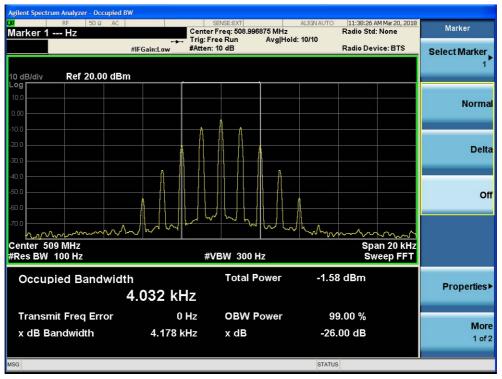
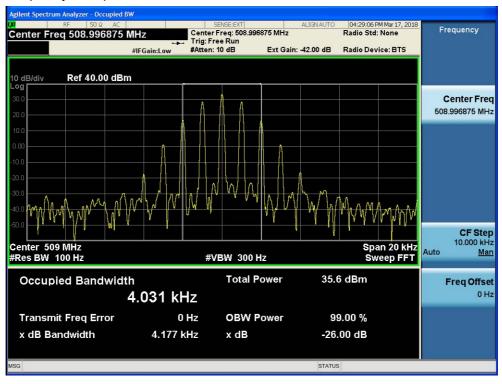


Report No.: GZEM180300121602 Page: 90 of 118

# 1.5 highest frequency—Input



1.6 highest frequency—Output

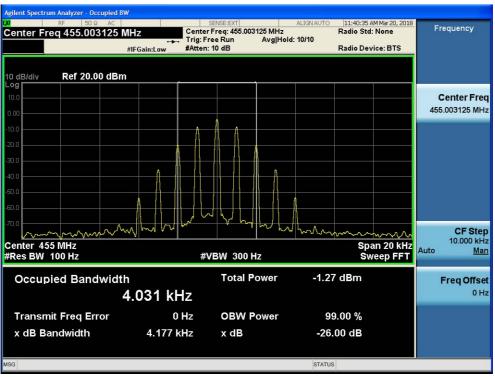




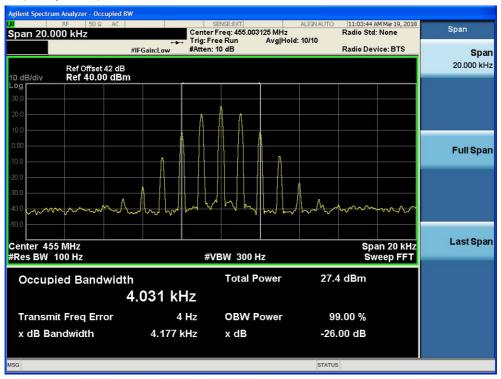
Report No.: GZEM180300121602 91 of 118 Page:

