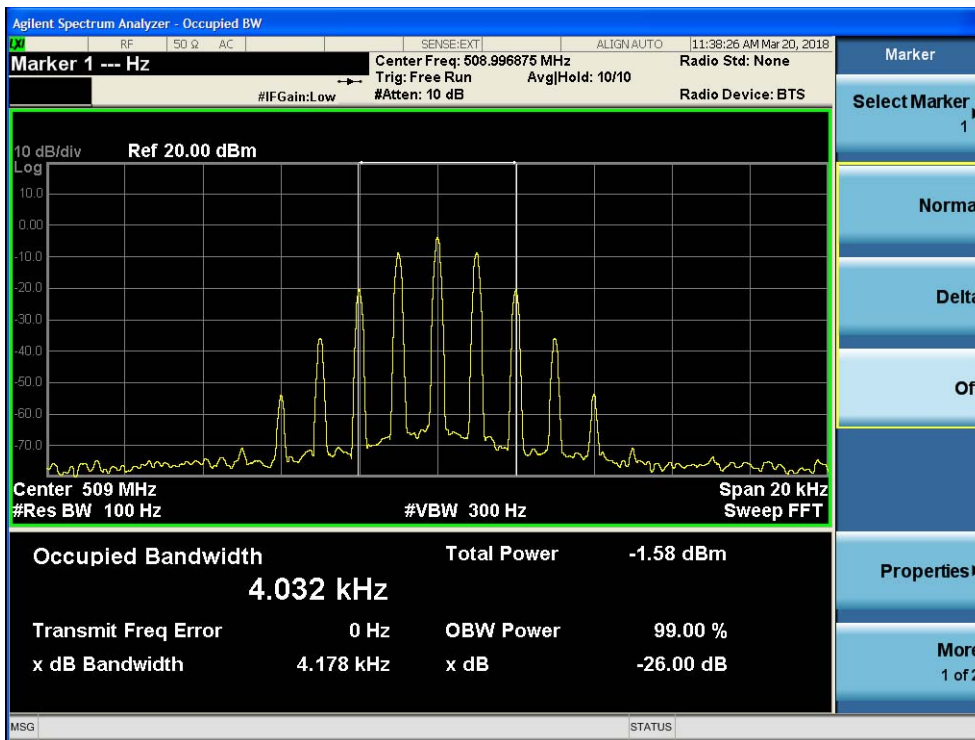
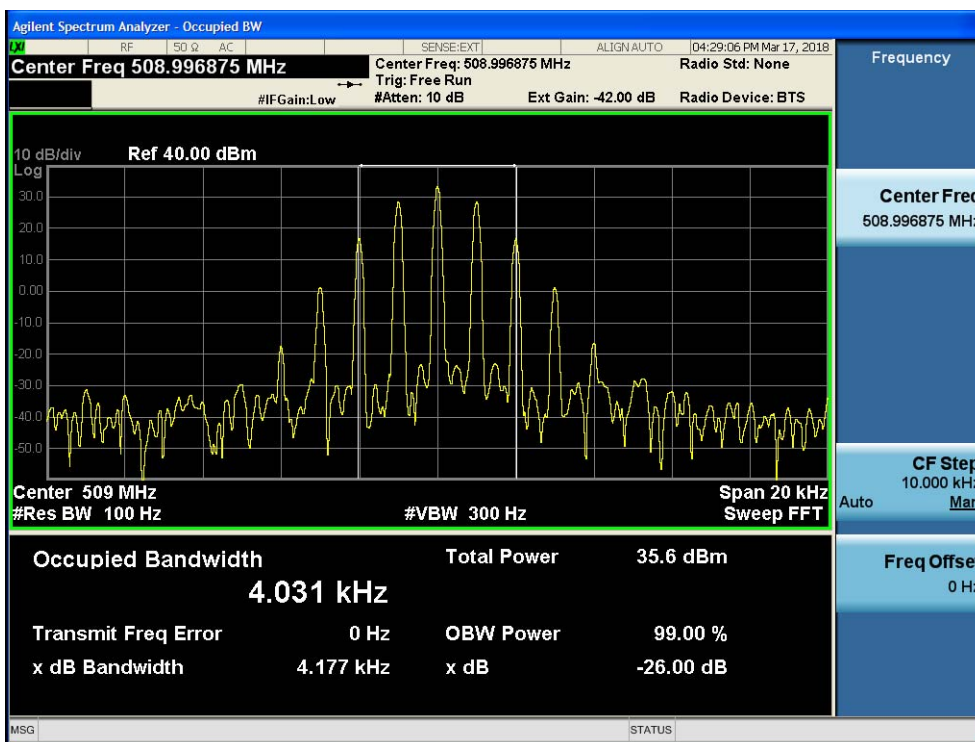




