.5 along HWY 168, shortly after descending in from the southwest. Three FM radio stations were easily found by the car radio: 92.5, 93.3, and 96.1. An electric fence was also within 100 feet from this site.

  Data: Deep Springs 2

- **Site 3 (2006-05-28, 6:10 PM):** Located on the northeast side of the valley floor, directly in front of the Deep Springs Ranch, about 0.5 miles off HWY 168. No electric fence was nearby and the measurement was performed about 50 feet from the car.

  Data: Deep Springs 3
• **Site 4 (2006-05-28, 6:30 PM):** Located on the floor of the valley directly under power lines to the northeast. A residential house was within a few hundred feet.

  Data: Deep Springs 4

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**Monitor Valley, NV**

• **Site 1 (2006-05-29, 11:00 AM):** At southern mouth of Monitor Valley, about 1 mile after the junction with HWY 377. Not the actual large basin, yet, just a (comparatively) narrow passage shielded on most sides by mountains and hills.

  Data:

  MONITOR VALLEY 1 -- single-pole antenna
  MONITOR VALLEY 2 -- disc-cone antenna

• **Site 2 (2006-05-29, 11:45 AM):** On the main dirt road running through the valley, at intersection with Meadow Canyon Mountain Bike Trail, about 5 miles from Belmont, NV.

  Data:

  MONITOR VALLEY 3 -- disc-cone antenna

• **Site 3 (2006-05-29, 12:20 PM):** By the lake in the north-central region of the valley.

  Data:

  MONITOR VALLEY 5 -- single-pole antenna
  MONITOR VALLEY 6 -- disc-cone antenna

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**Panamint Valley, CA**

• **Site 1 (2006-05-30, 11:20 AM):** Along HWY 190, mile marker 58. A large valley just west of Death Valley. One small settled area at western edge along road. Nice, soft sand dry-lake bed.

  Data:
Other: California Sites

- **Lone Pine, CA (2006-05-28, 3:30 PM):** At the Lone Pine visitors' center along HWY 395, just before entering town from the south. The first scan was without the pre-amp.

  Data: LONE PINE 1, LONE PINE 2

- **Big Pine, CA (2006-05-28, 4:30 PM):** At the intesection of HWY 168 and Death Valley Road, about 2 miles east of HWY 325.

  Data: BIG PINE 1, BIG PINE 2

- **Mono County, CA (2006-05-28, 7:00 PM):** Mile marker 1 on HWY 168 in Mono county, California.

  Data: MONO 1, MONO 2

- **Highway 127 (2006-05-30, 3:00 PM):** At Dumont Dunes about 30 miles north of Baker, CA along HWY 127.

  Data: HWY127 1 -- single-pole antenna

- **Kelso Station (2006-05-30, 5:15 PM):** Along road by Kelso Dunes, about 2 miles from the Kelso Station and railway.

  Data: KELSO 1 -- single-pole antenna

- **Site 3: Joshua Tree National Park (2006-05-31, 1:00 PM):** Pretty much at the center of the park, which is a big basin. Only one FM radio station was picked up by the car radio so we decided to stop.

  Data:
  
  JOSHUA TREE 1 -- disc-cone (50 - 250 MHz)  
  JOSHUA TREE 2 -- disc-cone (80 - 110 MHz)  
  JOSHUA TREE 3 -- disc-cone (110 - 140 MHz)
Other: Central Nevada

- **Highway 266 - 1 (2006-05-28, 7:20 PM):** At approximately mile marker 10 along HWY 266 in Nevada. Beside the car, just off the road. A small valley-like region with some construction equipment nearby.
  
  Data: NV 266 1

- **Highway 266 - 2 (2006-05-28, 7:45 PM):** At mile marker 29 on HWY 266 in Nevada. Beside the car, about 200 feet off the roadway. A nice big basin possibly with some mining operations and various other buildings scattered around. Power lines ran about 500 feet from the site of the observation.
  
  Data: NV 266 2

- **Smoky Valley, NV (2006-05-29, 2:30 PM):** Outside the Hadley Airport. This was a big valley with a highway running through, power lines, a small town (about 1 mile away from the site), and a large strip mine (about 2 miles from the site).
  
  Data: SMOKY VALLEY 1 -- disc-cone antenna

- **Highway 6 - 1,2 (2006-05-29, 4:50 PM):** Outside a rest area along HWY 6, east of Tonopah, NV, at mile marker 25. In a large valley with power lines on the other side of the road.
  
