# 6 Conducted Unwanted Emission

**Test result:** **Pass**

## 6.1 Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

## 6.2 Measurement Procedure

In accordance with FCC rules, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using an attenuator and the frequency spectrum investigated from 9kHz to 20GHz. The resolution bandwidth of 1MHz was employed for frequency band 9kHz to 20GHz. The spectrum analyzer detector was set to RMS.

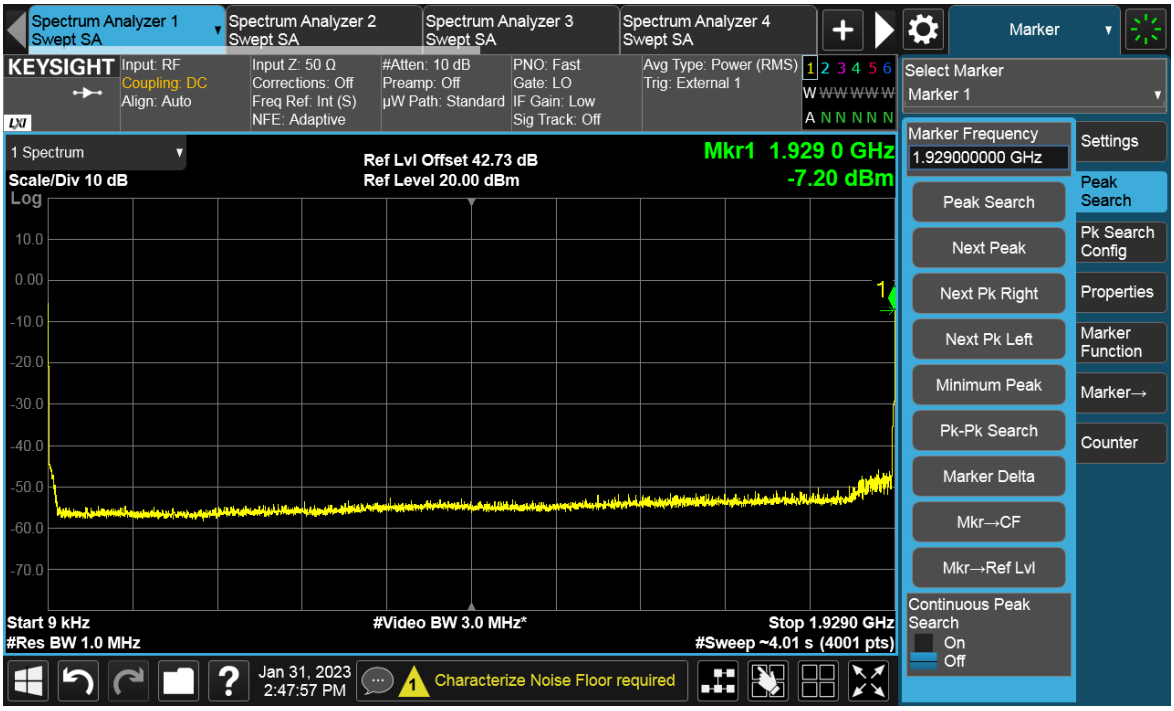
For MIMO mode configurations, the limit was adjusted with a correction of -6.02dB [10Log(1/4)] by using the Measure and Add 10Log(N) dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports. Then the limit was adjusted to -19.02dBm.

## 6.3 Measurement result

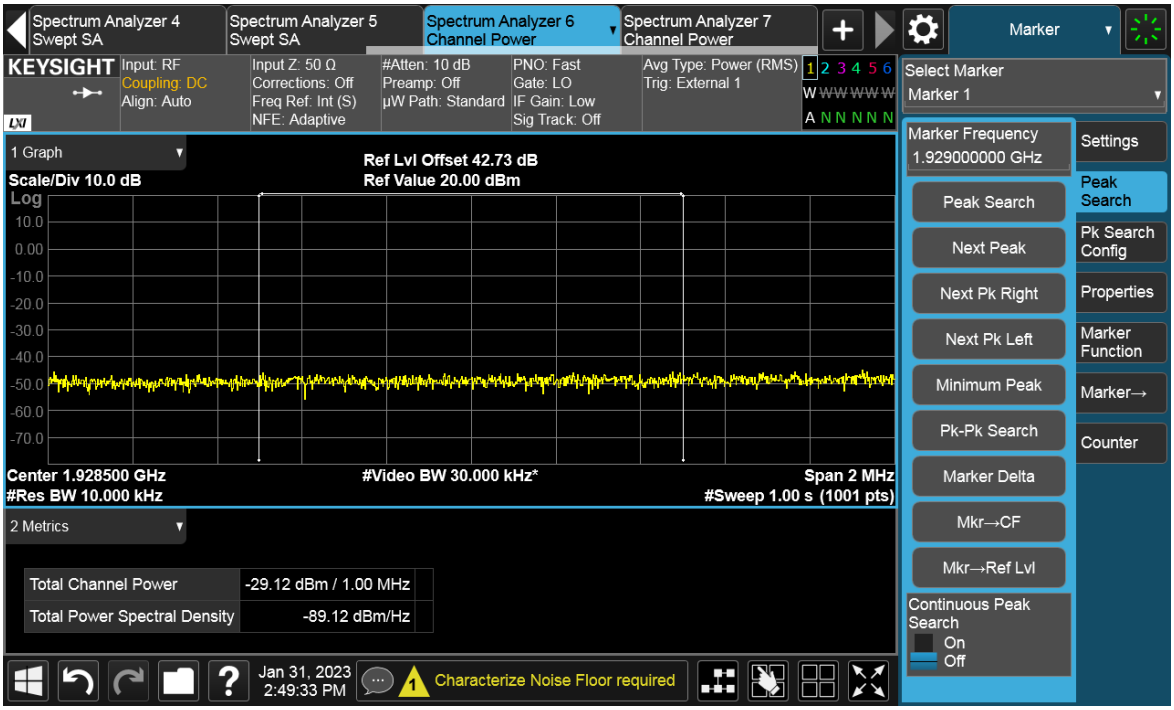
NR-1C

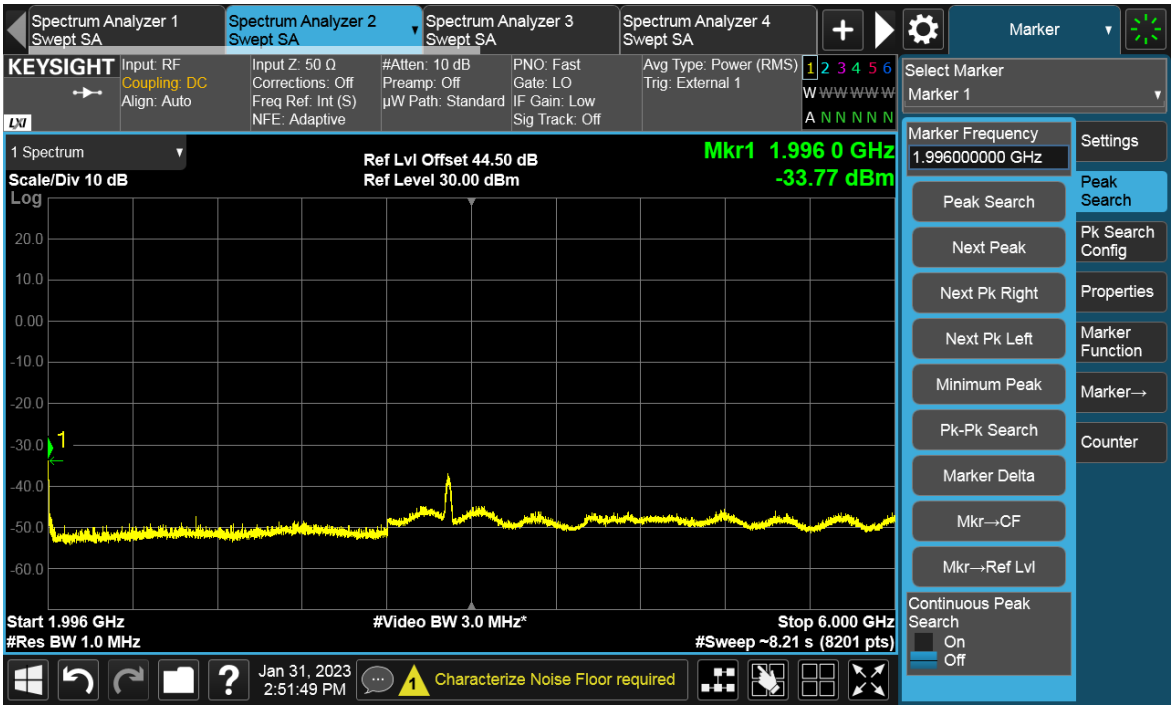
| Antenna Port | Channel Position | Modulation | Carrier BW (MHz) | RBW (kHz) | Limit (dBm) |
|---|---|---|---|---|---|
| D | B | 256QAM | 25 | 1000 | -19.02 |
| D | M | 256QAM | 25 | 1000 | -19.02 |
| D | T | 256QAM | 25 | 1000 | -19.02 |