1.5 highest frequency—Input

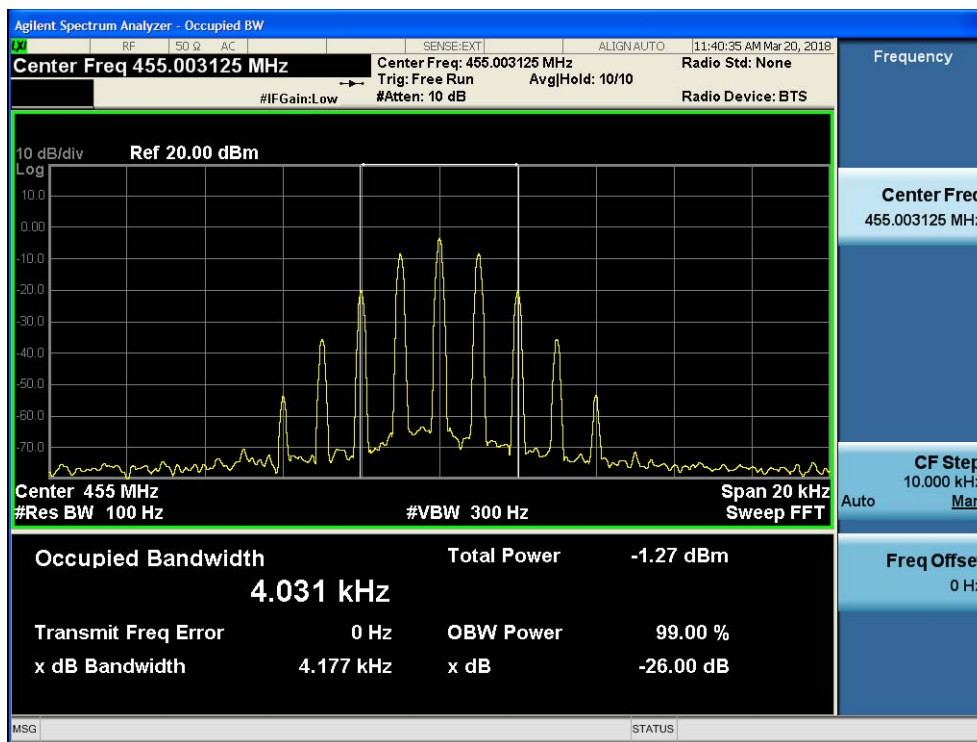


1.6 highest frequency—Output

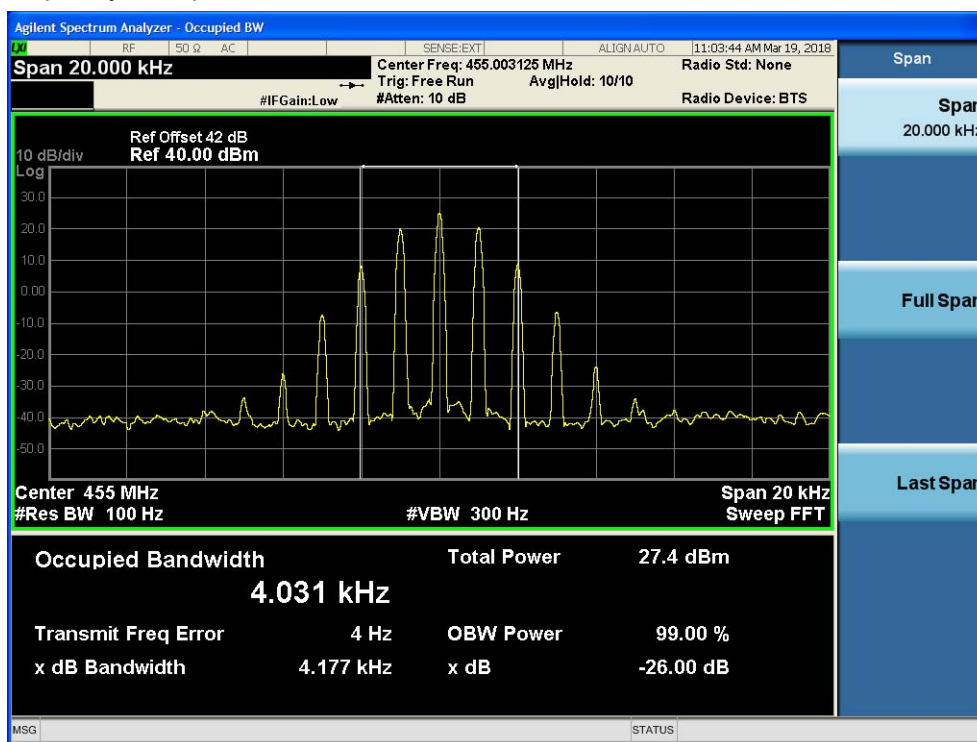


4. Uplink:455MHz to 512MHz
(for FM 6.25K mode)

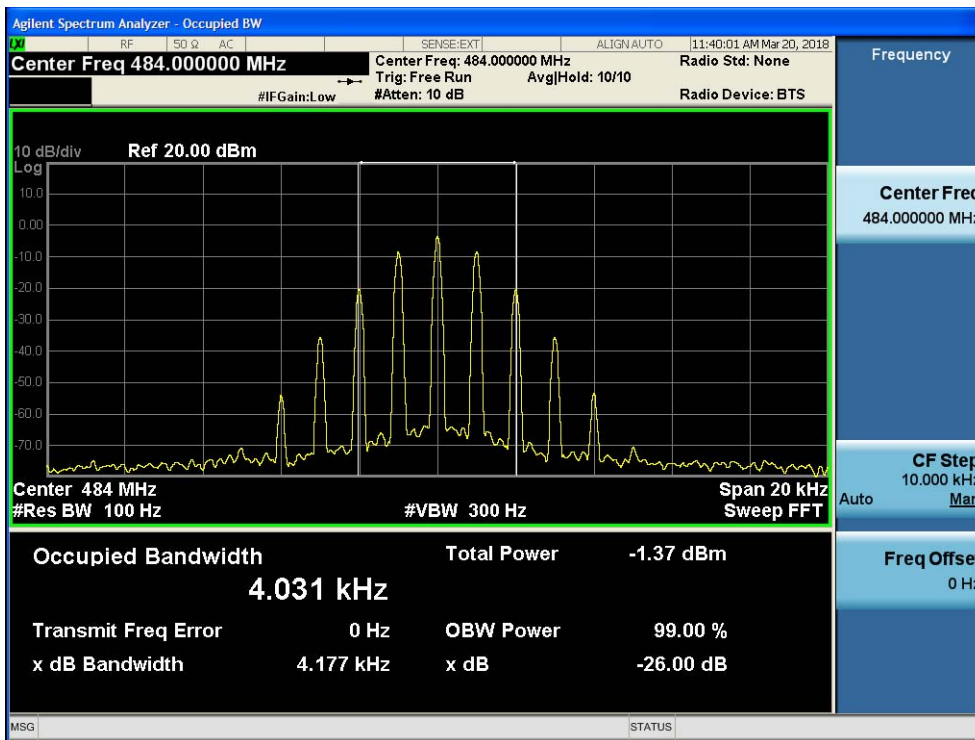
1.1 lowest frequency – Input



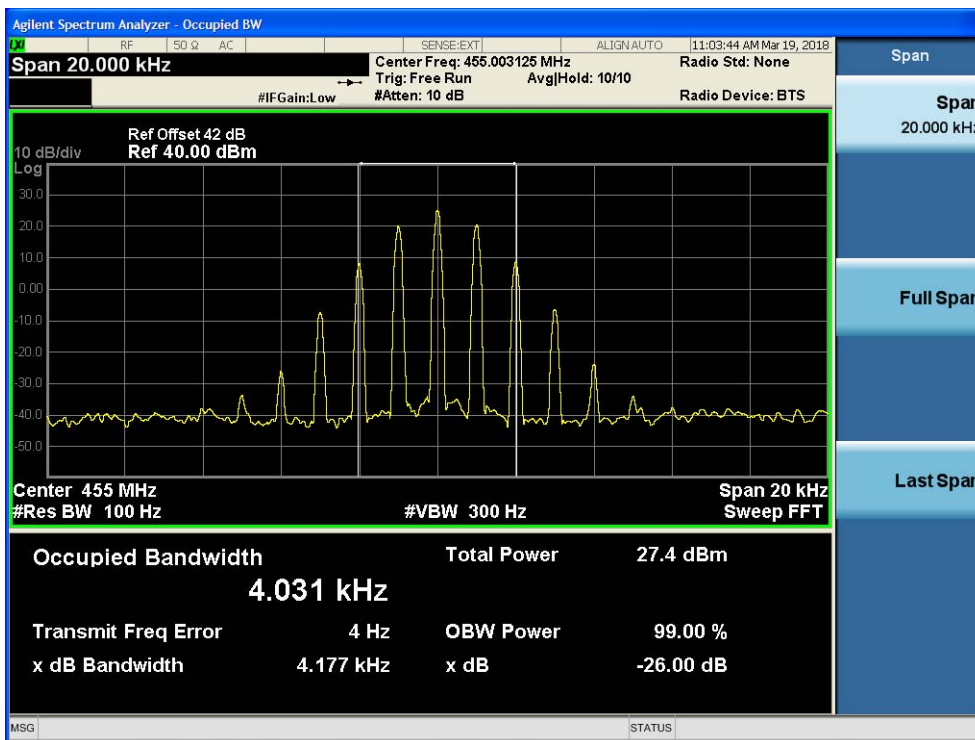
1.2 lowest frequency—Output



1.3 middle frequency—Input

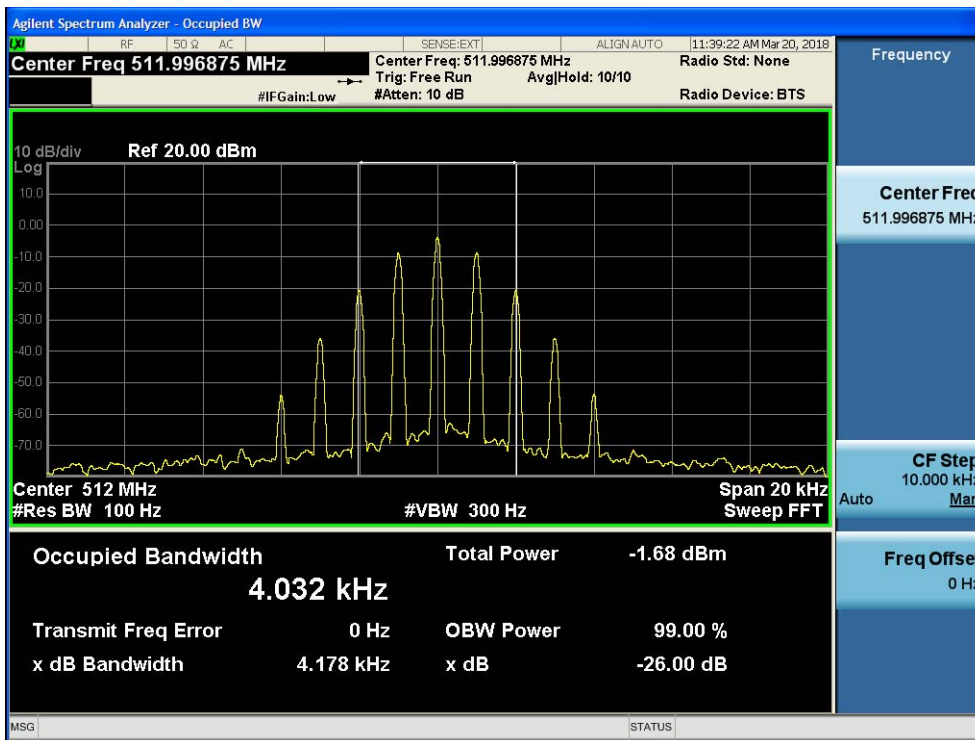


1.4 middle frequency—Output

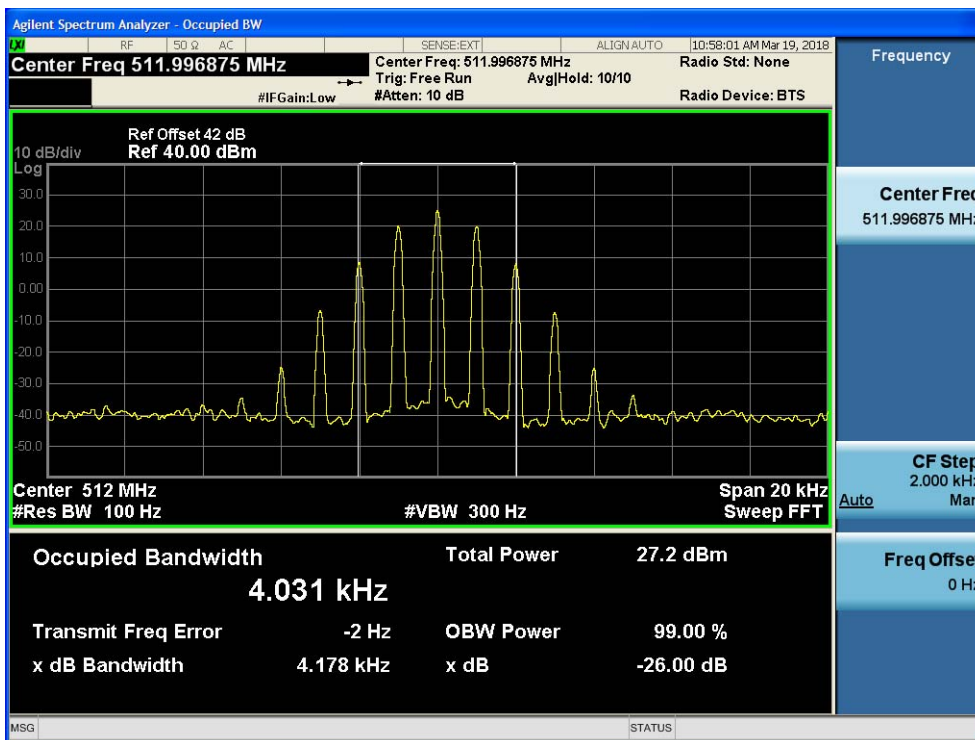




1.5 highest frequency—Input