  Data:
  
  HWY6 1 -- disc-cone antenna
  HWY6 2 -- single-pole antenna

- **Highway 6 - 3 (2006-05-29, 5:15 PM):** A nice, remote valley along HWY 6 at mile marker 42. Turned out to be directly in line with repeaters visible on the surrounding mountain tops. About 1000 feet away from the highway on a dirt road. Power lines along the highway.
  
  Data: HWY6 2 -- single-pole antenna

- **Extraterrestrial Highway - 1,2 (2006-05-29, 5:40 PM):** At intersection of HWY 375 and unnamed road. Probably repeaters on mountain tops.
  
  Data:
ET 1 -- single-pole antenna
ET 2 -- disc-cone antenna

- **Extraterrestrial Highway - 3,4,5,6 (2006-05-29, 6:00 PM):** At mile marker 18 on ET HWY. Around a bend into another valley.

  Data:

  ET 3 -- disc-cone antenna
  ET 4 -- single-pole antenna
  ET 5 -- single-pole antenna (40 - 400 MHz)
  ET 6 -- disc-cone antenna (40 - 400 MHz)

- **Highway 374 (2006-05-30, 9:45 AM):** At mile marker 3 along HWY 274 from Beatty, NV to Death Valley, CA. Amorgosa Desert (Valley). A mine was in the valley and construction equipment was up ahead on the road.

  Data:

  HWY374 1 -- single-pole antenna
  HWY374 2 -- disc-cone antenna
Figure 1 – Map of sites in south-central California.

Figure 2 – Map of sites in central Nevada.
Figure 3 – Expanded map of sites in Deep Springs, CA.
Figure 4 – Panorama from within Deep Springs, CA.

Figure 5 – Looking down on Deep Springs, CA, from the northeast.

Figure 6 – Panorama from within Monitor Valley, NV.

Figure 7 – Panorama from within Panamint Valley, CA.

Figure 8 – Repeater stations outside Tonopah, NV.
Spectrum Analyzer
JOSHUA TREE 5

CF: 185.0 MHz
RBW: 10 kHz
Min Sweep Time: 1.00 Milli Sec
Model: MS2711D

SPAN: 30.00 MHz
VBW: 100 Hz
Date: 05/31/2006
Serial #: 00431146

Attenuation: 0 dB
Detection: RMS Average
Time: 13:01:01
Preamp ON
Spectrum Analyzer
JOSHUA TREE 4

CF: 155.0 MHz
RBW: 10 kHz

SPAN: 30.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Min Sweep Time: 1.00 Milli Sec
Date: 05/31/2006
Model: MS2711D
Serial #: 00431146

Time: 13:00:14
Preamp ON
Spectrum Analyzer
JOSHUA TREE 3

CF: 125.0 MHz  SPAN: 30.00 MHz  Attenuation: 0 dB
RBW: 10 kHz  VBW: 100 Hz  Detection: RMS Average
Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/31/2006  Time: 12:59:22
Model: MS2711D  Serial #: 00431146  Preamp ON
Spectrum Analyzer
JOSHUA TREE 2

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

dBm

Frequency (80.0 - 110.0 MHz)

CF: 95.0 MHz
RBW: 10 kHz

SPAN: 30.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/31/2006
Time: 12:57:39
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
JOSHUA TREE 1

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
SPAN: 200.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/31/2006
Model: MS2711D

Time: 12:56:21
Serial #: 00431146

Preamp ON
Spectrum Analyzer
KELSO 1

CF: 150.0 MHz
RBW: 10 kHz
Min Sweep Time: 1.00 Milli Sec
Date: 05/30/2006
Model: MS2711D

SPAN: 200.00 MHz
VBW: 100 Hz
Time: 17:26:34
Serial #: 00431146

Ref Level:
-30.0 dBm

dB / Div:
10.0 dB

Attenuation: 0 dB
Detection: RMS Average
Preamp ON
Spectrum Analyzer
HWY1271

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

SPAN: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/30/2006
Model: MS2711D
Serial #: 00431146

Time: 15:14:37
Preamp ON
Spectrum Analyzer
DEATH VALLEY 3

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
SPAN: 200.00 MHz
VBW: 100 Hz
Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/30/2006
Time: 13:50:35
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
PANAMINT VLY 4