Channel Position B

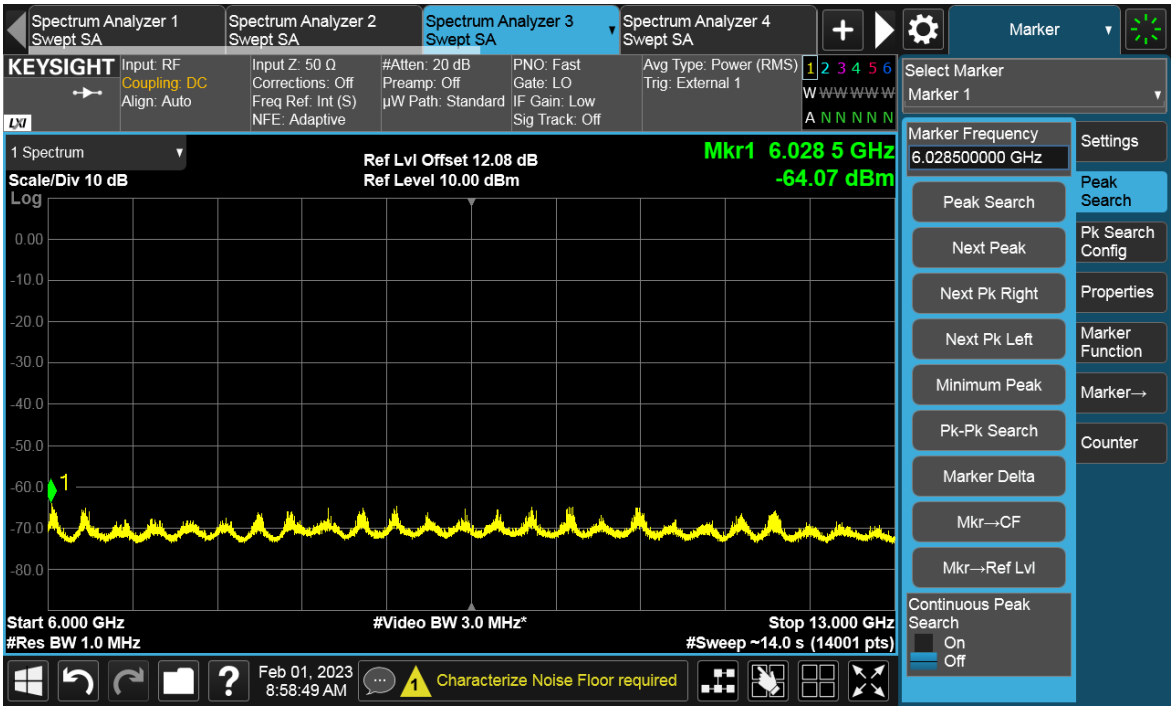


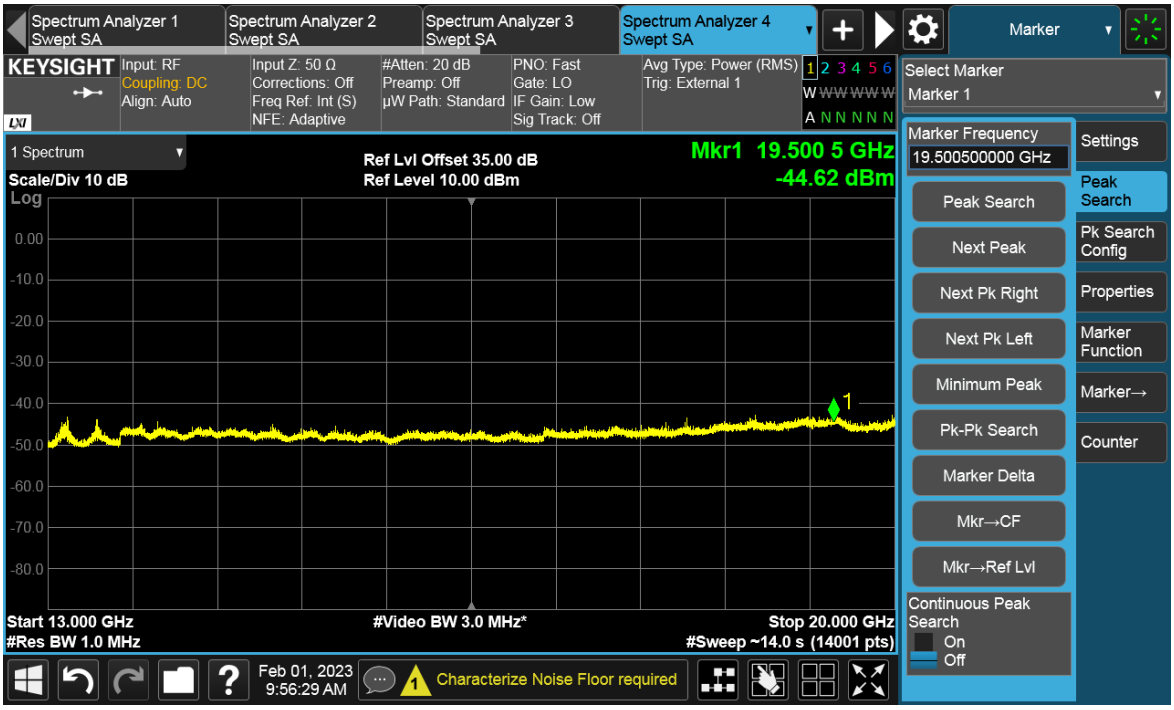
**TEST REPORT**


Spectrum Analyzer 4 Swept SA
Spectrum Analyzer 5 Swept SA
Spectrum Analyzer 6 Channel Power
Spectrum Analyzer 7 Channel Power
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Graph
Ref Lvl Offset 42.73 dB
Ref Value 20.00 dBm
Scale/Div 10.0 dB
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 1.928500 GHz
#Res BW 10.000 kHz
#Video BW 30.000 kHz*
Span 2 MHz
#Sweep 1.00 s (1001 pts)
2 Metrics
Total Channel Power
-29.12 dBm / 1.00 MHz
Total Power Spectral Density
-89.12 dBm/Hz
Marker Frequency
1.929000000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Jan 31, 2023
2:49:33 PM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 44.50 dB
Ref Level 30.00 dBm
Mkr1 1.996 0 GHz
-33.77 dBm
Scale/Div 10 dB
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Start 1.996 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 6.000 GHz
#Sweep ~8.21 s (8201 pts)
Marker Frequency
1.996000000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Jan 31, 2023
2:51:49 PM
Characterize Noise Floor required