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

1.1 lowest frequency – Input



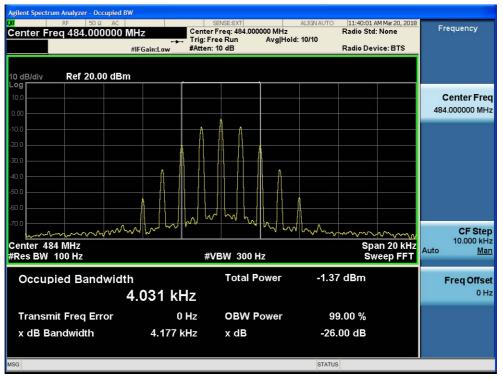
1.2 lowest frequency—Output



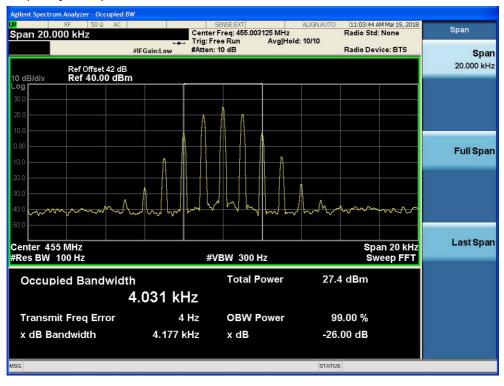


Report No.: GZEM180300121602 Page: 92 of 118

# 1.3 middle frequency-Input



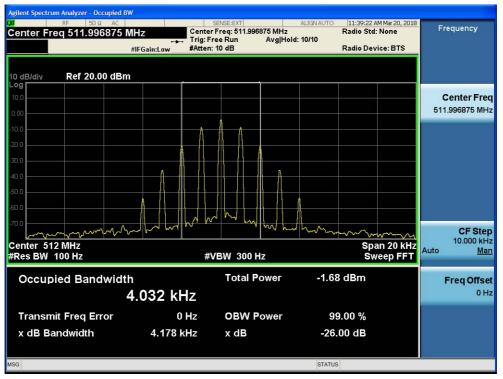
1.4 middle frequency—Output



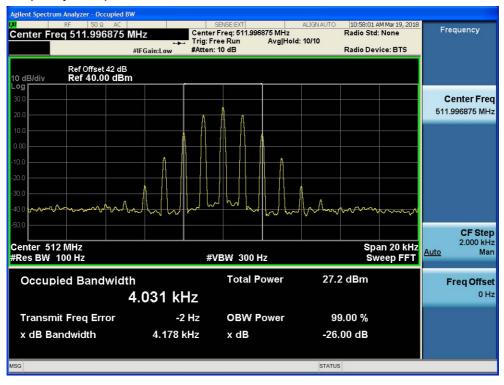


Report No.: GZEM180300121602 Page: 93 of 118

# 1.5 highest frequency—Input



1.6 highest frequency—Output

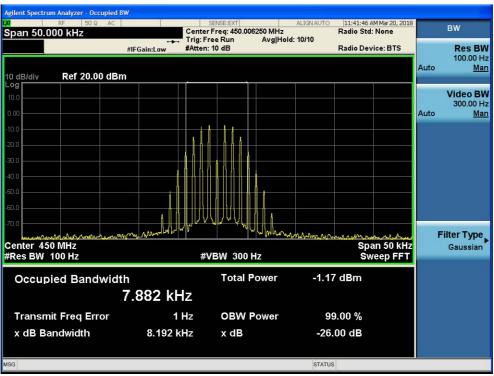




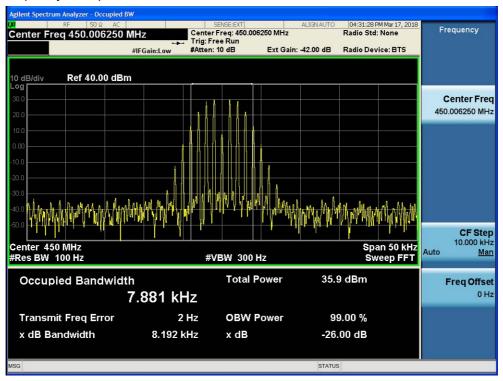
Report No.: GZEM180300121602 Page: 94 of 118