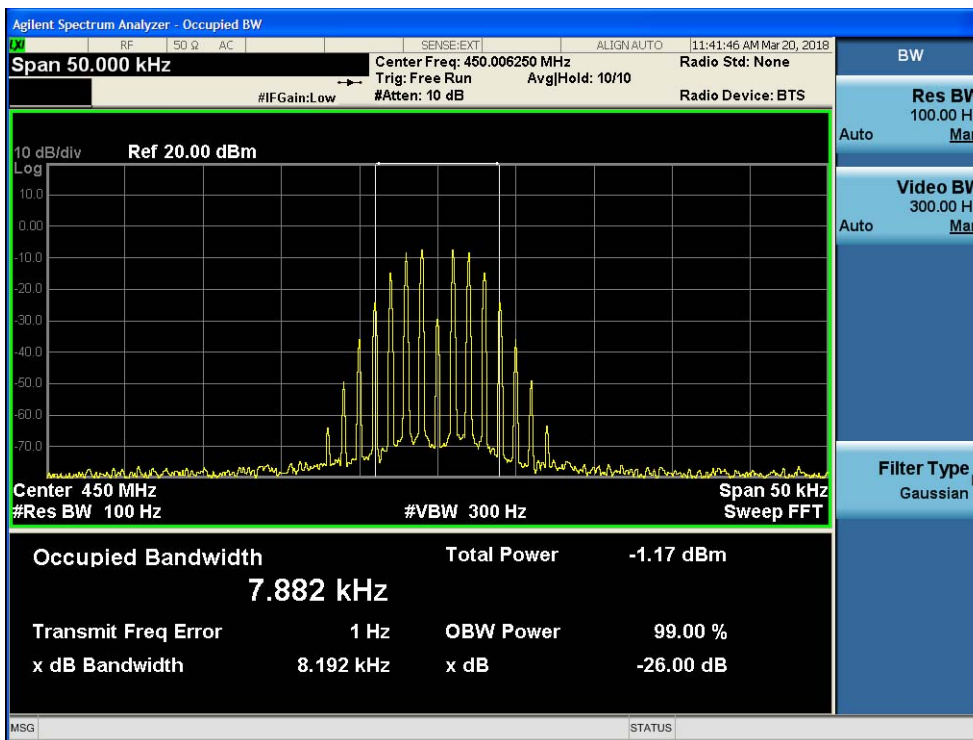


1.6 highest frequency—Output

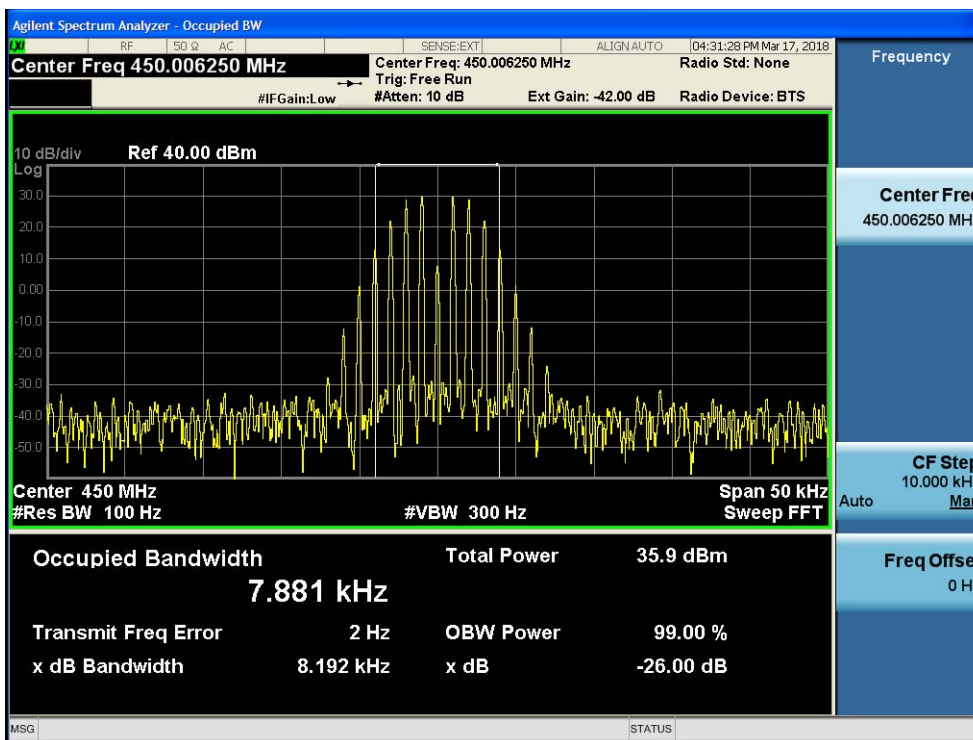


**5. Downlink:450MHz to 509MHz
(for FM 12.5K mode)**

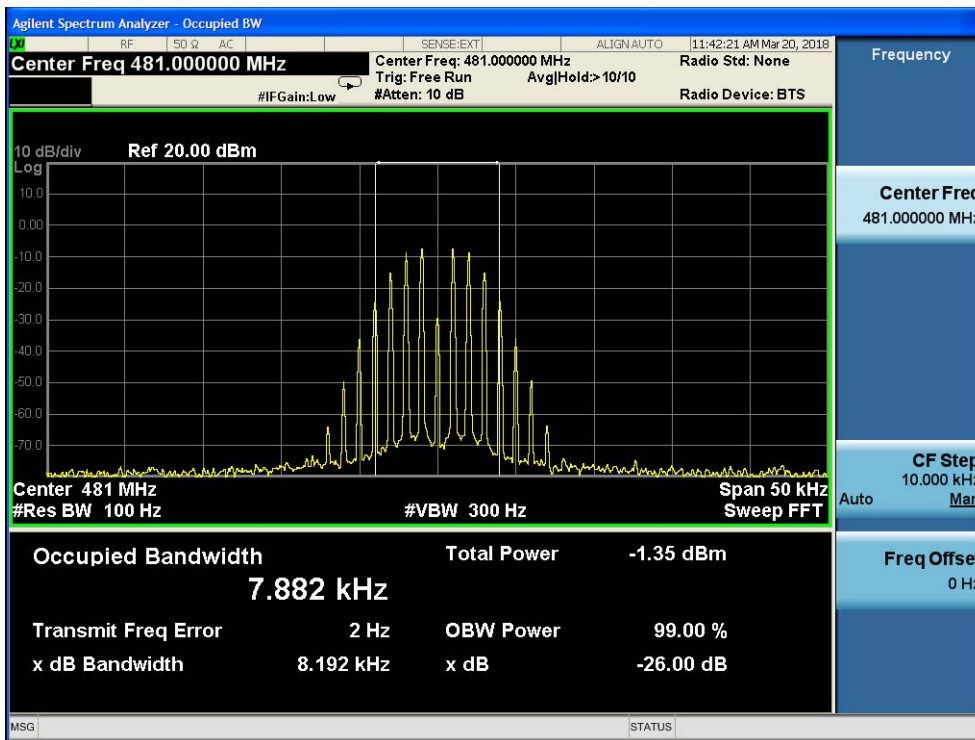
1.1 lowest frequency – Input



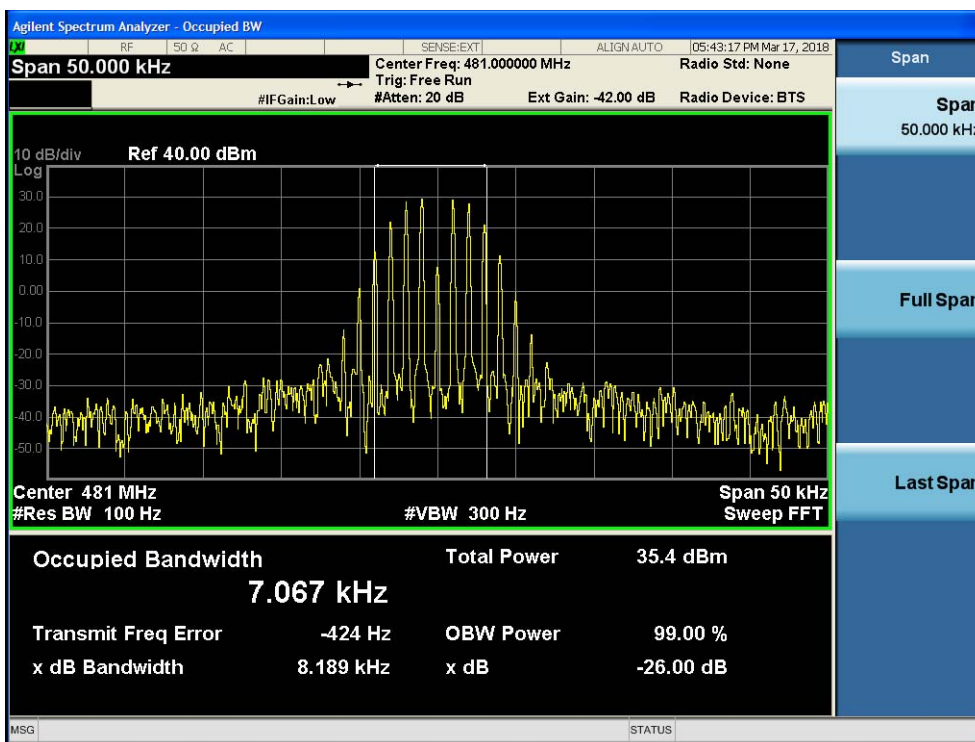
1.2 lowest frequency—Output



1.3 middle frequency—Input

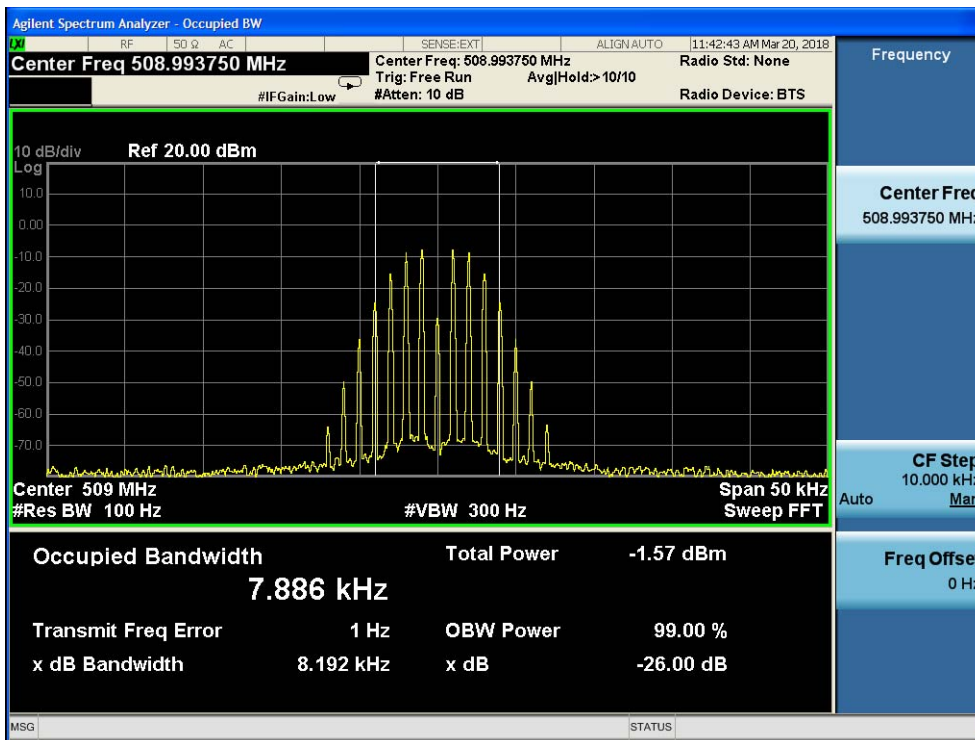


1.4 middle frequency—Output

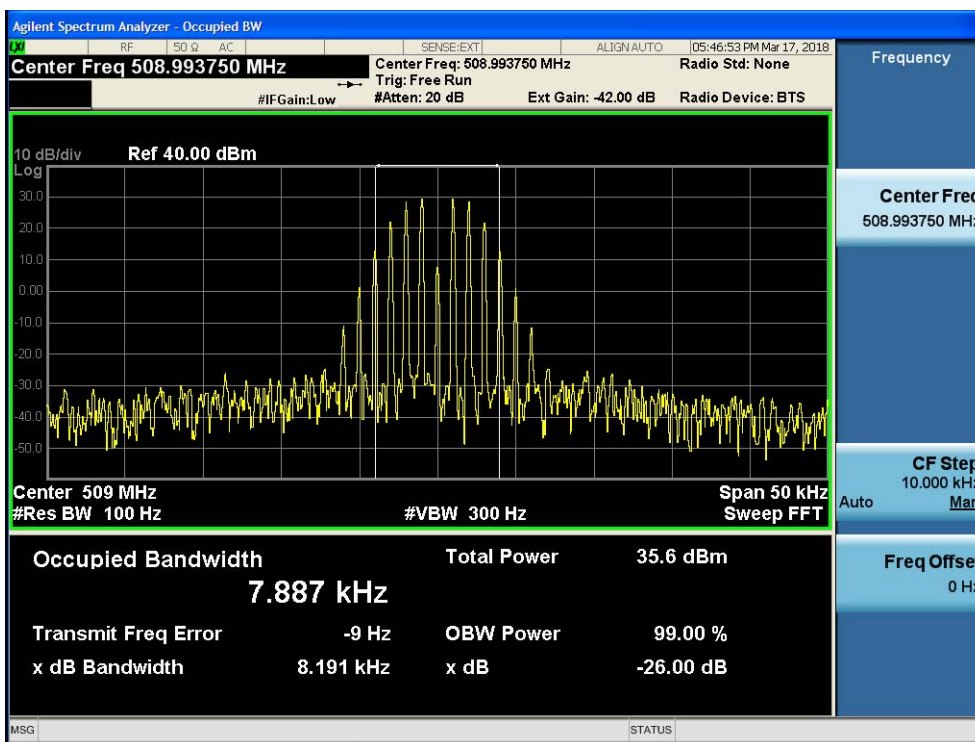




1.5 highest frequency—Input

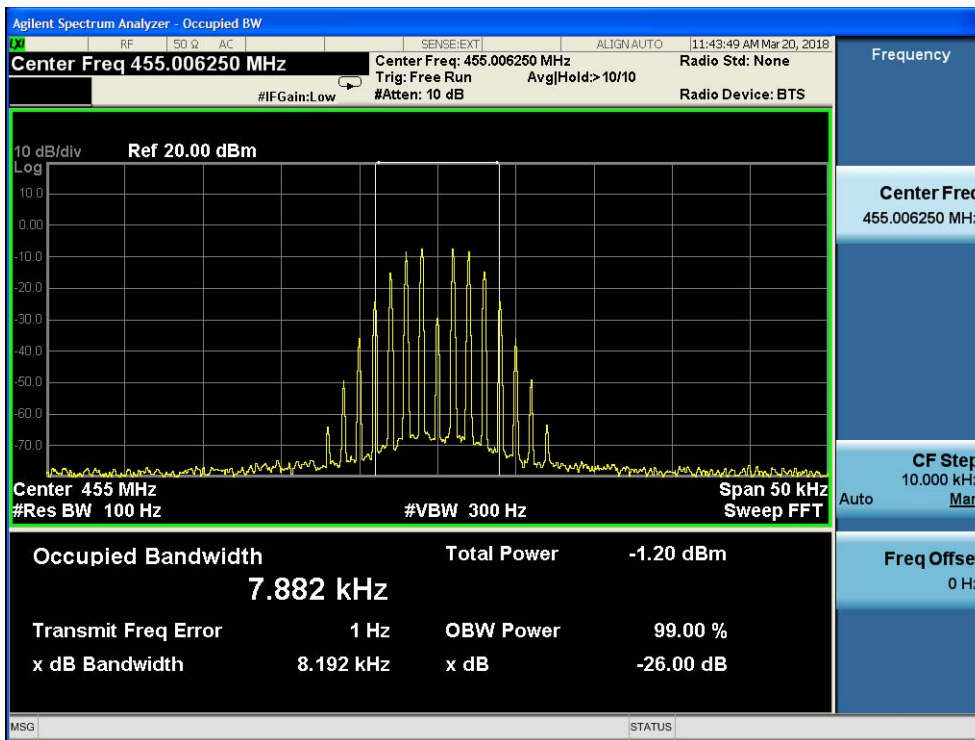