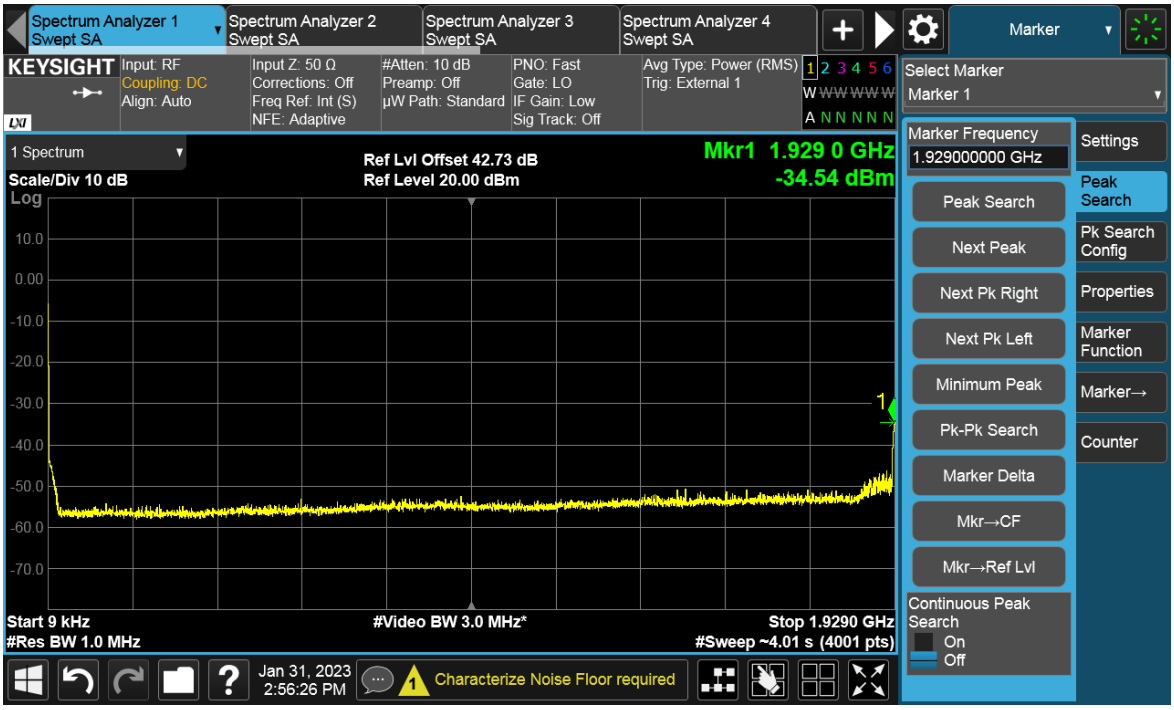
**TEST REPORT**

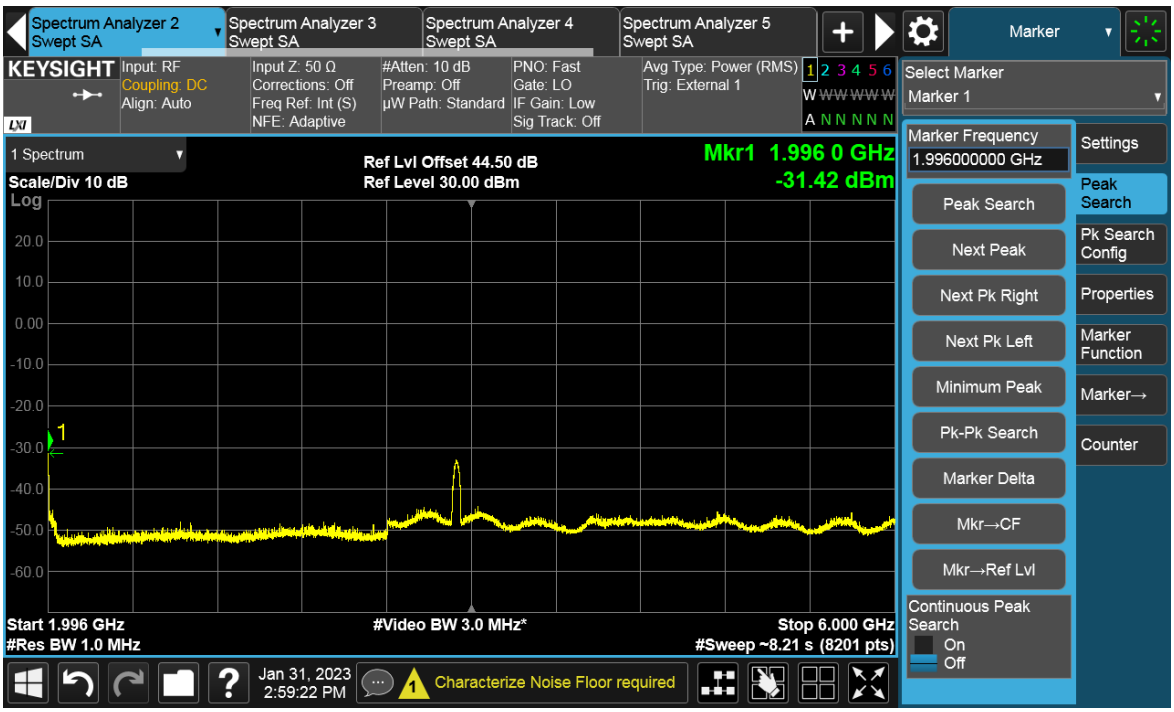

Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 12.08 dB
Ref Level 10.00 dBm
Mkr1 6.028 5 GHz
-64.07 dBm
Scale/Div 10 dB
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Start 6.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 13.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
6.028500000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
8:58:49 AM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 35.00 dB
Ref Level 10.00 dBm
Mkr1 19.500 5 GHz
-44.62 dBm
Scale/Div 10 dB
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Start 13.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 20.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
19.500500000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
9:56:29 AM
Characterize Noise Floor required