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

# 1.1 lowest frequency - Input



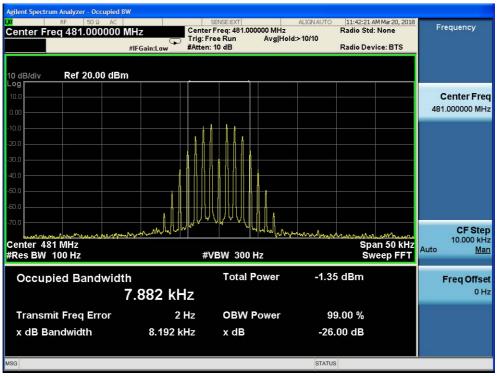
1.2 lowest frequency—Output



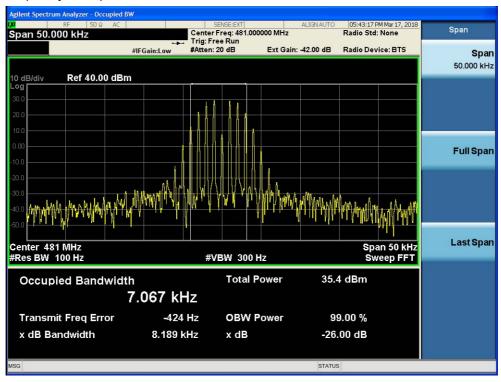


Report No.: GZEM180300121602 Page: 95 of 118

# 1.3 middle frequency-Input



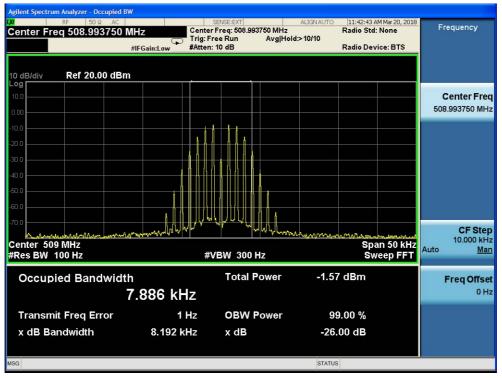
1.4 middle frequency—Output



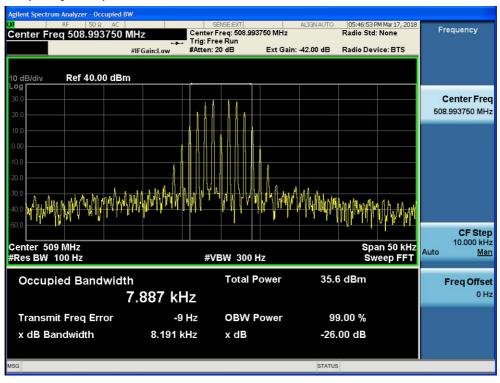


Report No.: GZEM180300121602 Page: 96 of 118

# 1.5 highest frequency—Input



1.6 highest frequency—Output

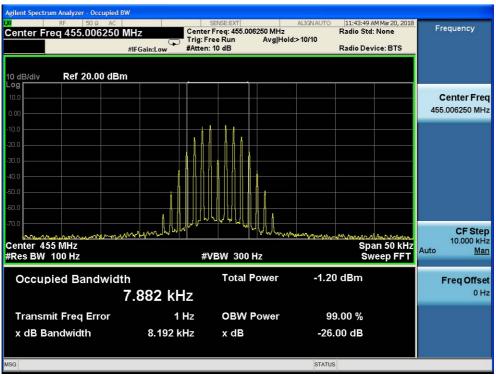




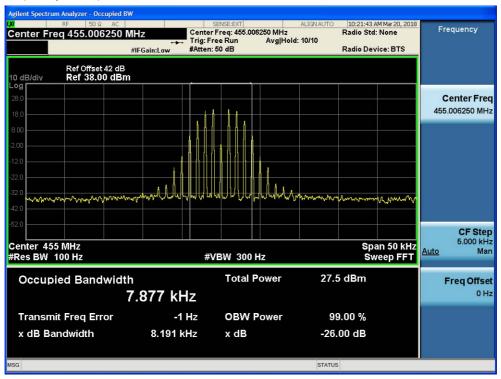
Report No.: GZEM180300121602 97 of 118 Page:

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

1.1 lowest frequency – Input



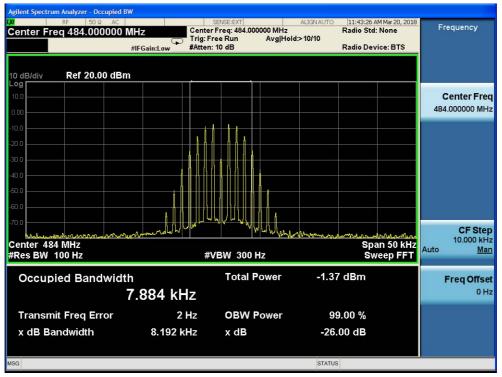
1.2 lowest frequency—Output



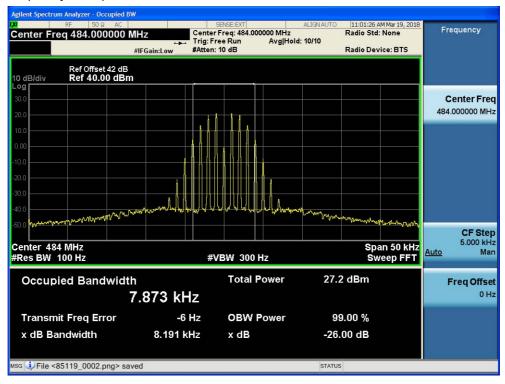


Report No.: GZEM180300121602 Page: 98 of 118

# 1.3 middle frequency-Input



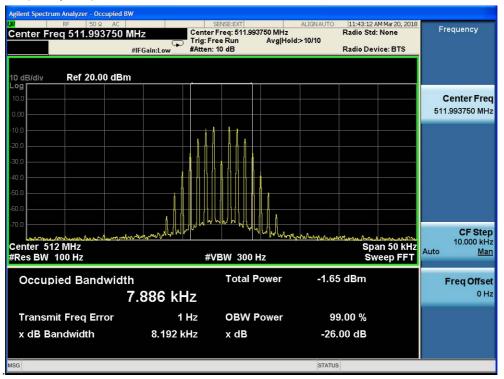
1.4 middle frequency—Output



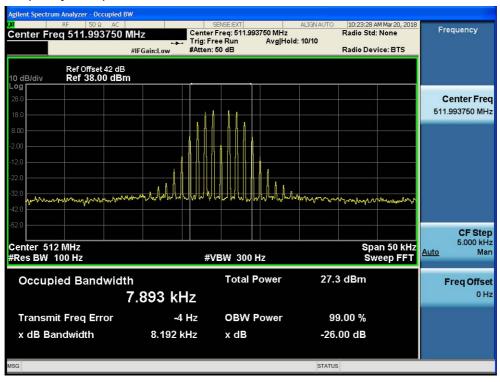


Report No.: GZEM180300121602 Page: 99 of 118

# 1.5 highest frequency—Input



1.6 highest frequency—Output

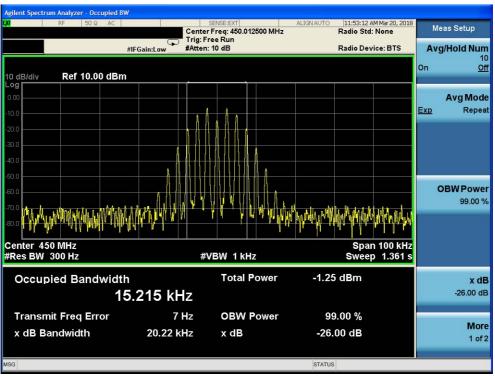




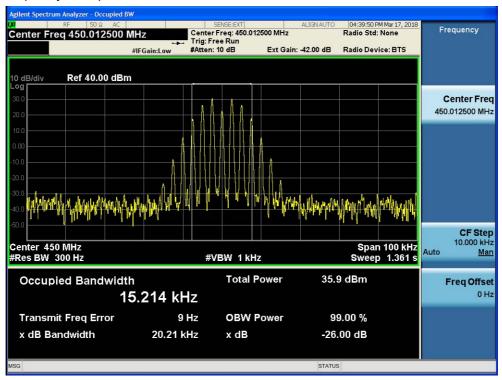
Report No.: GZEM180300121602 100 of 118 Page:

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

# 1.1 lowest frequency - Input



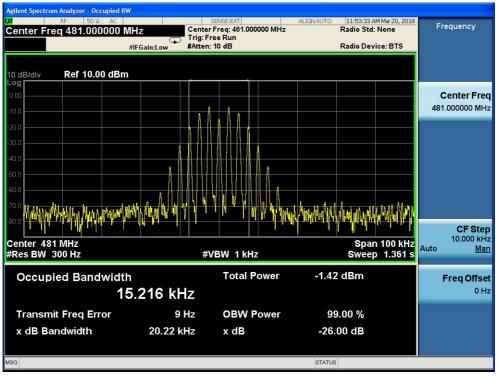
1.2 lowest frequency—Output



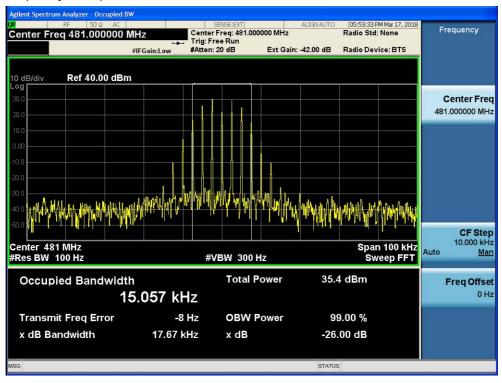


Report No.: GZEM180300121602 Page: 101 of 118

# 1.3 middle frequency—Input



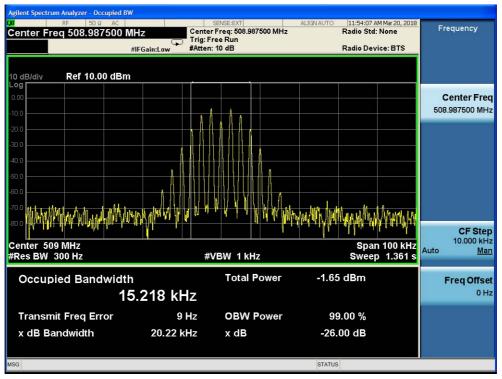
1.4 middle frequency—Output



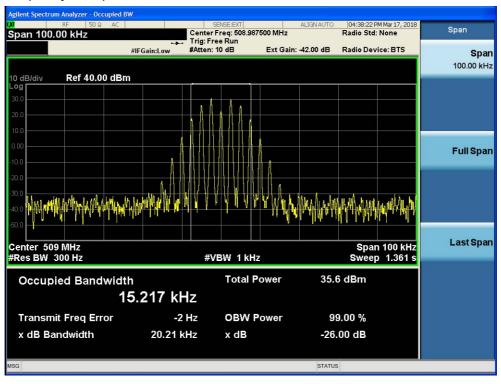


Report No.: GZEM180300121602 Page: 102 of 118

# 1.5 highest frequency—Input



1.6 highest frequency—Output

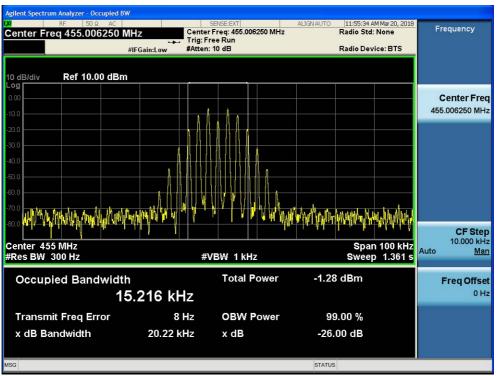




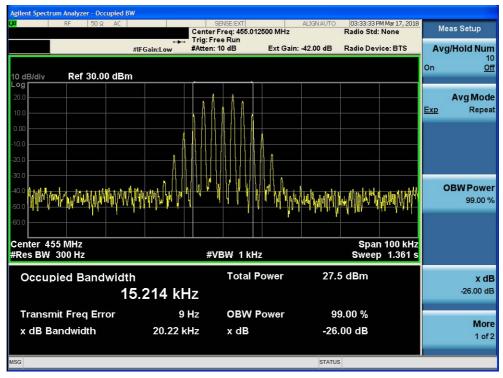
Report No.: GZEM180300121602 103 of 118 Page:

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

1.1 lowest frequency - Input



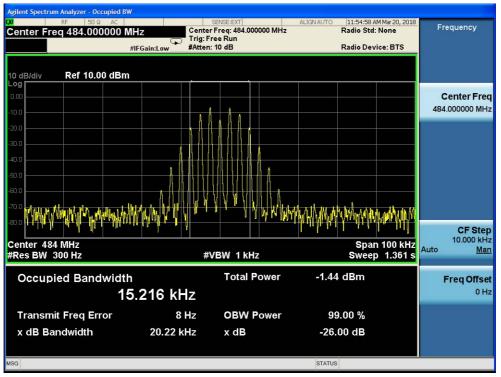
1.2 lowest frequency—Output



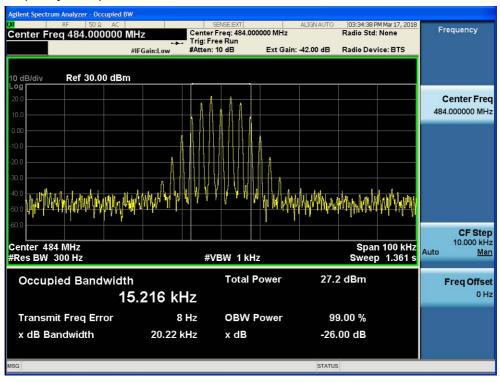


Report No.: GZEM180300121602 Page: 104 of 118

# 1.3 middle frequency—Input



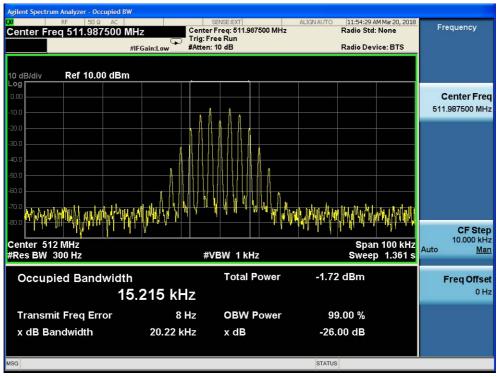
1.4 middle frequency—Output



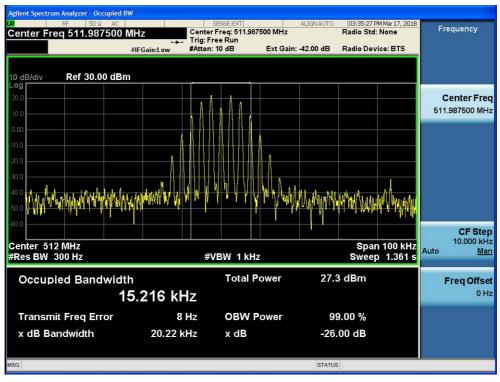


Report No.: GZEM180300121602 Page: 105 of 118

# 1.5 highest frequency—Input



1.6 highest frequency—Output





> Report No.: GZEM180300121602 106 of 118 Page:

7.2.9 Out of Band Reject	tion				
Test Requirement:	KDB935210	D02			
	Test for reje acceptable.	ection of ou	t of band sig	gnals. Filter freq. re	sponse plots are
Test Method:	KDB935210	D02			
EUT Operation:					
Status:	Drive the EU	T to maximur	n output powe	r	
Conditions:	Normal condi	itions			
Application:	Cellular Band	d RF output p	orts		
Test Configuration:					
Signa Gene			RF Output	Spectrum Analyzer	
			-	_	l
	EUT				
	-	-	ection test con	figuration	
Test Procedure:		• •	as illustrated;		
		•		all the test facilities;	
	<ol> <li>Keep one to normal power</li> </ol>			connectors shall be co	nnected by
	4. Select the attenuator to avoid the test receiver or spectrum analyzer being destroied;				
	<ul> <li>5. Keep the EUT continuously transmitting in max power;</li> <li>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;</li> </ul>				
	bandwidth an	nd frequency		erator and spectrum a e open channel (i.e. a d.	
				s-frequency response of the channel up to at	

of the 20dB bandwidth.