1.6 highest frequency—Output

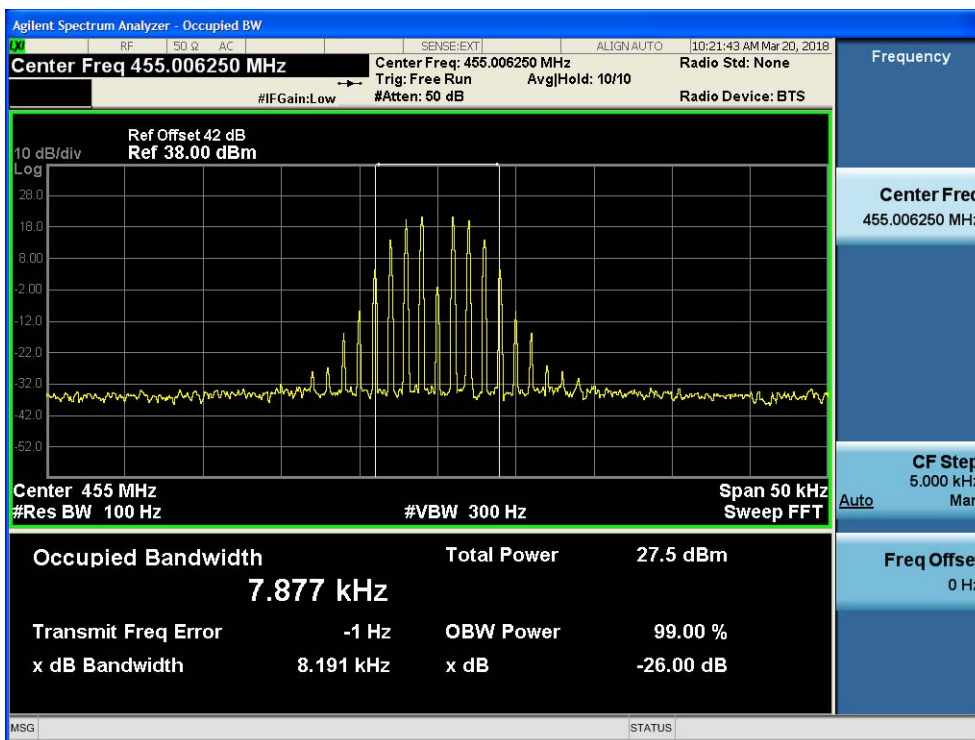


**6. Uplink:455MHz to 512MHz
(for FM 12.5K mode)**

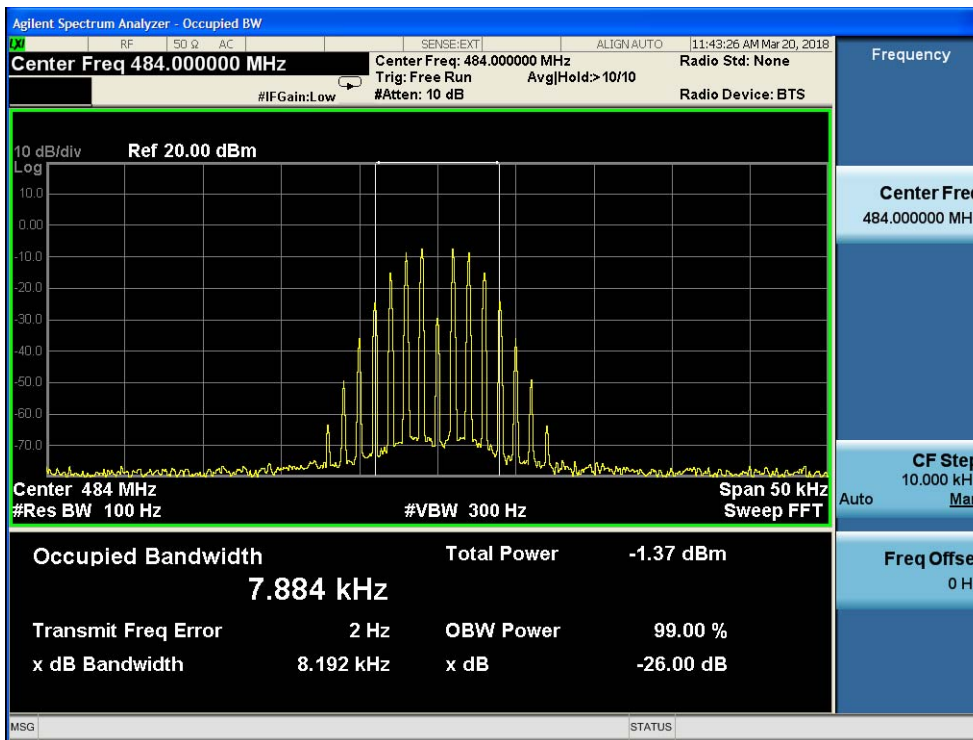
1.1 lowest frequency – Input



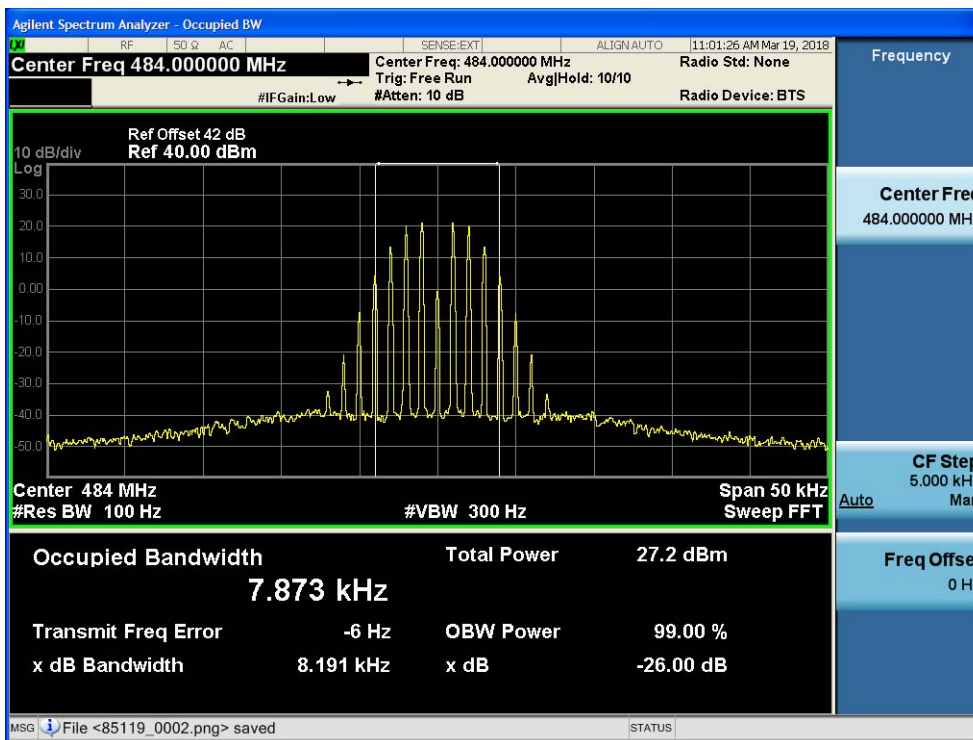
1.2 lowest frequency—Output



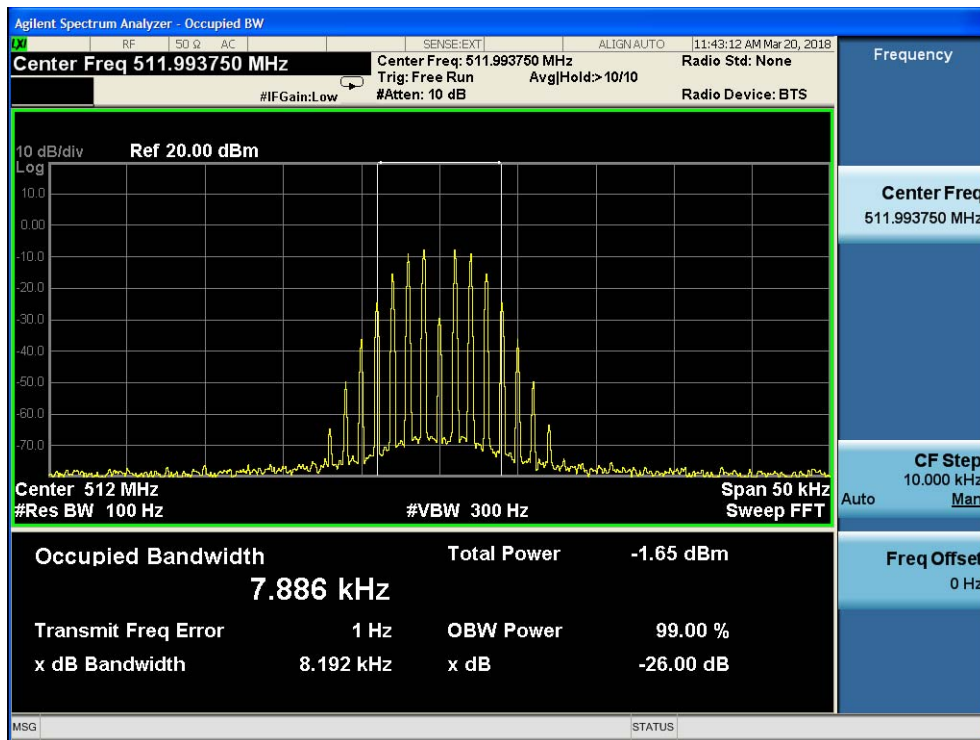
1.3 middle frequency—Input



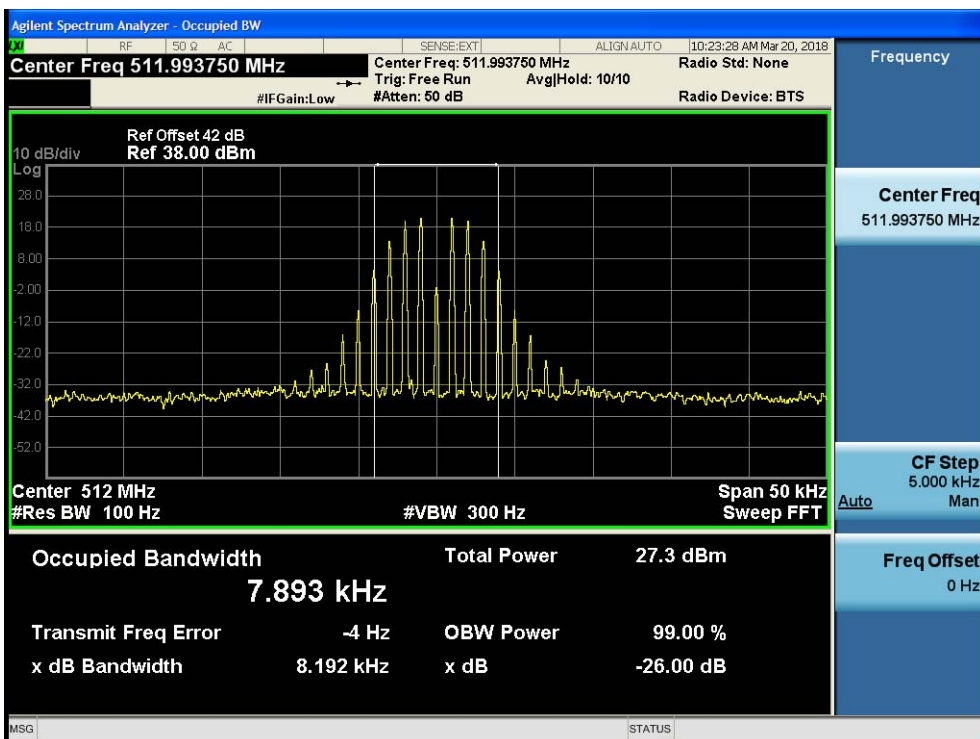
1.4 middle frequency—Output



1.5 highest frequency—Input

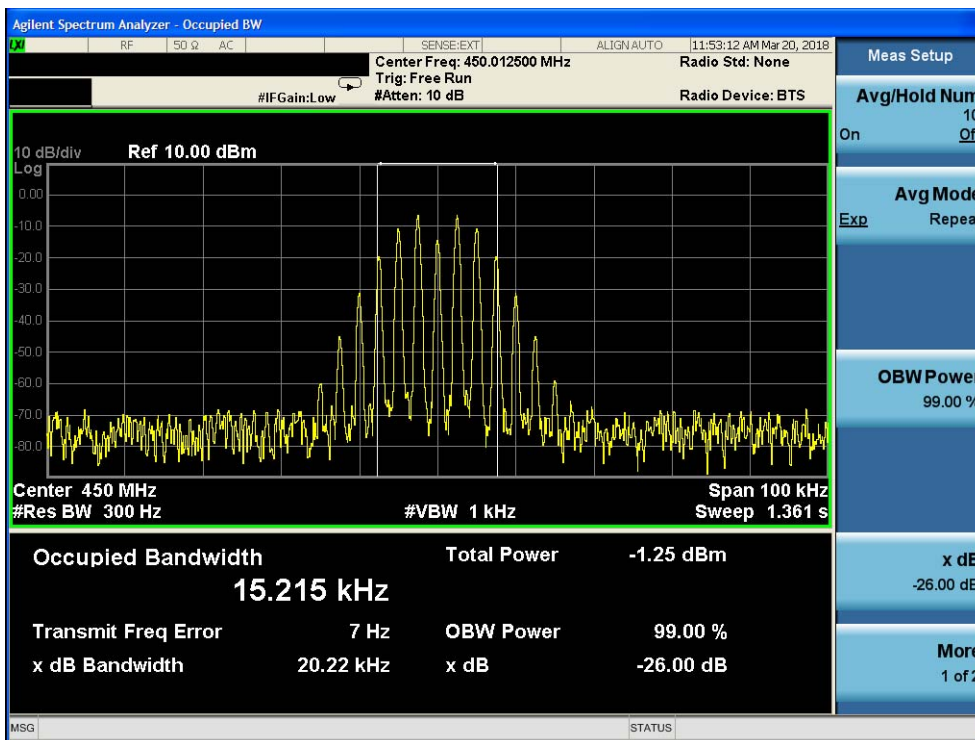


1.6 highest frequency—Output

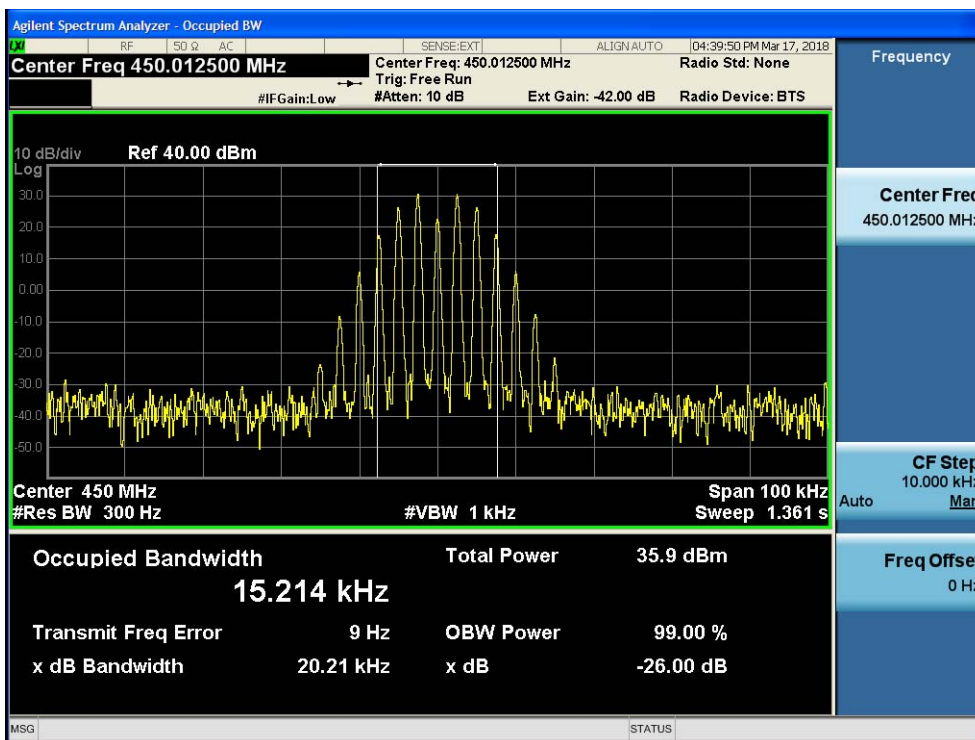