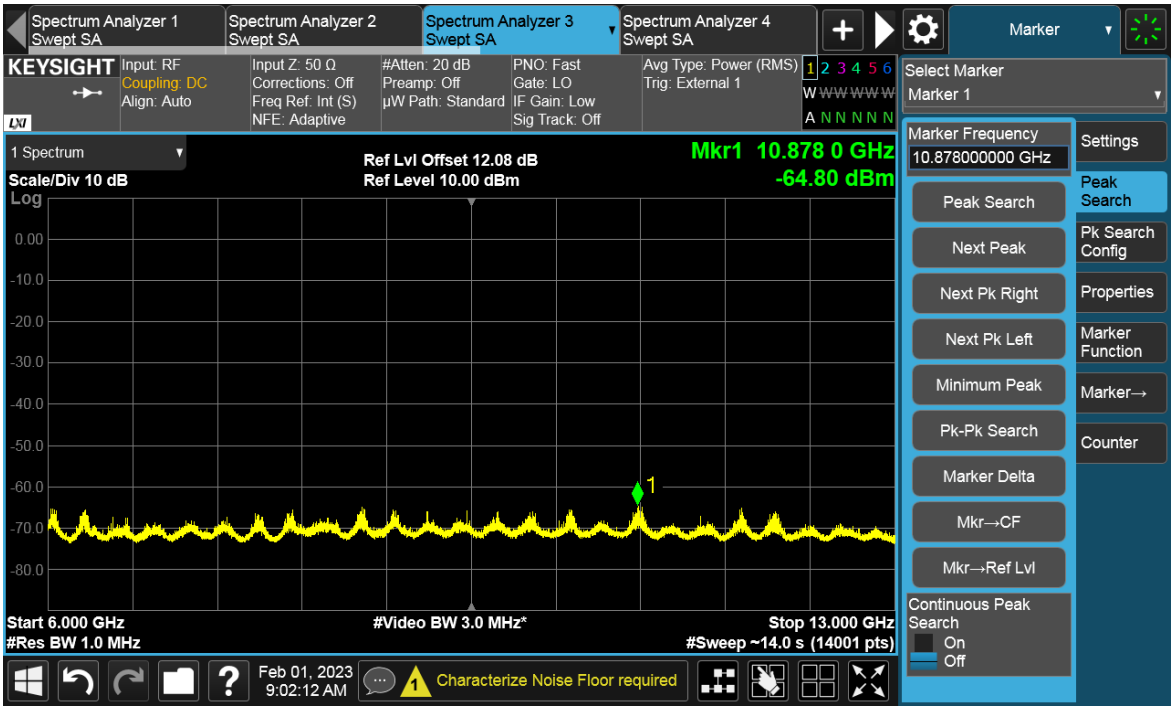
**TEST REPORT**

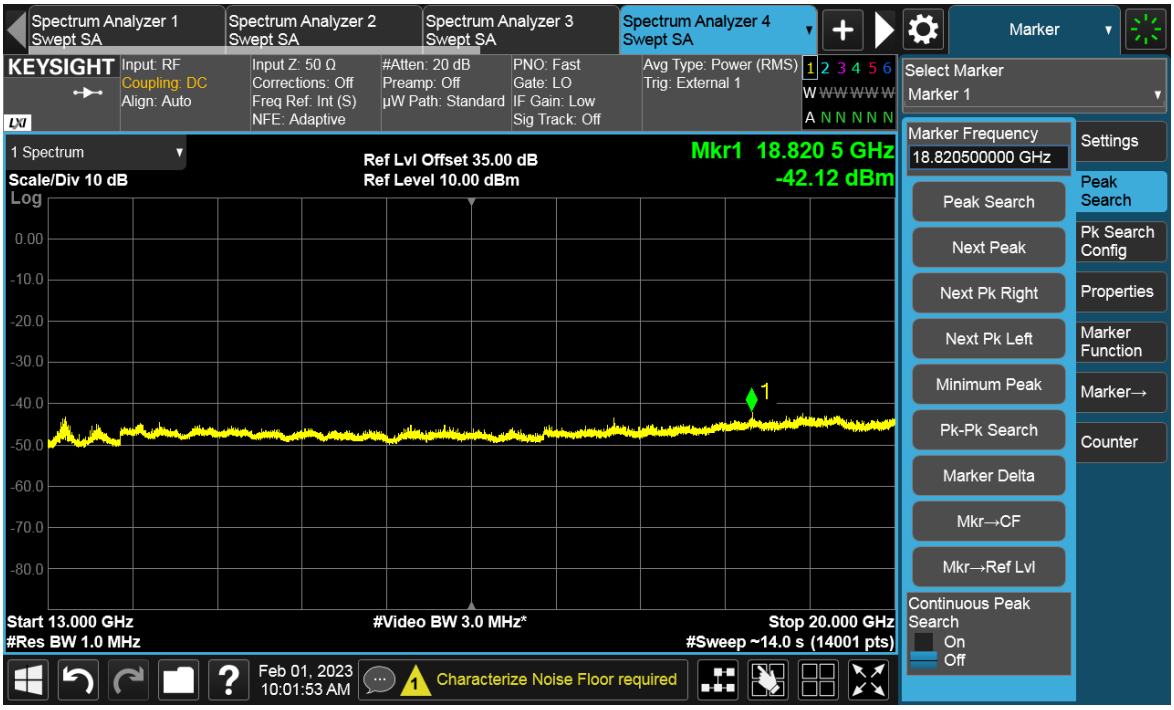
Channel Position M



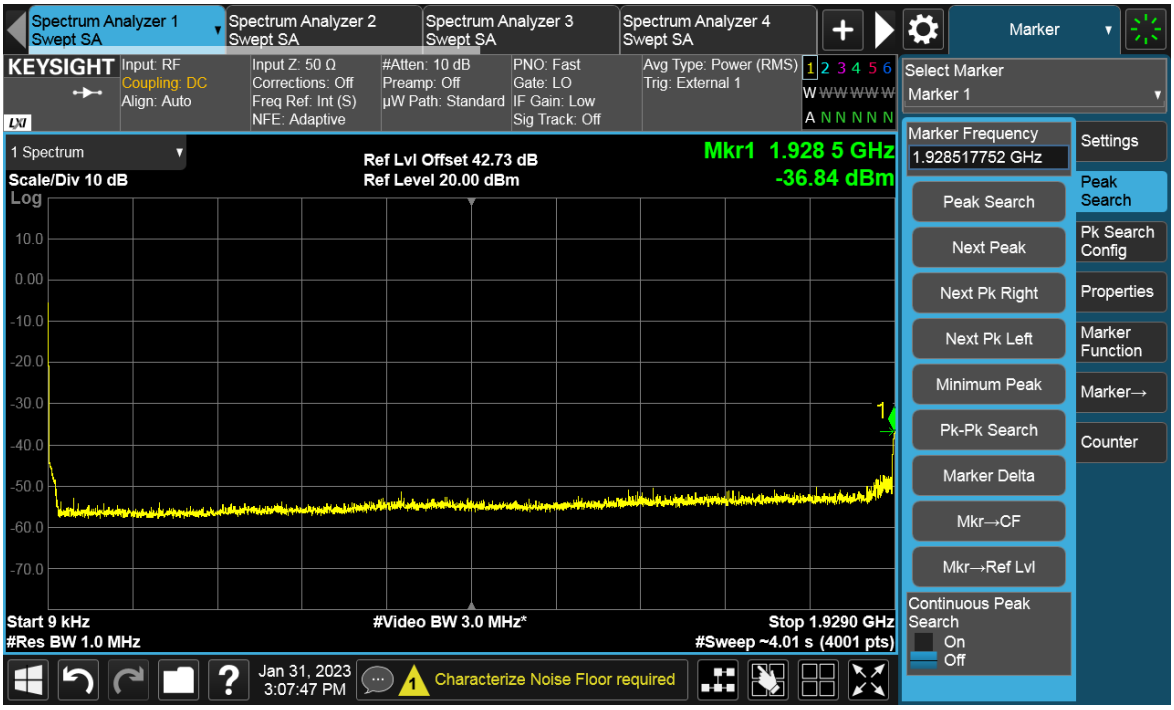
**TEST REPORT**

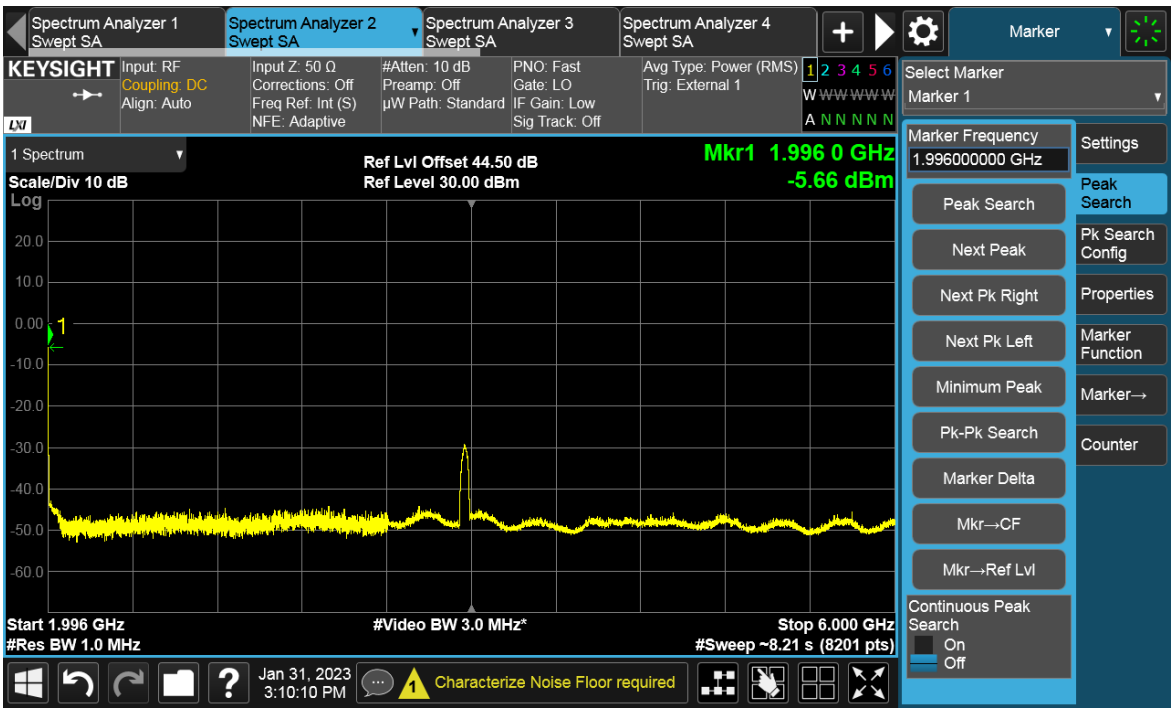

Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 12.08 dB
Ref Level 10.00 dBm
Mkr1 10.878 0 GHz
-64.80 dBm
Scale/Div 10 dB
Log
Start 6.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 13.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
10.878000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
9:02:12 AM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 35.00 dB
Ref Level 10.00 dBm
Mkr1 18.820 5 GHz
-42.12 dBm
Scale/Div 10 dB
Log
Start 13.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 20.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
18.820500000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
10:01:53 AM
Characterize Noise Floor required