Report No.: GZEM180300121602 Page: 107 of 118

# 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

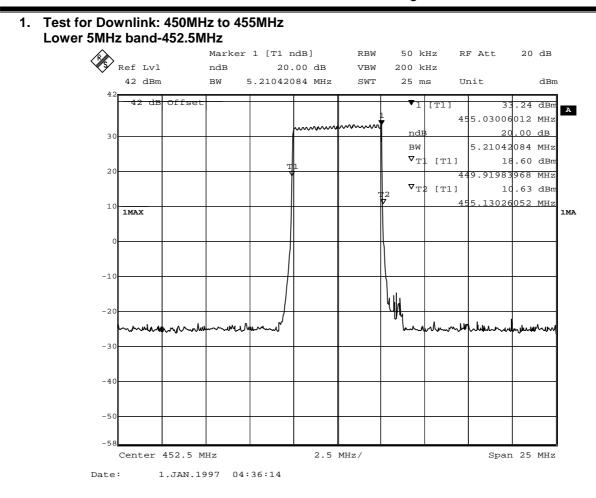
# **Uplink:**

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



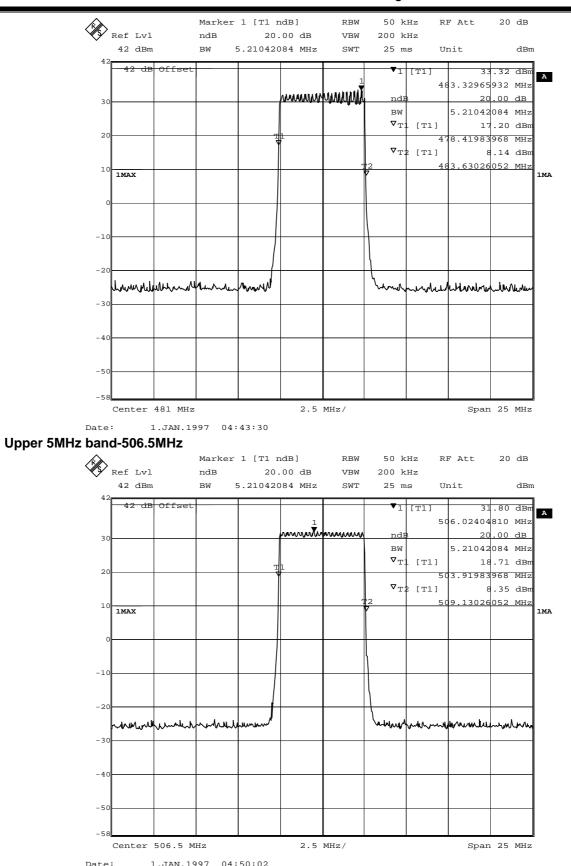
Report No.: GZEM180300121602 Page: 108 of 118



Middle 5MHz band-481MHz



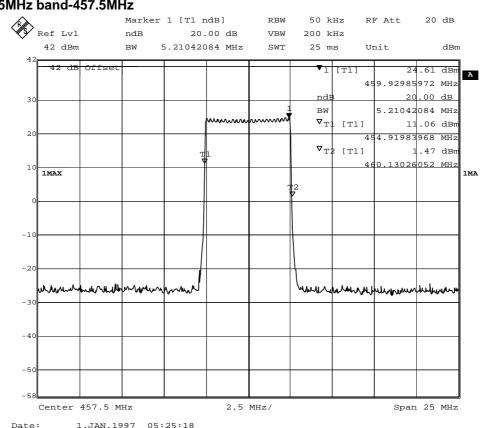
Report No.: GZEM180300121602 Page: 109 of 118



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Report No.: GZEM180300121602 Page: 110 of 118