7. Downlink:450MHz to 509MHz (for FM 25K mode)

1.1 lowest frequency – Input

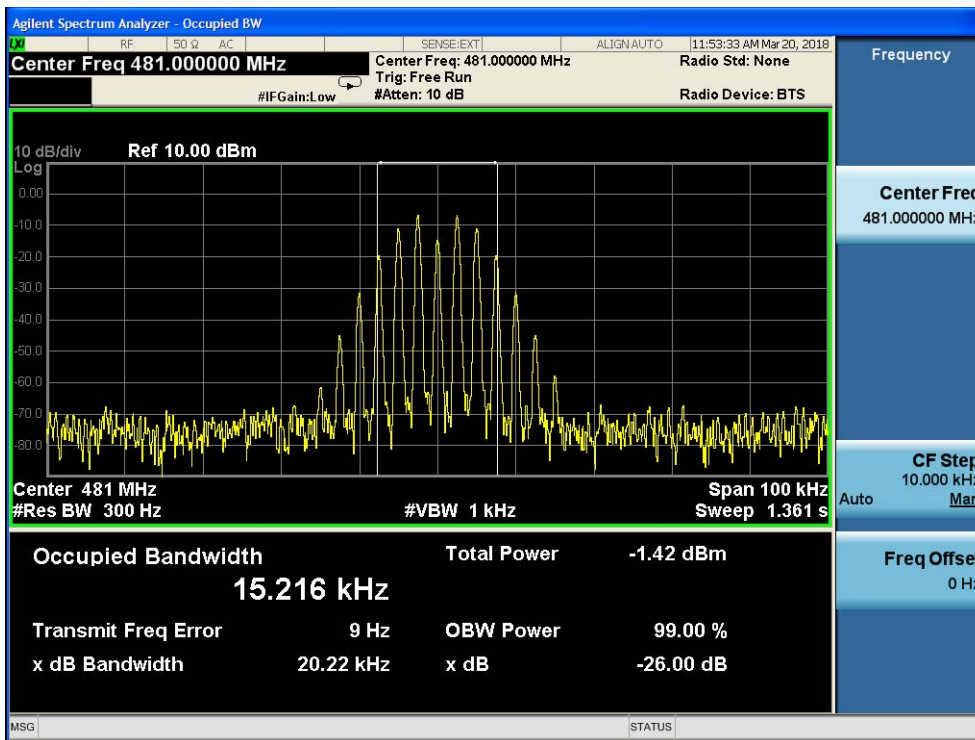


1.2 lowest frequency—Output

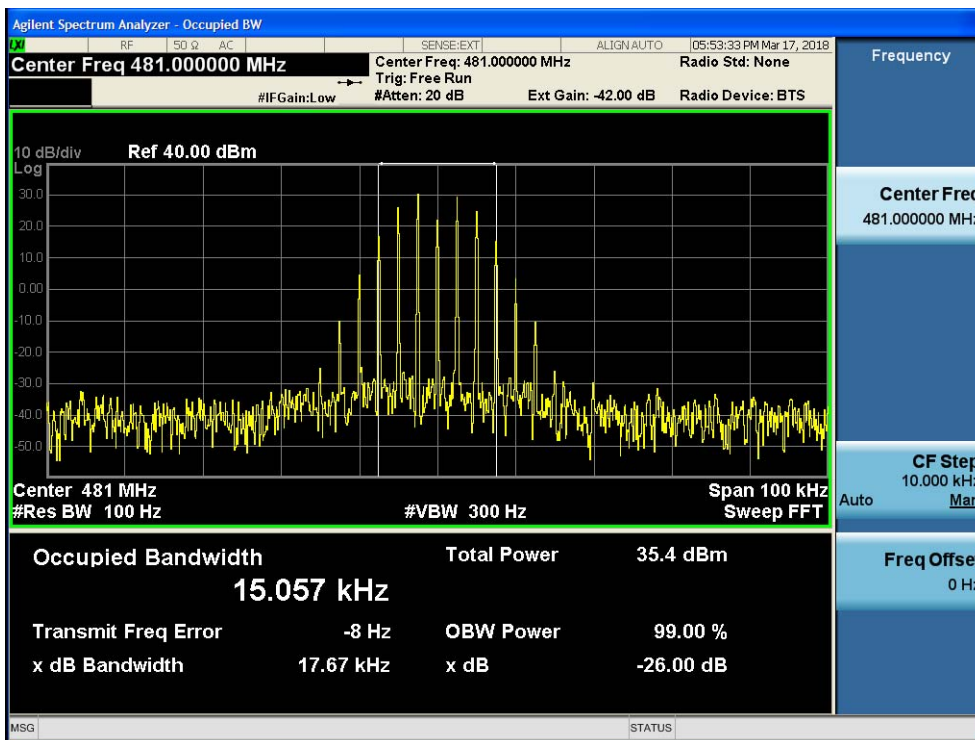




1.3 middle frequency—Input

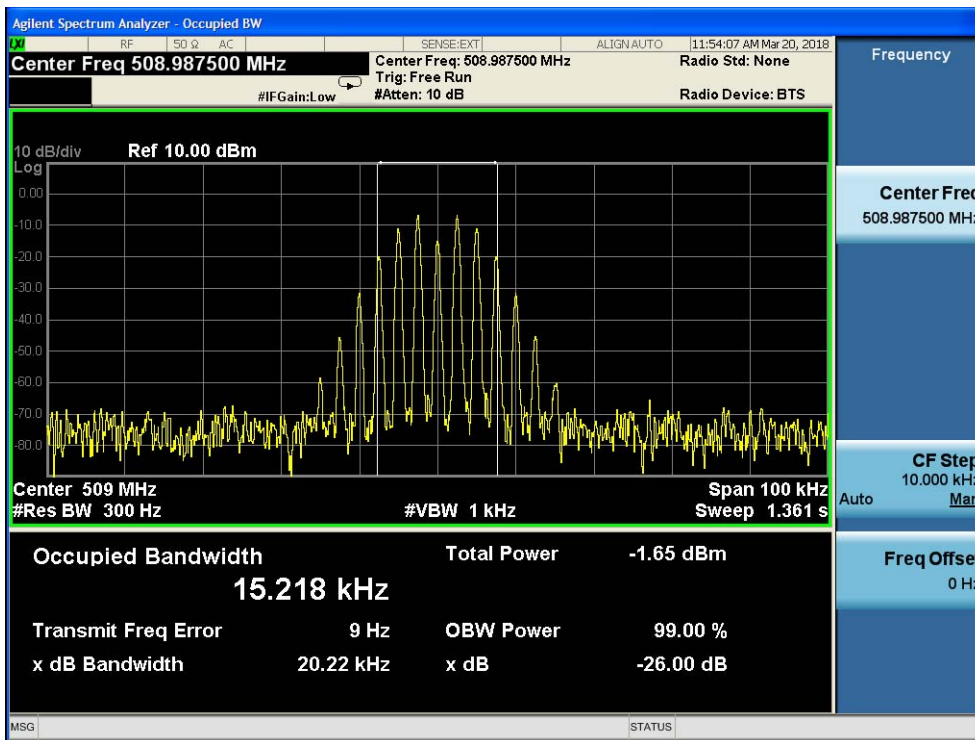


1.4 middle frequency—Output

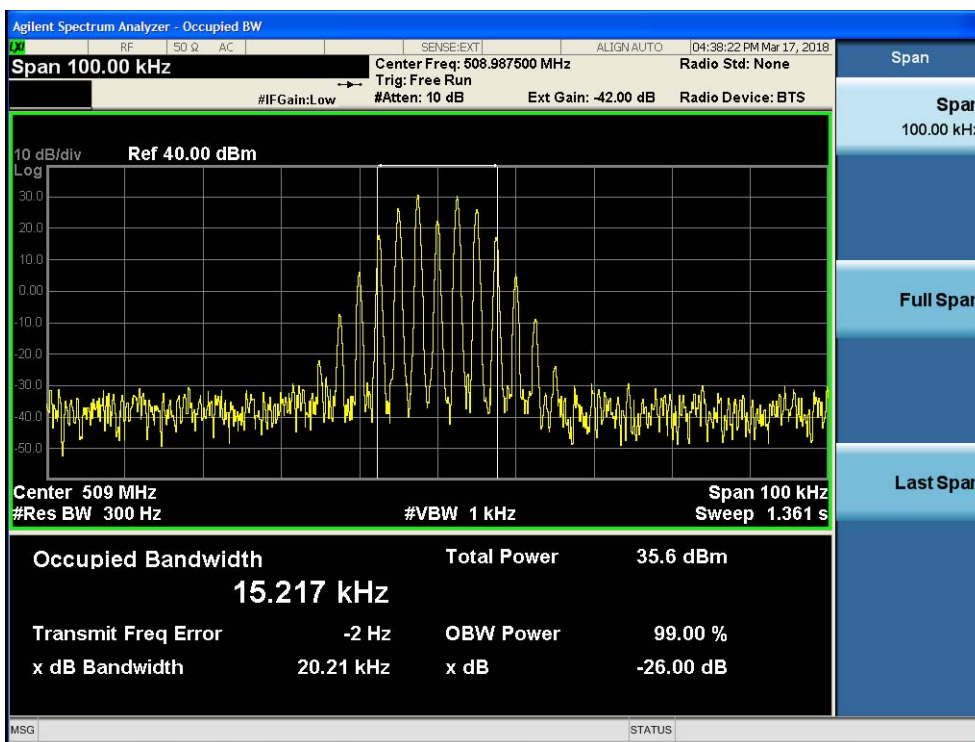




1.5 highest frequency—Input

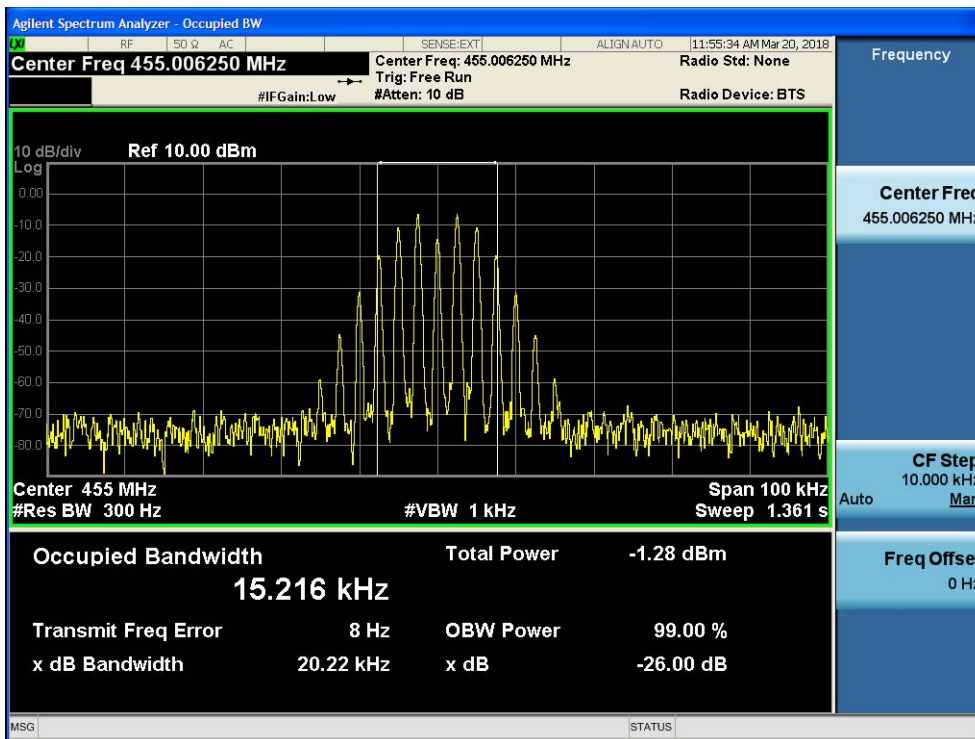


1.6 highest frequency—Output

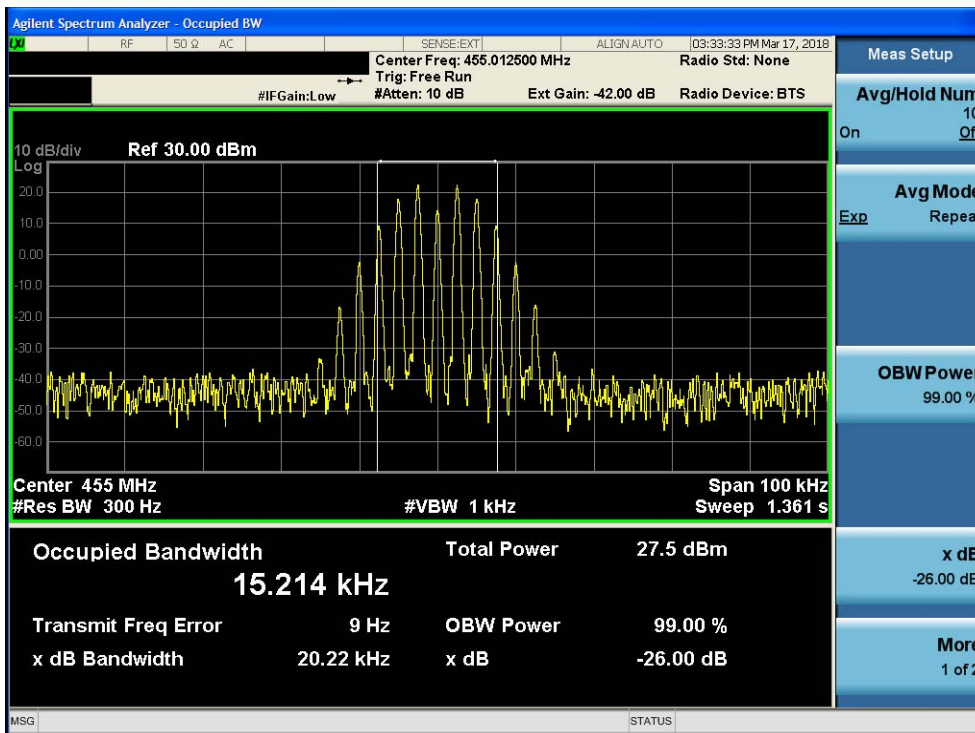