**TEST REPORT**

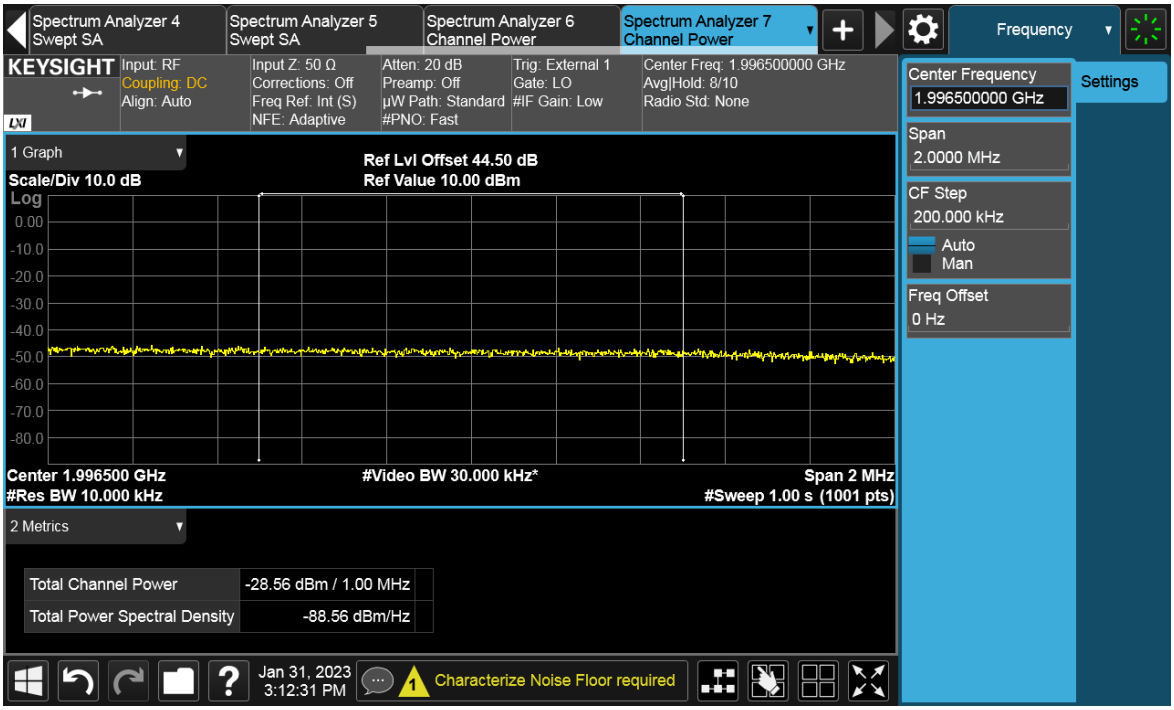
Channel Position T

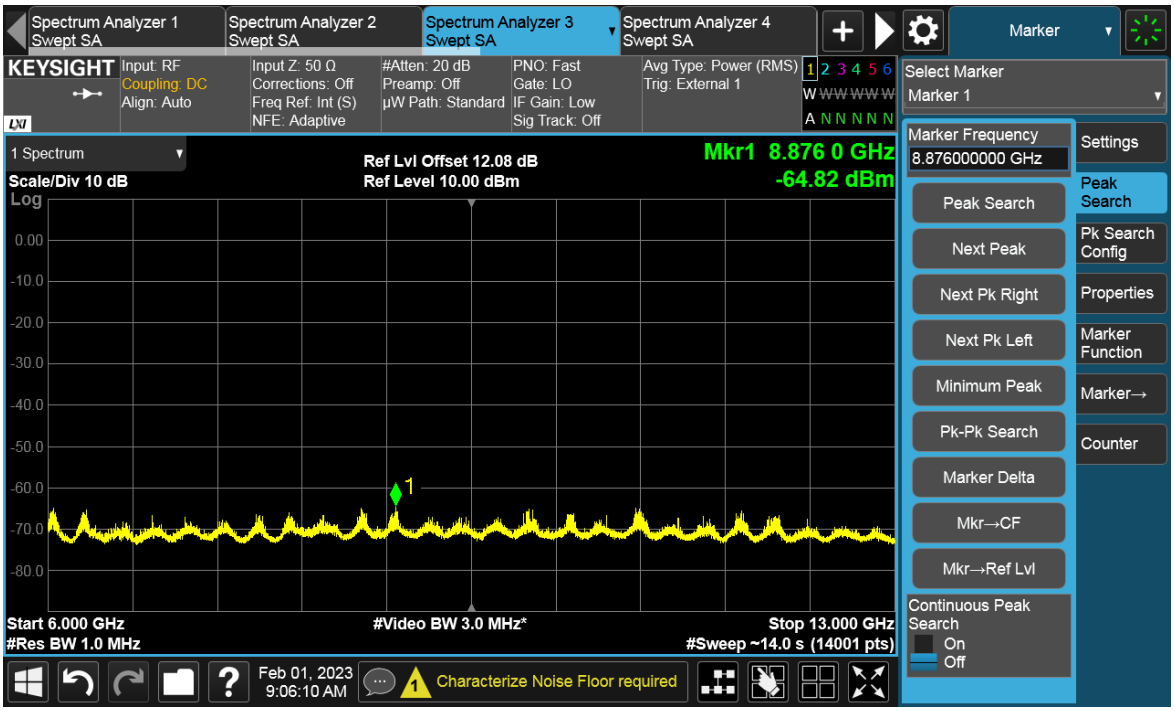


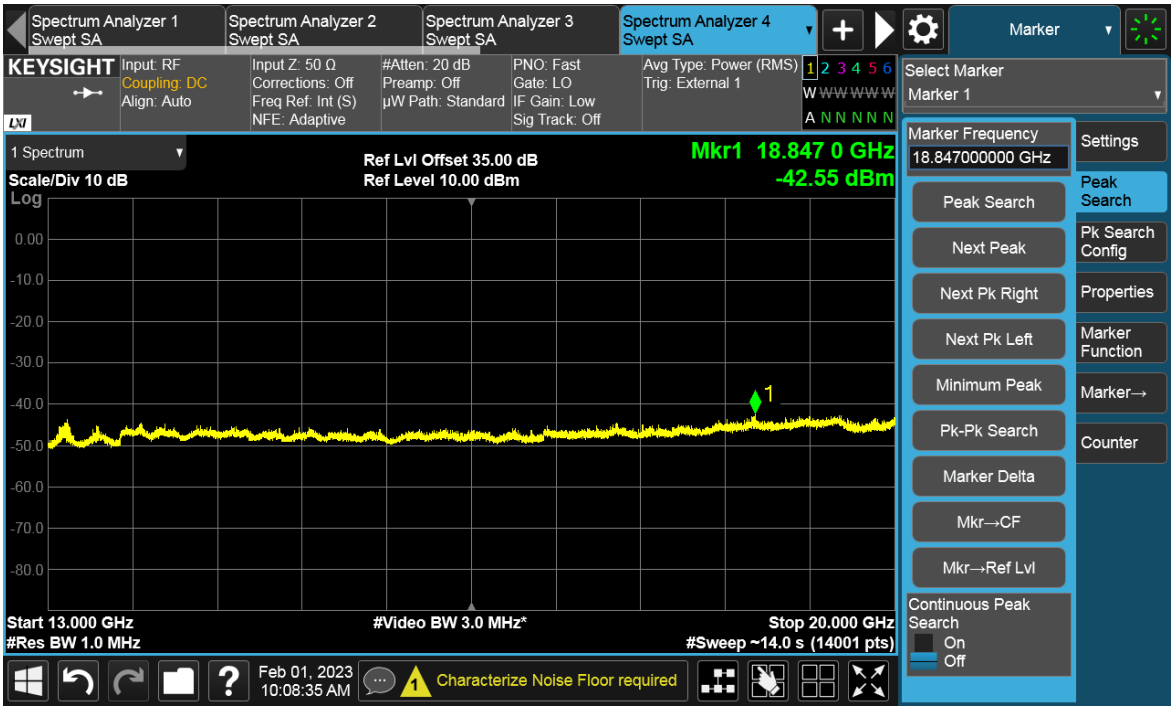
Total Quality. Assured.