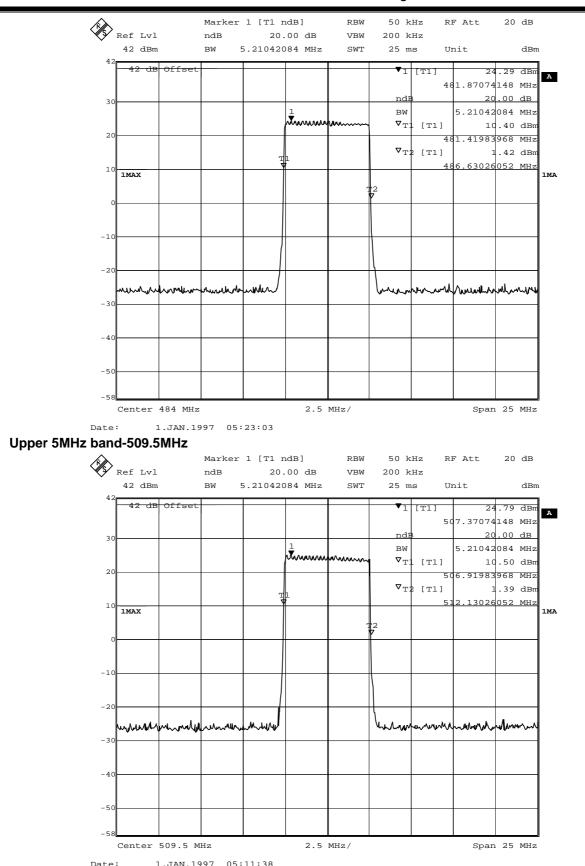


2. Test for Uplink: 455MHz to 455MHz Lower 5MHz band-457.5MHz

Mid 5MHz band-484MHz



Report No.: GZEM180300121602 Page: 111 of 118



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Report No.: GZEM180300121602 Page: 112 of 118

# 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:	
	<ul> <li>a) The RF output port of the EUT was connected to Frequency Meter;</li> </ul>	
	b) Set the working Frequency in the middle channel;	
	<li>c) record the 20°C and norminal voltage frequency value as reference point;</li>	
	d) vary the temperature from -30°C to 50°C with step 10°C	
	<ul> <li>e) when reach a temperature point, keep the temperature banlance at least 1 hour to make the product working in this status;</li> </ul>	
	f) read the frequency at the relative temperature.	
	2. Voltage conditions:	
	<ul> <li>a) record the 20°C and norminal voltage frequency value as reference point;</li> </ul>	
	b) vary the voltage from -15% norminal voltage to +15% voltage;	
	c) read the frequency at the relative voltage.	
Limit:		

MINIMUM FREQUENCY STABILITY

[Parts per million (ppm)]

		Mobile stations	
Frequency range (MHz)	Fixed and base stations	Over 2 watts output power	2 watts or less output power
Below 25	<sup>123</sup> 100	100	200
25-50	20		50
72-76	5		50
150-174	<sup>5 11</sup> 5	65	* <sup>6</sup> 50
216-220	1.0		1.0
220-222 <sup>12</sup>	0.1		1.5
421-512	711142.5	<sup>8</sup> 5	35
806-809	<sup>1+</sup> 1.0		1.5
809-824	1+1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5		2.5
896-901	<sup>14</sup> 0.1	1.5	1.5
902-928	2.5		2.5
902-928 <sup>13</sup>	2.5	2.5	25
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	<sup>9</sup> 300	300	300
Above 2450 <sup>10</sup>			



Report No.: GZEM180300121602 Page: 113 of 118

<sup>7</sup>In 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.

<sup>11</sup>Paging 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.

<sup>14</sup>Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

<sup>8</sup>In 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.



Report No.: GZEM180300121602 Page: 114 of 118

# 7.2.10.1 Measurement Record:

# 1) Frequency Stability vs temperature:

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

Temperature (°C)		Telerence (nnm)
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

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Report No.: GZEM180300121602 Page: 115 of 118

# 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)

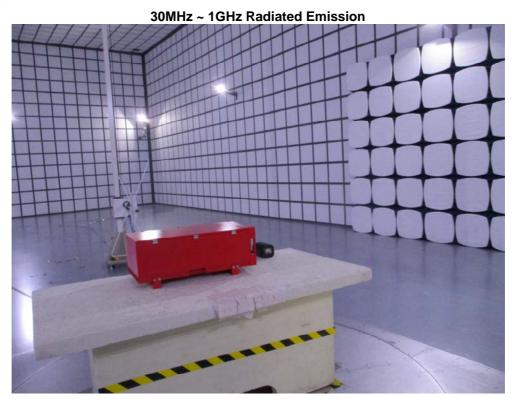
Voltage(V DC)	Frequency(MHz)	Tolerance(ppm)
-40.8 (-48.0*0.85)	484.0000022	0.000082644
-48.0	484.0000018	Reference
-55.2 (-48.0*1.15)	484.0000026	0.000165289

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Report No.: GZEM180300121602 Page: 116 of 118

# 8 Photographs - Test Setup





Report No.: GZEM180300121602 Page: 117 of 118



Above 1GHz Radiated Emission



Report No.: GZEM180300121602 Page: 118 of 118

# 9 Photographs - EUT Constructional Details

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

--The End of Report--

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