**8. Uplink:455MHz to 512MHz
(for FM 25K mode)**

1.1 lowest frequency – Input

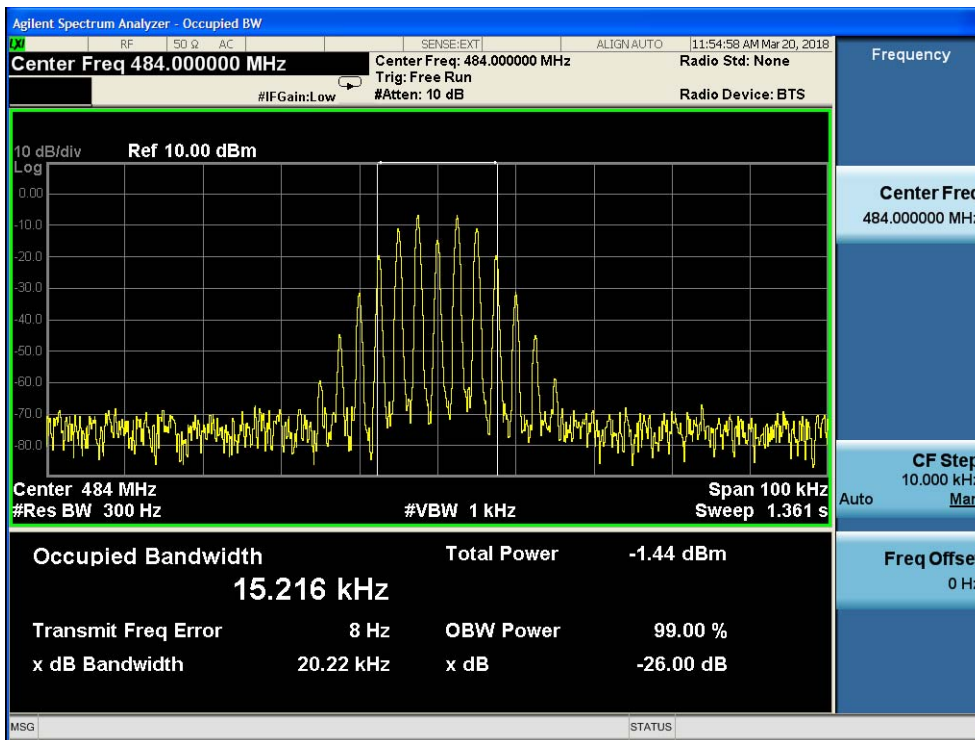


1.2 lowest frequency—Output

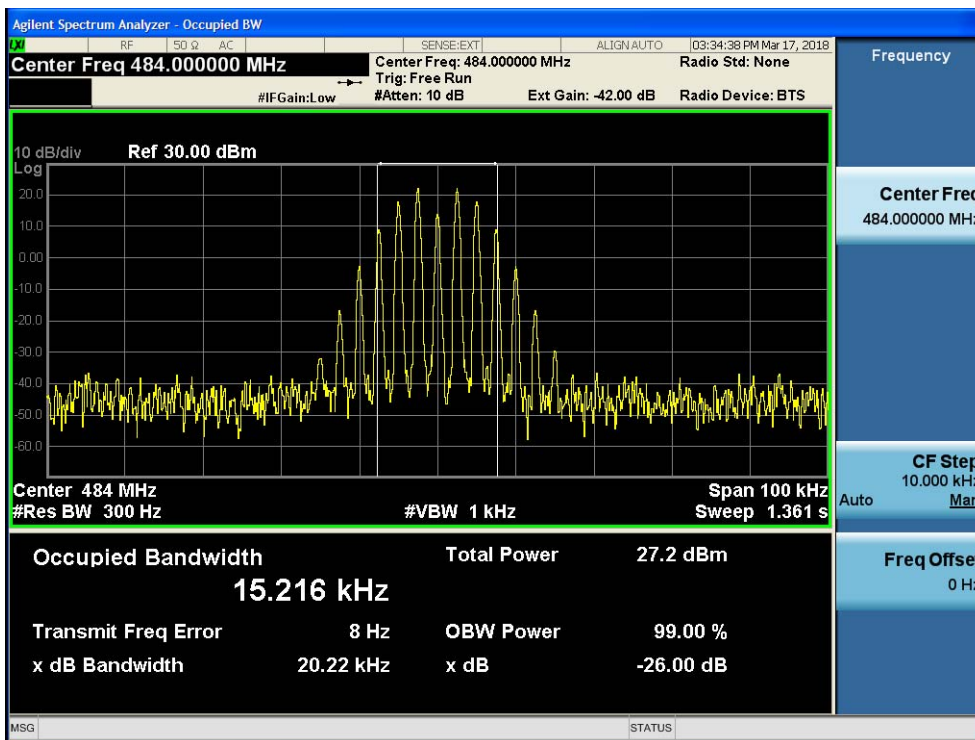




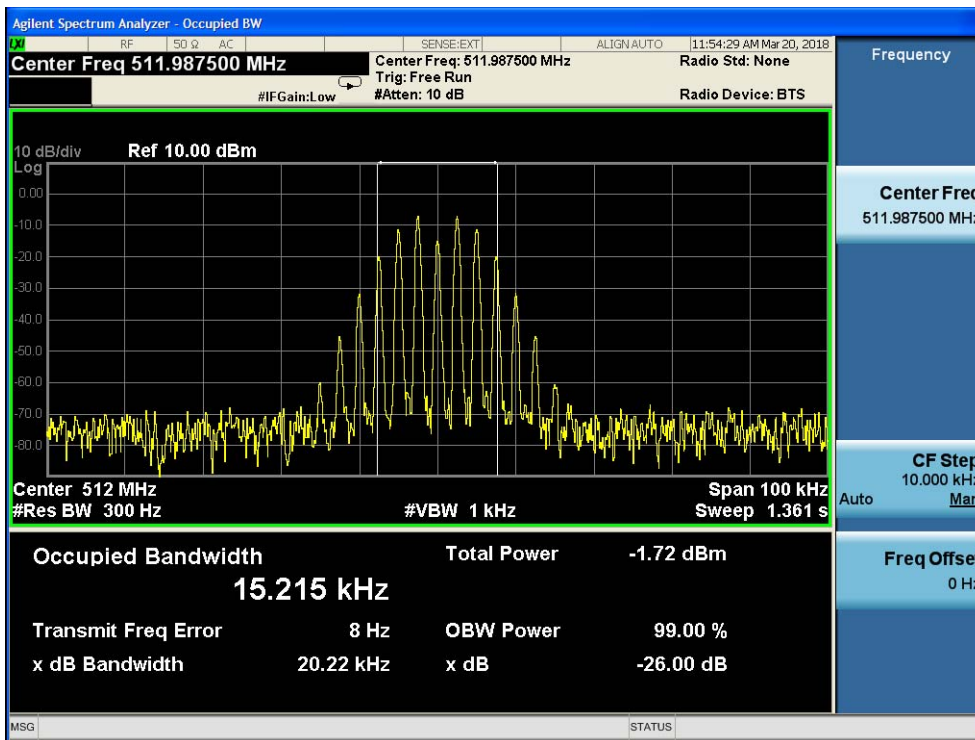
1.3 middle frequency—Input



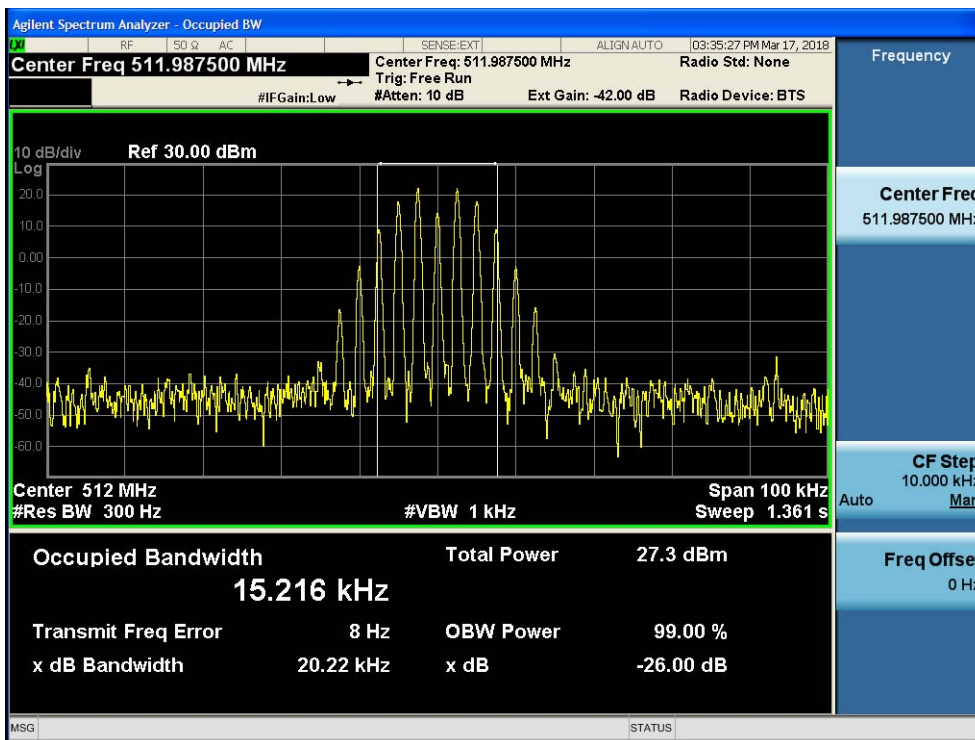
1.4 middle frequency—Output



1.5 highest frequency—Input



1.6 highest frequency—Output



7.2.9 Out of Band Rejection

Test Requirement: KDB935210 D02
Test for rejection of out of band signals. Filter freq. response plots are acceptable.