**TEST REPORT**



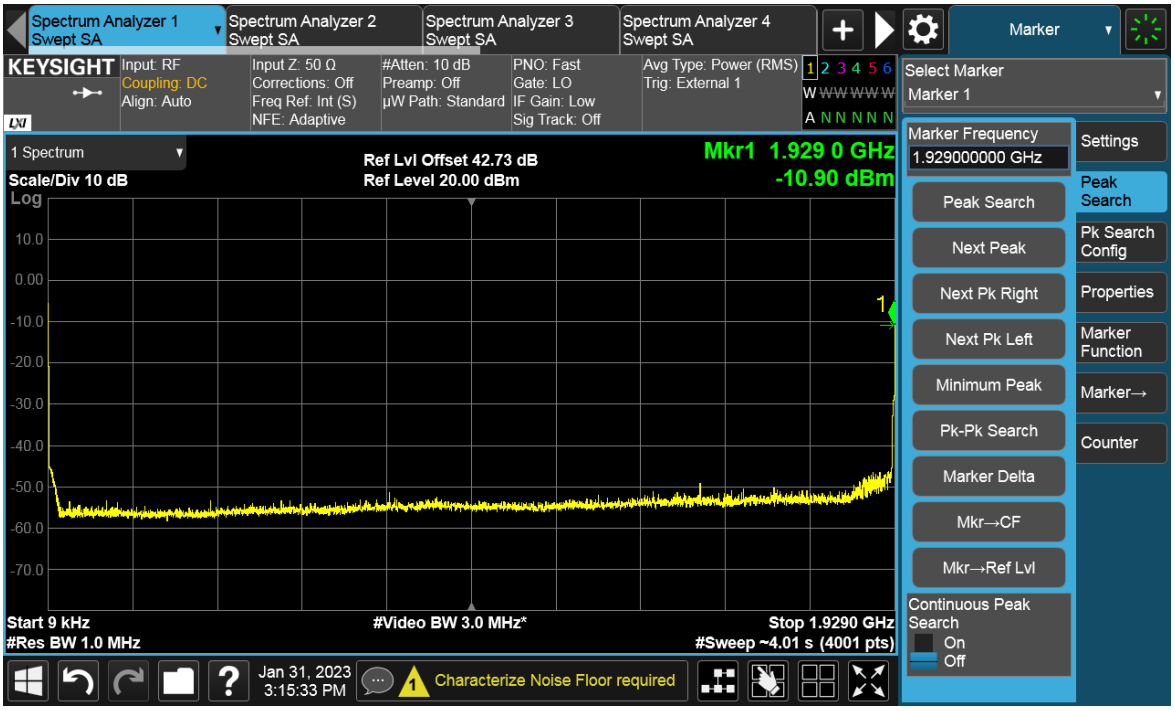



**TEST REPORT**

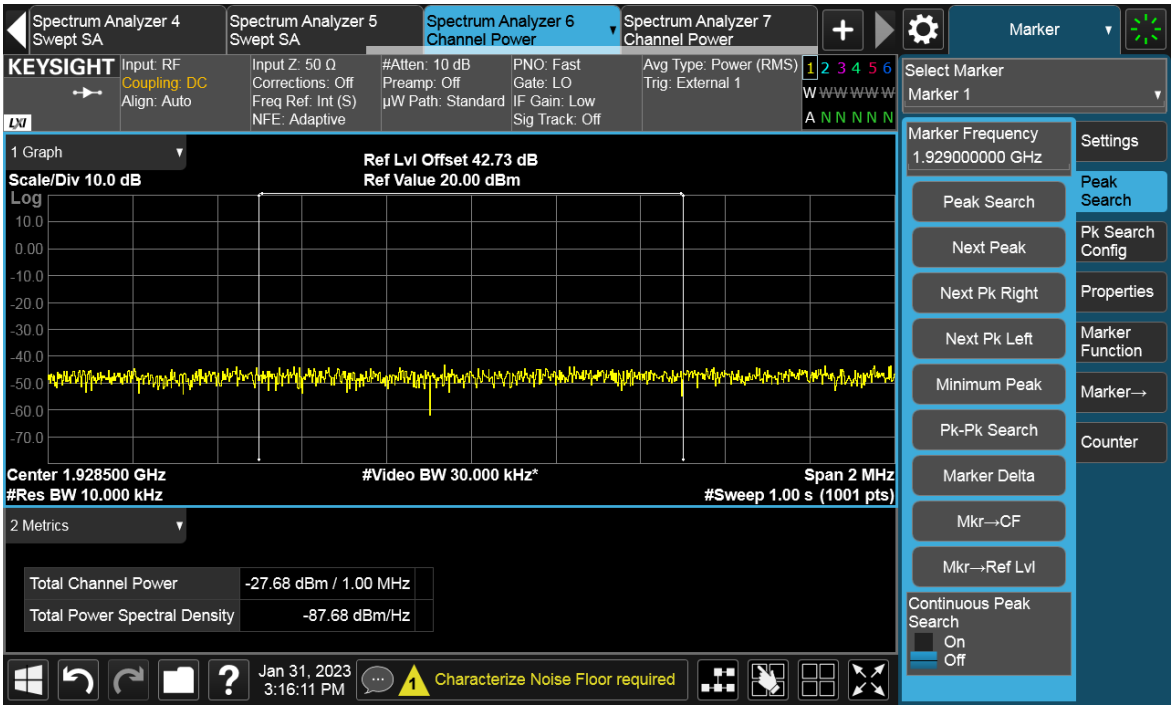


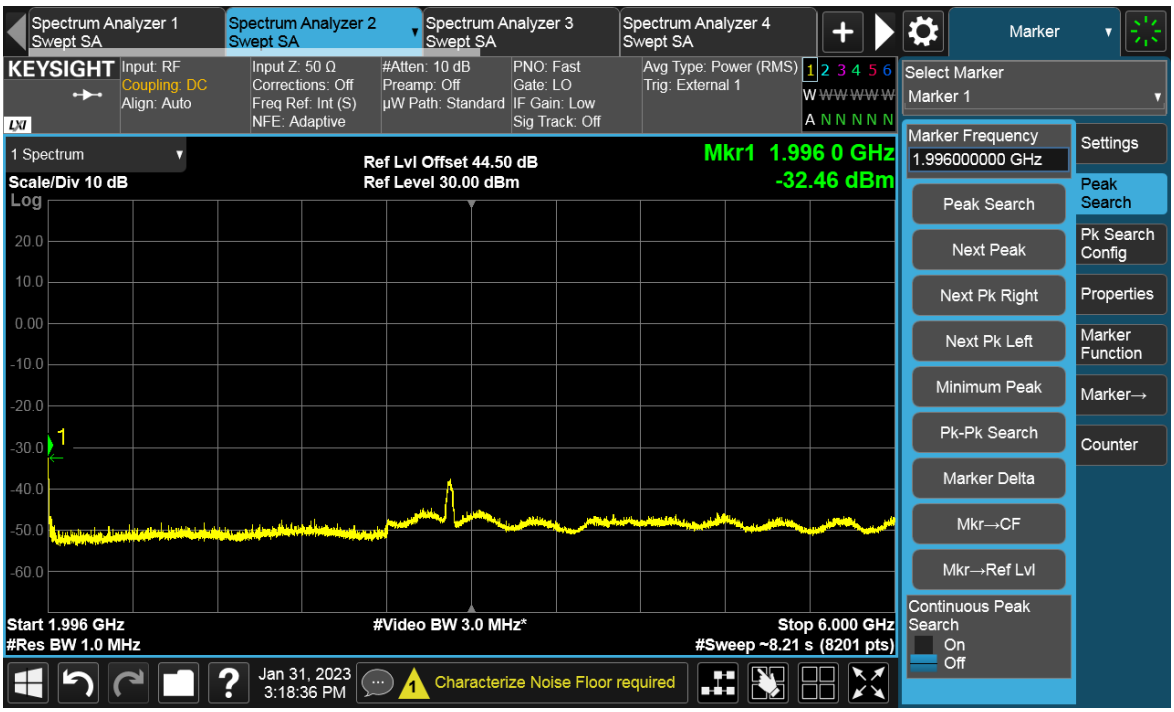

| Antenna Port | Channel Position | Modulation | Carrier BW (MHz) | RBW (kHz) | Limit (dBm) |
|---|---|---|---|---|---|
| D | B | 256QAM | 30 | 1000 | -19.02 |
| D | M | 256QAM | 30 | 1000 | -19.02 |
| D | T | 256QAM | 30 | 1000 | -19.02 |