Ref Level: -30.0 dBm
db / Div: 10.0 dB

CF: 220.0 MHz
RBW: 300 kHz
Min Sweep Time: 1.00 Milli Sec
Date: 05/30/2006
Model: MS2711D

SPAN: 360.00 MHz
VBW: 100 Hz
Time: 11:45:45
Serial #: 00431146

Attenuation: 0 dB
Detection: RMS Average
Preamp ON
Spectrum Analyzer
PANAMINT VLY 3

CF: 150.0 MHz
RBW: 10 kHz
Min Sweep Time: 1.00 Milli Sec
Model: MS2711D
Date: 05/30/2006

SPAN: 200.00 MHz
VBW: 100 Hz
Serial #: 00431146

Attenuation: 0 dB
Detection: RMS Average
Time: 11:44:19
Preamp ON
Spectrum Analyzer
PANAMINT VLY 2

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

dBM

Frequency (50.0 - 250.0 MHz)

CF: 150.0 MHz
RBW: 10 kHz
SPAN: 200.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/30/2006
Time: 11:40:01
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
PANAMINT VLY 1

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

dBi
-130
-120
-110
-100
-90
-80
-70
-60
-50
-40
-30

Frequency (50.0 - 250.0 MHz)
60  80  100  120  140  160  180  200  220  240

CF: 150.0 MHz  SPAN: 200.00 MHz  Attenuation: 0 dB
RBW: 10 kHz  VBW: 100 Hz  Detection: RMS Average
Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/30/2006  Time: 11:35:36
Model: MS2711D  Serial #: 00431146  Preamp ON
Spectrum Analyzer
DEATH VALLEY 2

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

SPAN: 200.00 MHz
VBW: 300 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/30/2006
Time: 10:42:11

Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
DEATH VALLEY 1

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

SPAN: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/30/2006
Time: 10:38:59

Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
HWY374 2

Ref Level:
-30.0 dBm

dB / Div:
10.0 dB

CF: 150.0 MHz
RBW: 10 kHz

SPAN: 200.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/30/2006
Time: 10:04:52

Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
HWY3741

Ref Level:
-30.0 dBm

dB / Div:
10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

SPAN: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/30/2006
Time: 10:04:43

Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
ET 6

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 220.0 MHz
RBW: 300 kHz

SPAN: 360.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006
Model: MS2711D

Time: 18:24:17
Serial #: 00431146
Preamp ON
Spectrum Analyzer
ET 5

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 220.0 MHz
RBW: 300 kHz
Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006
Model: MS2711D

SPAN: 360.00 MHz
VBW: 100 Hz
Time: 18:21:52
Serial #: 00431146

Attenuation: 0 dB
Detection: RMS Average
Preamp ON
Spectrum Analyzer

ET 4

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Min Sweep Time: 1.00 Milli Sec
Model: MS2711D

SPAN: 200.00 MHz
VBW: 100 Hz
Attenuation: 0 dB
Detection: RMS Average

Date: 05/29/2006
Serial #: 00431146
Time: 18:20:36
Preamp ON
Spectrum Analyzer
ET 3

Ref Level: -30.0 dBm

dB / Div: 10.0 dB

CF: 150.0 MHz
SPAN: 200.00 MHz
Attenuation: 0 dB
RBW: 10 kHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006
Time: 18:16:20
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
ET 1

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

SPAN: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average

Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006
Time: 17:53:37
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
ET 1

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz  SPAN: 200.00 MHz  Attenuation: 0 dB
RBW: 10 kHz  VBW: 100 Hz  Detection: RMS Average
Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006  Time: 17:53:37
Model: MS2711D  Serial #: 00431146  Preamp ON
Spectrum Analyzer
HWY63

Ref Level:
-30.0 dBm

dB / Div:
10.0 dB

Frequency (50.0 - 250.0 MHz)

dBM

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

SPAN: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/29/2006
Time: 17:27:39

Model: MS2711D
Serial #: 00431146

Preamp ON
Spectrum Analyzer
HWY6 2

Ref Level: -30.0 dBm

dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

Span: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006
Time: 17:03:13
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
HWY6 1

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz SPAN: 200.00 MHz Attenuation: 0 dB
RBW: 10 kHz VBW: 100 Hz Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006 Time: 16:59:00
Model: MS2711D Serial #: 00431146 Preamp ON
Spectrum Analyzer
MONITOR VALLEY 6