Test Method: KDB935210 D02

EUT Operation:
Status: Drive the EUT to maximum output power. .
Conditions: Normal conditions
Application: Cellular Band RF output ports

Test Configuration:

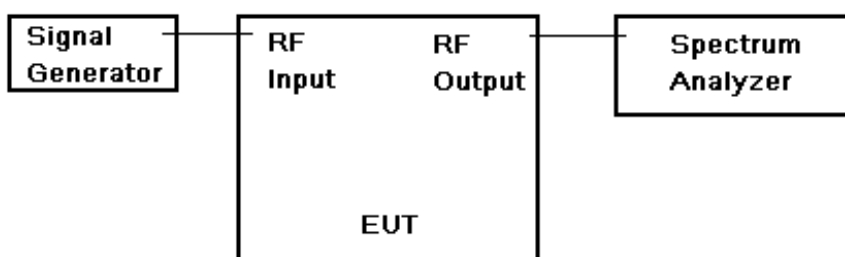


Fig.4. Out of Band rejection test configuration

Test Procedure:

1. Connect the equipment as illustrated;
2. Test the background noise level with all the test facilities;
3. Keep one transmitting path, all other connectors shall be connected by normal power or RF leads;
4. Select the attenuator to avoid the test receiver or spectrum analyzer being destroyed;
5. Keep the EUT continuously transmitting in max power;
6. Signal generator sweep from the frequency more lower than the product frequency to the frequency more higher than it, find the product band filter characteristic;

· With the aid of a CW Swept signal generator and spectrum analyser, the bandwidth and frequency response of the open channel (i.e. at the point where the gain has fallen by 20dB) is measured.

This measurement shows the gain-versus-frequency response of the open channel from the midband frequency f_0 of the channel up to at least $f_0 + 250\%$ of the 20dB bandwidth.



7.2.9.1 Measurement Record:

Downlink:

Lower 5MHz Band 450.0MHz-455.0MHz

Middle 5MHz Band 478.5MHz-483.5MHz

Upper 5MHz Band 504.0MHz-509.0MHz

Frequency (MHz)	FL(MHz)	FH (MHz)	20dB Bandwidth(kHz)
452.5	449.9198	455.1303	5.21MHz
481	478.4198	483.6302	5.21MHz
506.5	503.9198	509.1303	5.21MHz

Uplink:

Lower 5MHz Band 455.0MHz-460.0MHz

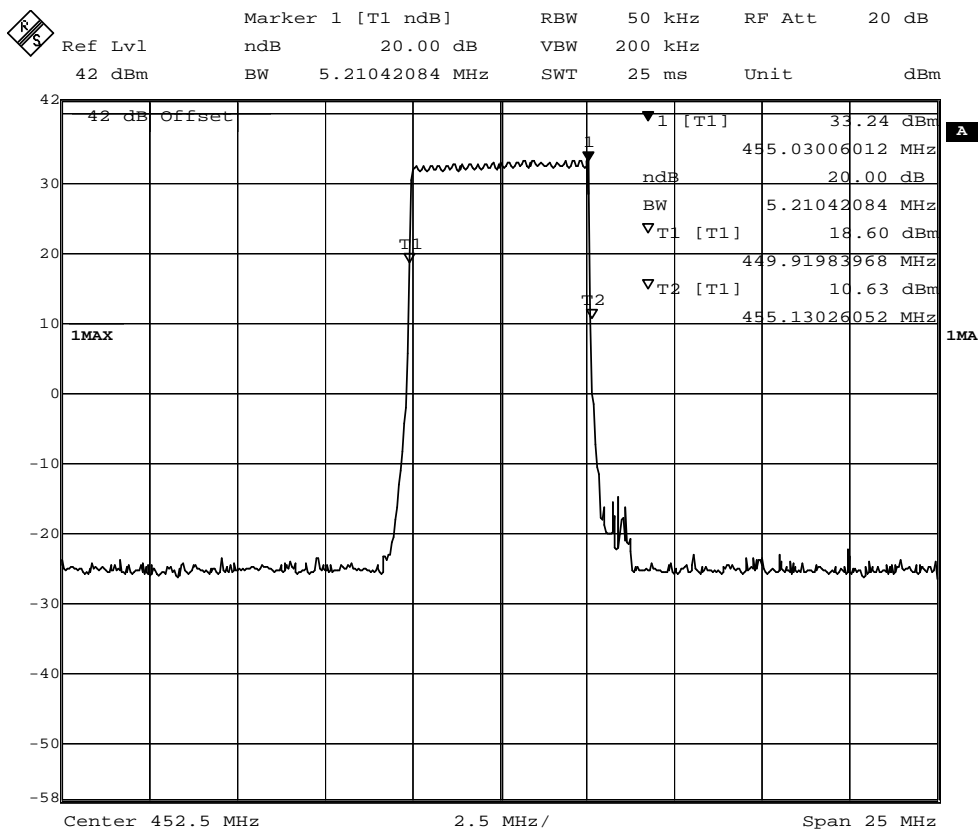
Middle 5MHz Band 481.5MHz-486.5MHz

Upper 5MHz Band 507.0MHz-512.0MHz

Frequency (MHz)	FL(MHz)	FH (MHz)	20 dB Bandwidth
457.5	454.9198	460.1303	5.21MHz
484	481.4198	486.6302	5.21MHz
509.5	506.9198	512.1303	5.21MHz