Channel Position B

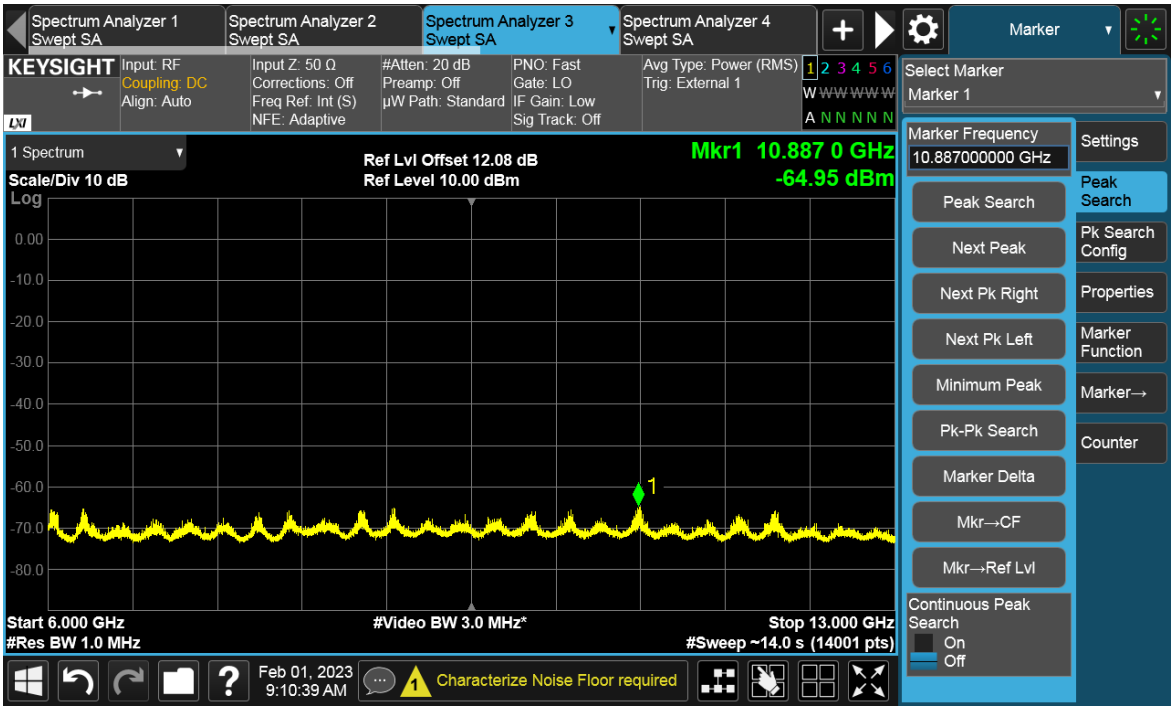


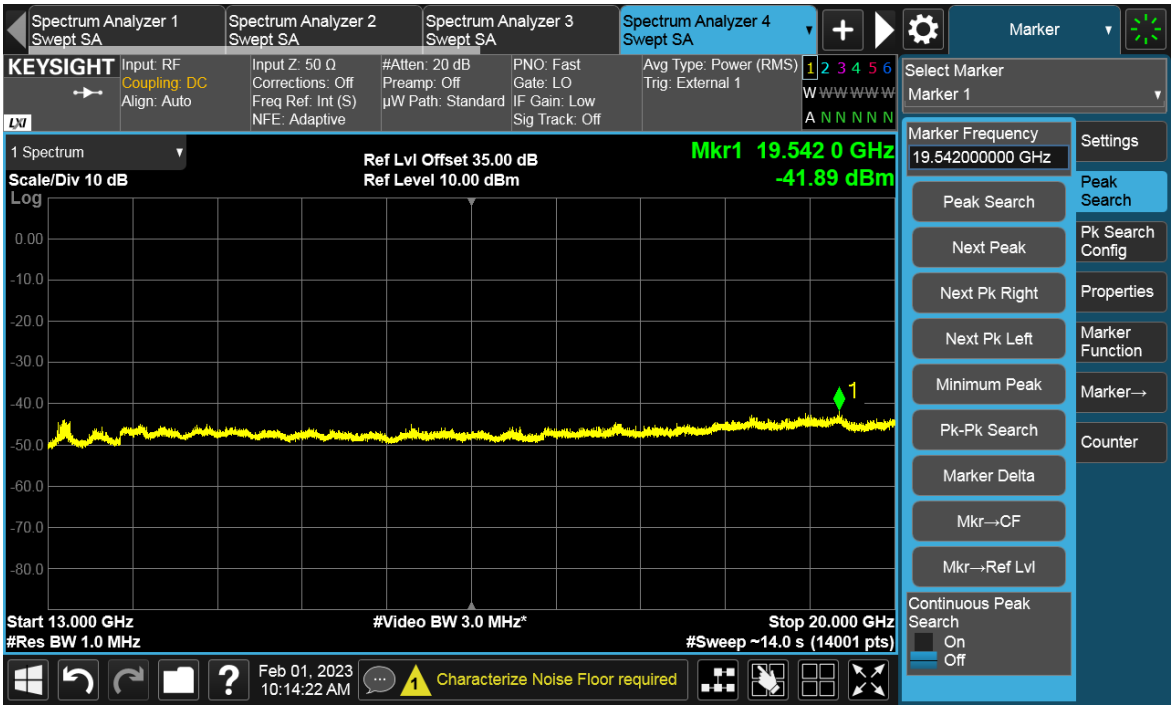
**TEST REPORT**


Spectrum Analyzer 4 Swept SA
Spectrum Analyzer 5 Swept SA
Spectrum Analyzer 6 Channel Power
Spectrum Analyzer 7 Channel Power
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Graph
Ref Lvl Offset 42.73 dB
Ref Value 20.00 dBm
Scale/Div 10.0 dB
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 1.928500 GHz
#Res BW 10.000 kHz
#Video BW 30.000 kHz*
Span 2 MHz
#Sweep 1.00 s (1001 pts)
2 Metrics
Total Channel Power
-27.68 dBm / 1.00 MHz
Total Power Spectral Density
-87.68 dBm/Hz
Marker Frequency
1.929000000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Jan 31, 2023
3:16:11 PM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 44.50 dB
Ref Level 30.00 dBm
Mkr1 1.996 0 GHz
-32.46 dBm
Scale/Div 10 dB
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Start 1.996 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 6.000 GHz
#Sweep ~8.21 s (8201 pts)
Marker Frequency
1.996000000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Jan 31, 2023
3:18:36 PM
Characterize Noise Floor required