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Min Sweep Time: 1.00 Milli Sec
Model: MS2711D
Date: 05/29/2006

SPAN: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average
Time: 12:40:12
Serial #: 00431146
Preamp ON
Spectrum Analyzer
MONITOR VALLEY 5

Ref Level:
-30.0 dBm

dB / Div:
10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Min Sweep Time: 1.00 Milli Sec
Model: MS2711D
Date: 05/29/2006
Serial #: 00431146

SPAN: 200.00 MHz
VBW: 100 Hz
Time: 12:35:54
Preamp ON

Attenuation: 0 dB
Detection: RMS Average
Spectrum Analyzer
MONITOR VALLEY 4

Ref Level:
-30.0 dBm

dB / Div:
10.0 dB

dBm

Frequency (50.0 - 250.0 MHz)

CF: 150.0 MHz
SPAN: 200.00 MHz
Attenuation: 0 dB

RBW: 10 kHz
VBW: 100 Hz
Detection: RMS Average

Std:

Min Sweep Time: 1.00 Milli Sec
Date: 05/29/2006
Time: 12:02:14

Model: MS2711D
Serial #: 00431146
Preamp ON
**Spectrum Analyzer**
**MONITOR VALLEY 1**

Ref Level: -30.0 dBm

dB / Div: 10.0 dB

-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130

Frequency (50.0 - 250.0 MHz)

CF: 150.0 MHz

SPAN: 200.00 MHz

Attenuation: 0 dB

RBW: 10 kHz

VBW: 100 Hz

Detection: RMS Average

Std:

Min Sweep Time: 1.00 Milli Sec

Date: 05/29/2006

Time: 11:24:35

Model: MS2711D

Serial #: 00431146

Preamp ON
Spectrum Analyzer
NV 266 2

Ref Level: -30.0 dBm

dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz

SPAN: 200.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/28/2006
Time: 20:01:01

Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
NV 2661

Ref Level:
-30.0 dBm

dB/Div:
10.0 dB

dBm

Frequency (50.0 - 250.0 MHz)

CF: 150.0 MHz
RBW: 10 kHz

SPAN: 200.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/28/2006
Model: MS2711D

Time: 19:33:36
Serial #: 00431146
Preamp ON
Spectrum Analyzer
MONO 2

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 240.0 MHz
SPAN: 400.00 MHz
RBW: 300 kHz
VBW: 100 Hz
Attenuation: 0 dB
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec
Date: 05/28/2006
Time: 19:07:35
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
MONO 1

Ref Level: 
-30.0 dBm

dB / Div: 
10.0 dB

dBm

Frequency (50.0 - 250.0 MHz)

CF: 150.0 MHz
SPAN: 200.00 MHz
Attenuation: 0 dB

RBW: 10 kHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/28/2006
Time: 19:05:46

Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
DEEP SPRINGS 4

Ref Level:
-30.0 dBm

dB / Div:
10.0 dB

Frequency (50.0 - 250.0 MHz)

dBm

CF: 150.0 MHz
RBW: 10 kHz

SPAN: 200.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Min Sweep Time: 1.00 Milli Sec
Date: 05/28/2006
Time: 18:38:50
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
DEEP SPRINGS 2

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 10 kHz
Attenuation: 0 dB

SPAN: 200.00 MHz
VBW: 100 Hz
Detection: RMS Average

Std:
Min Sweep Time: 1.00 Milli Sec

Date: 05/28/2006
Time: 18:11:35

Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
DEEP SPRINGS 1

Ref Level: -30.0 dBm
dB / Div: 10.0 dB

CF: 150.0 MHz
SPAN: 200.00 MHz
Attenuation: 0 dB
RBW: 10 kHz
VBW: 100 Hz
Detection: RMS Average

Min Sweep Time: 1.00 Milli Sec
Date: 05/28/2006
Time: 17:56:55
Model: MS2711D
Serial #: 00431146
Preamp ON
Spectrum Analyzer
BIG PINE 1

Ref Level: -20.0 dBm

dB / Div: 10.0 dB

CF: 150.0 MHz
RBW: 100 kHz

SPAN: 200.00 MHz
VBW: 100 Hz

Attenuation: 0 dB
Detection: RMS Average

Min Sweep Time: 1.00 Milli Sec
Date: 05/28/2006
Time: 16:37:32

Model: MS2711D
Serial #: 00431146
Preamp ON