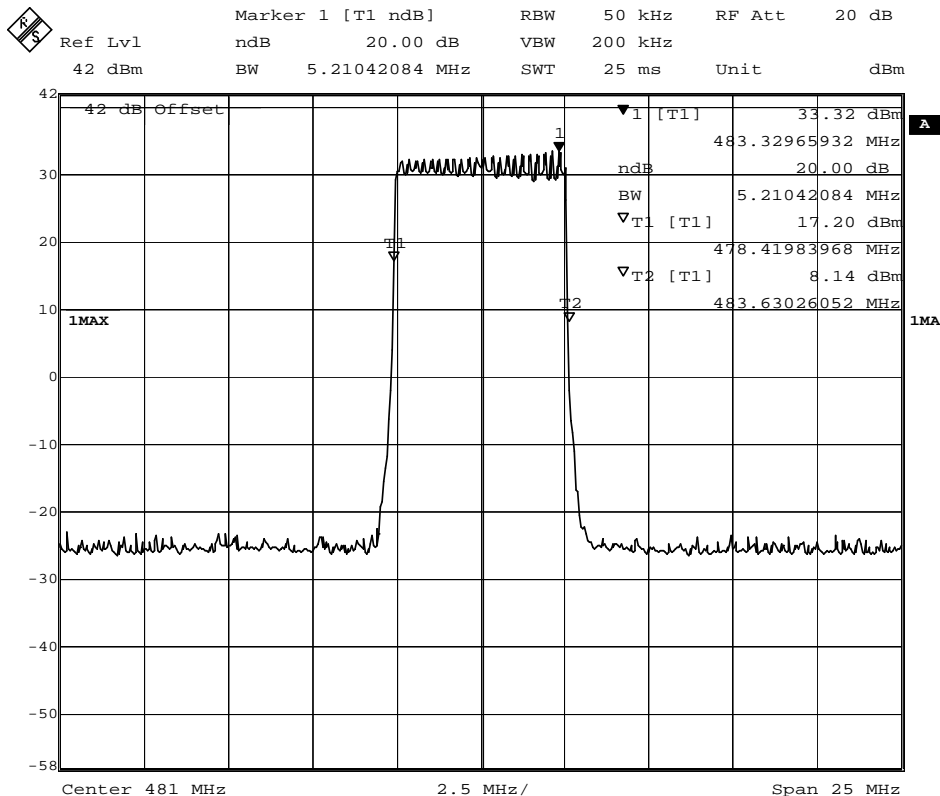


**1. Test for Downlink: 450MHz to 455MHz
Lower 5MHz band-452.5MHz**



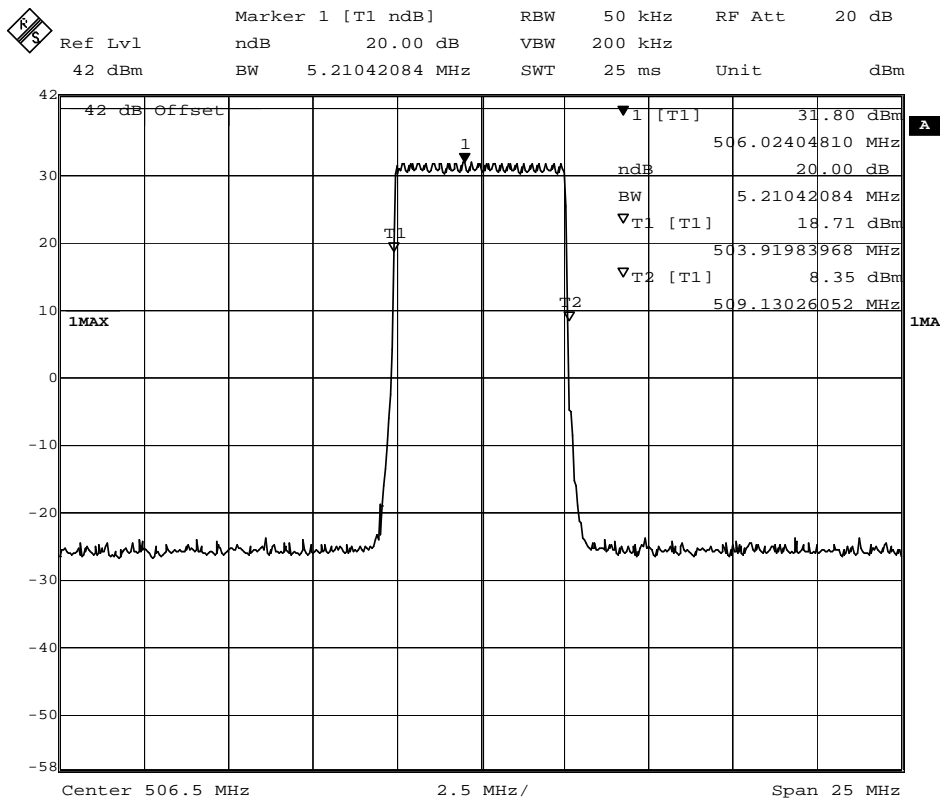
Date: 1.JAN.1997 04:36:14

Middle 5MHz band-481MHz



Date: 1.JAN.1997 04:43:30

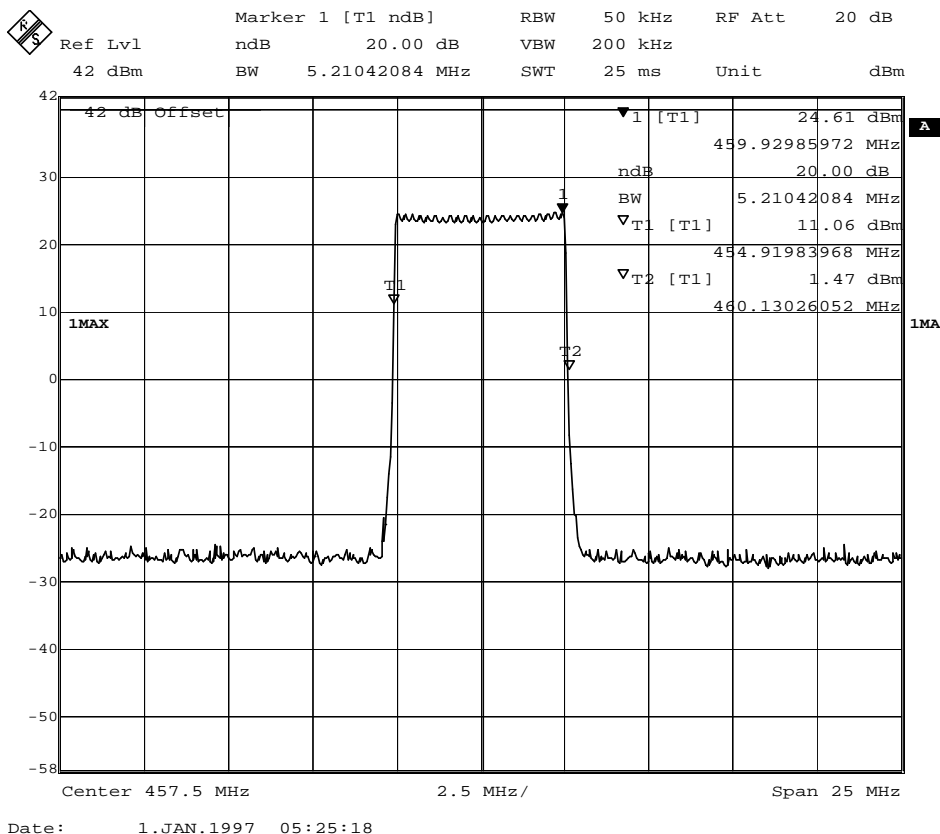
Upper 5MHz band-506.5MHz



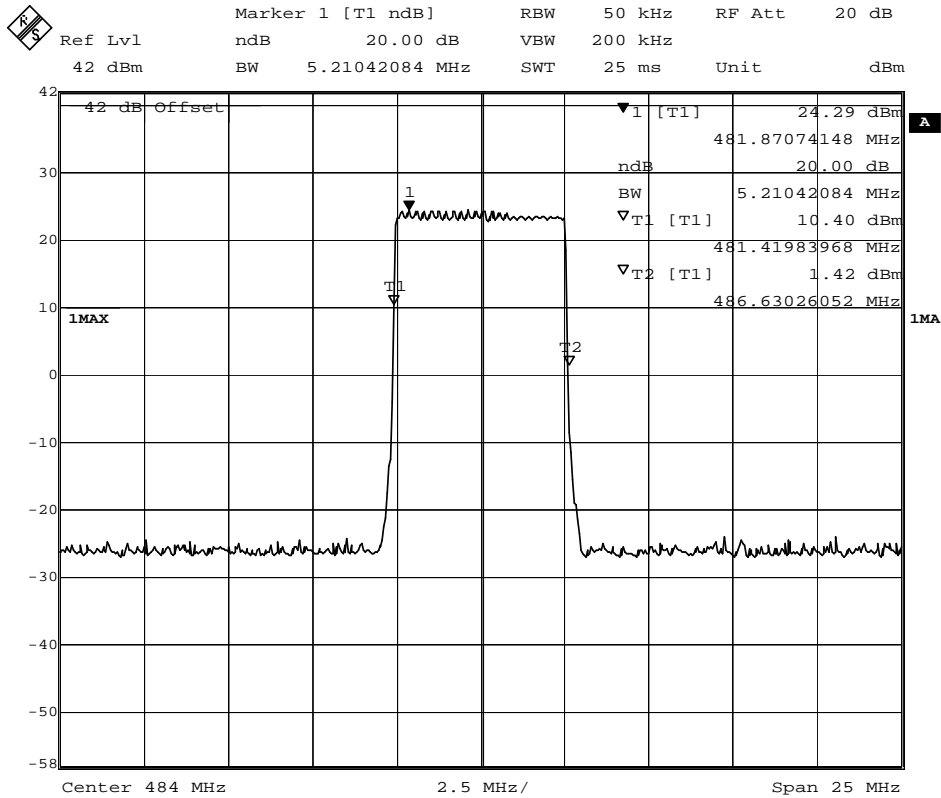
Date: 1.JAN.1997 04:50:02



**2. Test for Uplink: 455MHz to 455MHz
Lower 5MHz band-457.5MHz**

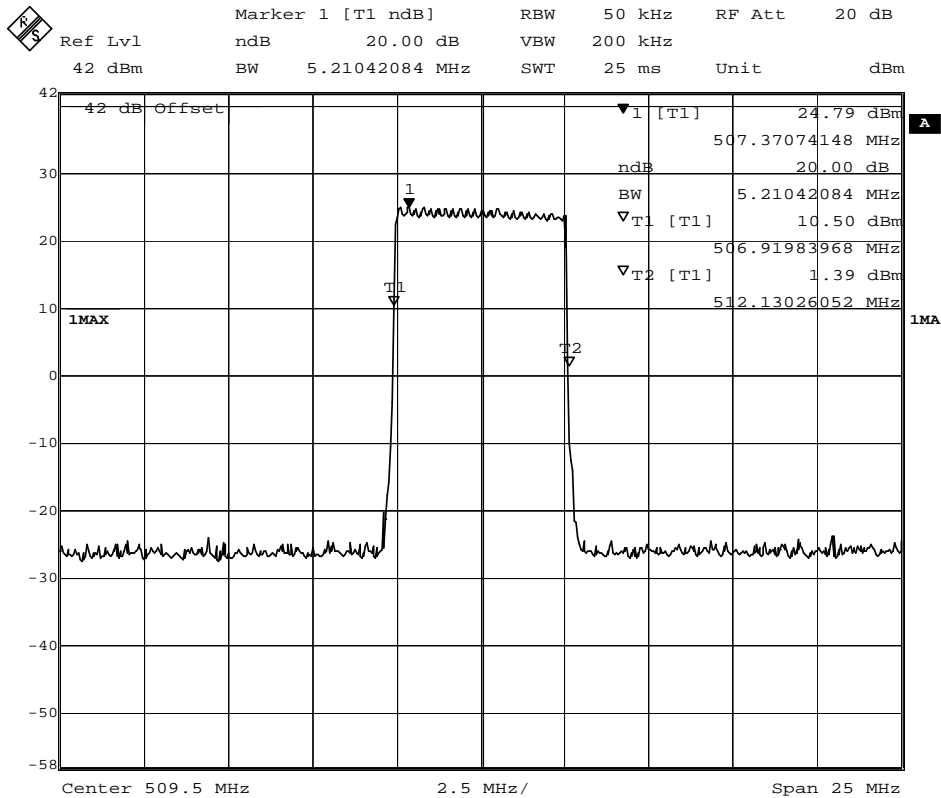


Mid 5MHz band-484MHz



Date: 1.JAN.1997 05:23:03

Upper 5MHz band-509.5MHz



Date: 1.JAN.1997 05:11:38



7.2.10 Frequency Stability

- Test Requirement: FCC part 90.213
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.
- Test Method: FCC part 2.1055
- EUT Operation:
- Status: Drive the EUT to maximum output power.
- Conditions: Temperature conditions, voltage conditions
- Application: Cellular Band RF output ports
- Test Procedure:
1. Temperature conditions:
 - a) The RF output port of the EUT was connected to Frequency Meter;
 - b) Set the working Frequency in the middle channel;
 - c) record the 20°C and nominal voltage frequency value as reference point;
 - d) vary the temperature from -30°C to 50°C with step 10°C
 - e) when reach a temperature point, keep the temperature banlance at least 1 hour to make the product working in this status;
 - f) read the frequency at the relative temperature.
 2. Voltage conditions:
 - a) record the 20°C and nominal voltage frequency value as reference point;
 - b) vary the voltage from -15% nominal voltage to +15% voltage;
 - c) read the frequency at the relative voltage.

Limit:

MINIMUM FREQUENCY STABILITY

[Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	¹²³ 100	100	200
25-50	20	20	50
72-76	5		50
150-174	⁵ 11.5	⁶ 5	⁴ 50
216-220	1.0		1.0
220-222 ¹²	0.1	1.5	1.5
421-512	⁷ 11 ¹⁴ 2.5	⁸ 5	⁸ 5
806-809	¹⁴ 1.0	1.5	1.5
809-824	¹⁴ 1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	¹⁴ 0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928 ¹³	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	⁸ 300	300	300
Above 2450 ¹⁰			



⁷In the 421-512 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 0.5 ppm.

¹¹Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150-174 MHz band and 2.5 ppm in the 421-512 MHz band.

¹⁴Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

⁸In the 421-512 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.



7.2.10.1 Measurement Record:

1) Frequency Stability vs temperature:

1.1) Test for Downlink: 450~509MHz (middle channel 481MHz)

Temperature(°C)	Frequency(MHz)	Tolerance(ppm)
50	481.0000021	0.000623700
40	481.0000017	0.000207900
30	481.0000023	0.001039500
20	481.0000018	Reference
10	481.0000025	0.001455300
0	481.0000019	-0.000207900
-10	481.0000022	0.000831600
-20	481.0000015	-0.000623700
-30	481.0000022	0.000831600

1.2) Test for Uplink: 455~512MHz (middle channel 484MHz)

Temperature(°C)	Frequency(MHz)	Tolerance(ppm)
50	484.0000021	0.000826446
40	484.0000023	0.001239669
30	484.0000019	0.000413223
20	484.0000017	Reference
10	484.0000014	-0.000619835
0	484.0000023	0.001239669
-10	484.0000022	0.000133067
-20	484.0000017	0
-30	484.0000015	-0.000413223

2) Frequency Stability vs voltage:

2.1) For AC supplied:

2.1.1) Test for Downlink:450~509MHz (middle channel 481.0MHz)

Voltage(V AC)	Frequency(MHz)	Tolerance(ppm)
102 (120*0.85)	481.0000017	0.000062370
120	481.0000020	Reference
138 (120*1.15)	481.0000022	0.000041580

2.1.2) Test for Uplink:455~512MHz (middle channel 484.0MHz)

Voltage(V AC)	Frequency(MHz)	Tolerance(ppm)
102 (120*0.85)	484.0000021	0.000041322
120	484.0000019	Reference
138 (120*1.15)	484.0000024	0.001033058

3) Frequency Stability vs voltage:

2.1) For DC supplied:

2.1.1) Test for Downlink:450~509MHz (middle channel 481.0MHz)

Voltage(V DC)	Frequency(MHz)	Tolerance(ppm)
-40.8 (-48.0*0.85)	481.0000019	0.000062370
-48.0	481.0000021	Reference
-55.2 (-48.0*1.15)	481.0000016	0.000103950

2.1.2) Test for Uplink:455~512MHz (middle channel 484.0MHz)

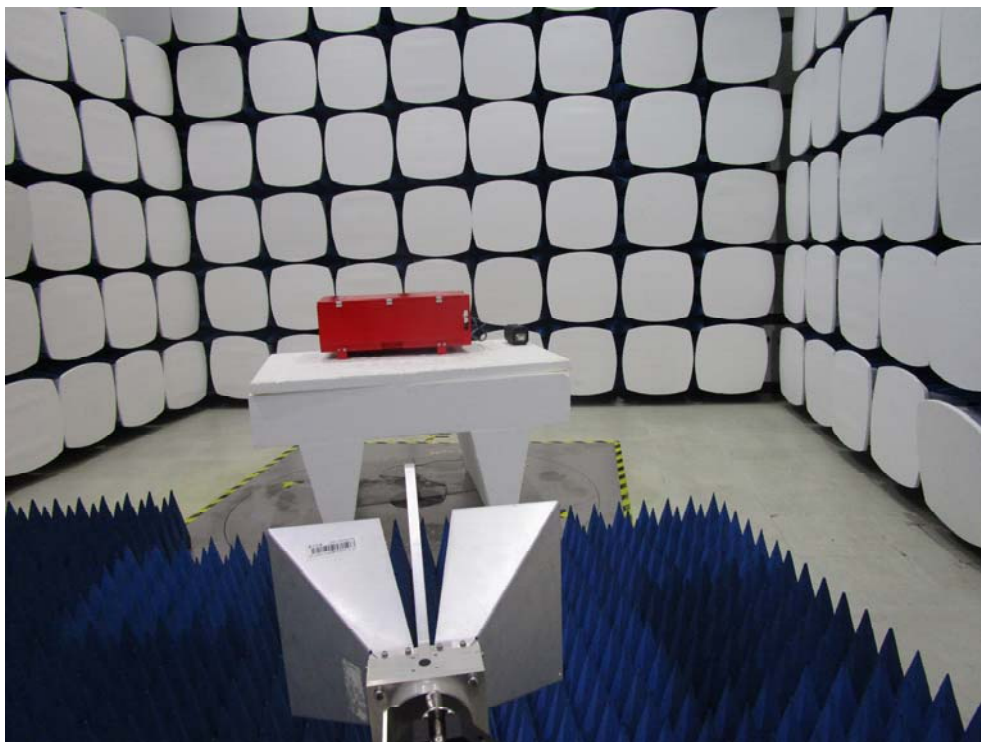
Voltage(V DC)	Frequency(MHz)	Tolerance(ppm)
-40.8 (-48.0*0.85)	484.0000022	0.000082644
-48.0	484.0000018	Reference
-55.2 (-48.0*1.15)	484.0000026	0.000165289

8 Photographs - Test Setup

30MHz ~ 1GHz Radiated Emission



Above 1GHz Radiated Emission





9 Photographs - EUT Constructional Details

Please refer to the Appendix A - EUT Construction Details of GZEM1803001216CR for detail.

--The End of Report--