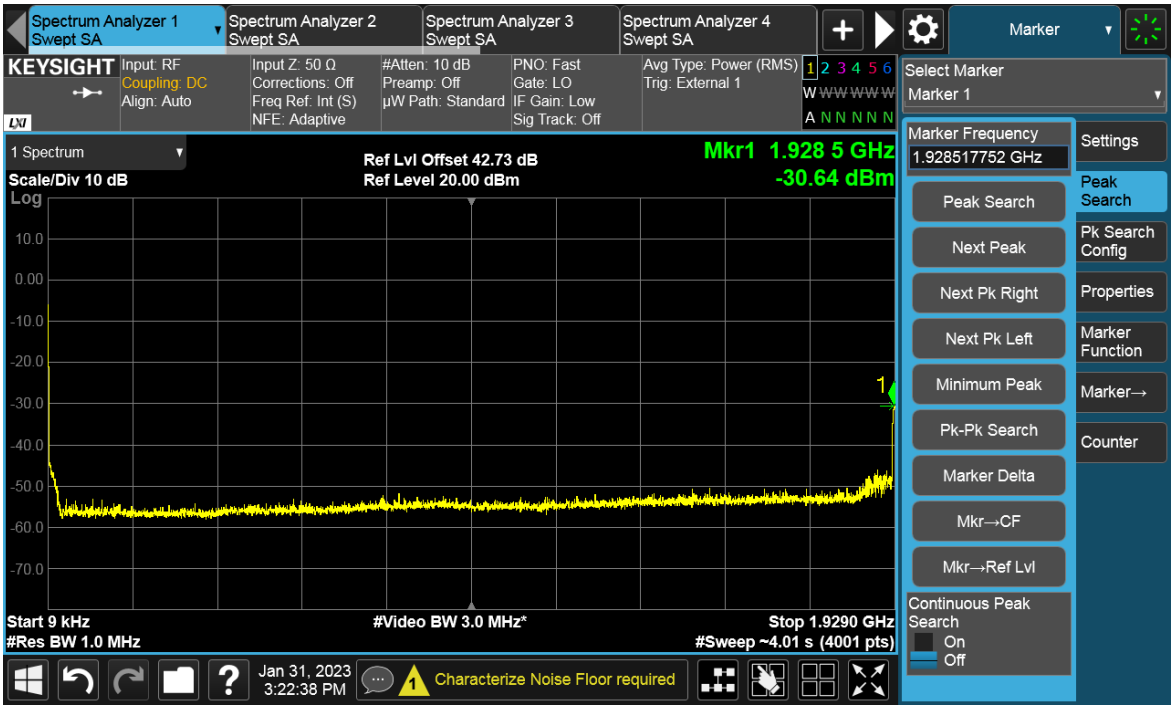
**TEST REPORT**

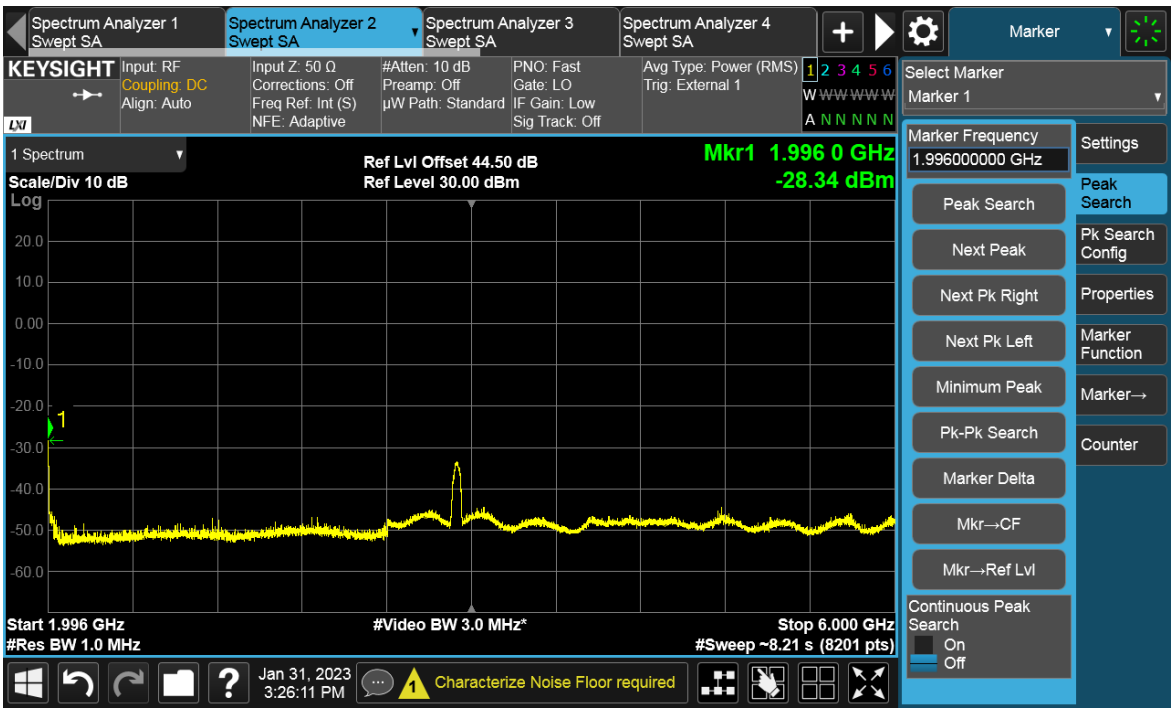

Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 12.08 dB
Ref Level 10.00 dBm
Mkr1 10.887 0 GHz
-64.95 dBm
Scale/Div 10 dB
Log
Start 6.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 13.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
10.887000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
9:10:39 AM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 35.00 dB
Ref Level 10.00 dBm
Mkr1 19.542 0 GHz
-41.89 dBm
Scale/Div 10 dB
Log
Start 13.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 20.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
19.542000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
10:14:22 AM
Characterize Noise Floor required

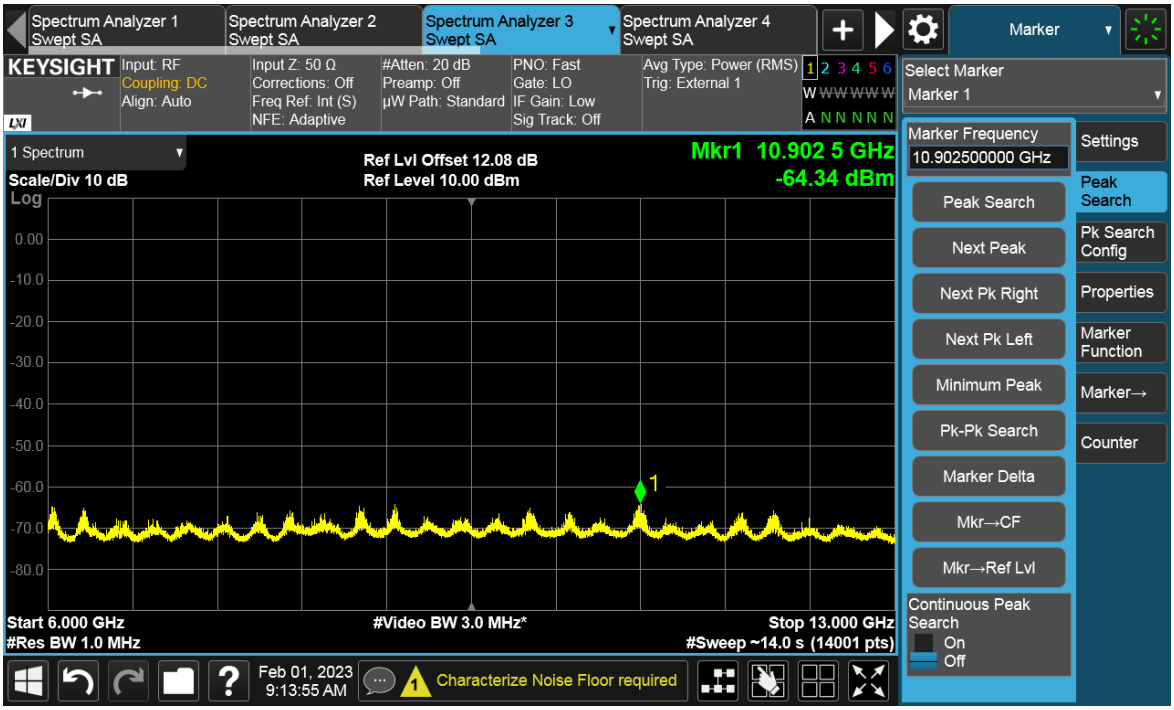
**TEST REPORT**

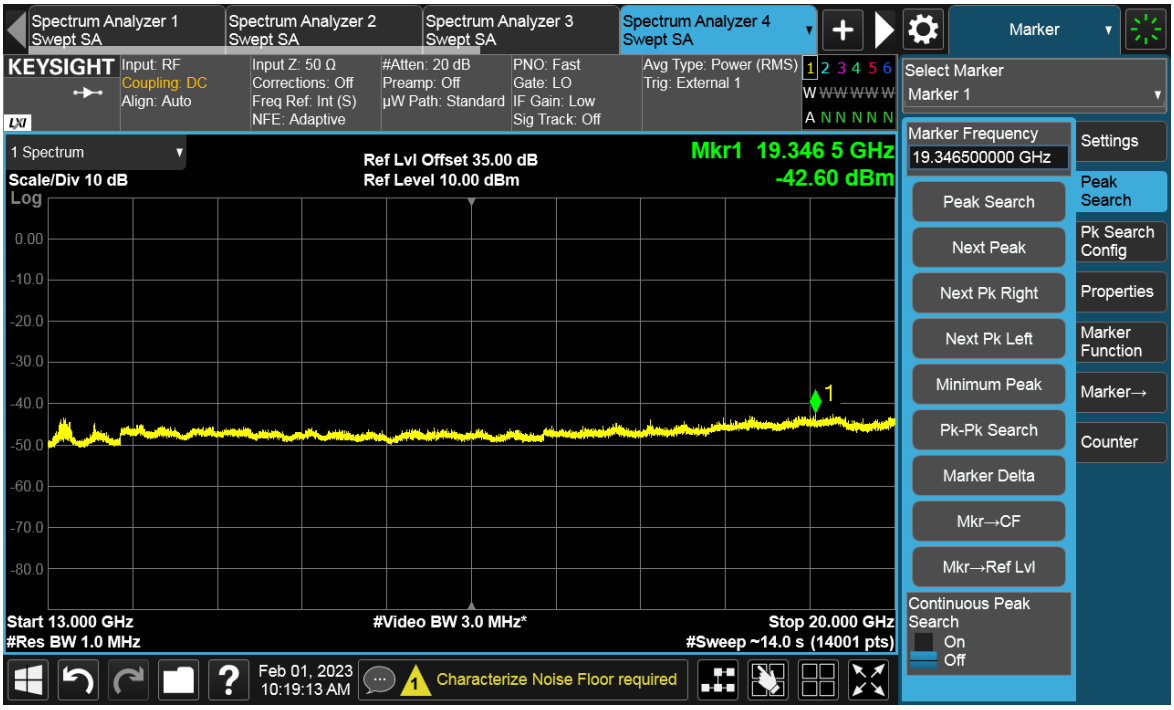
Channel Position M



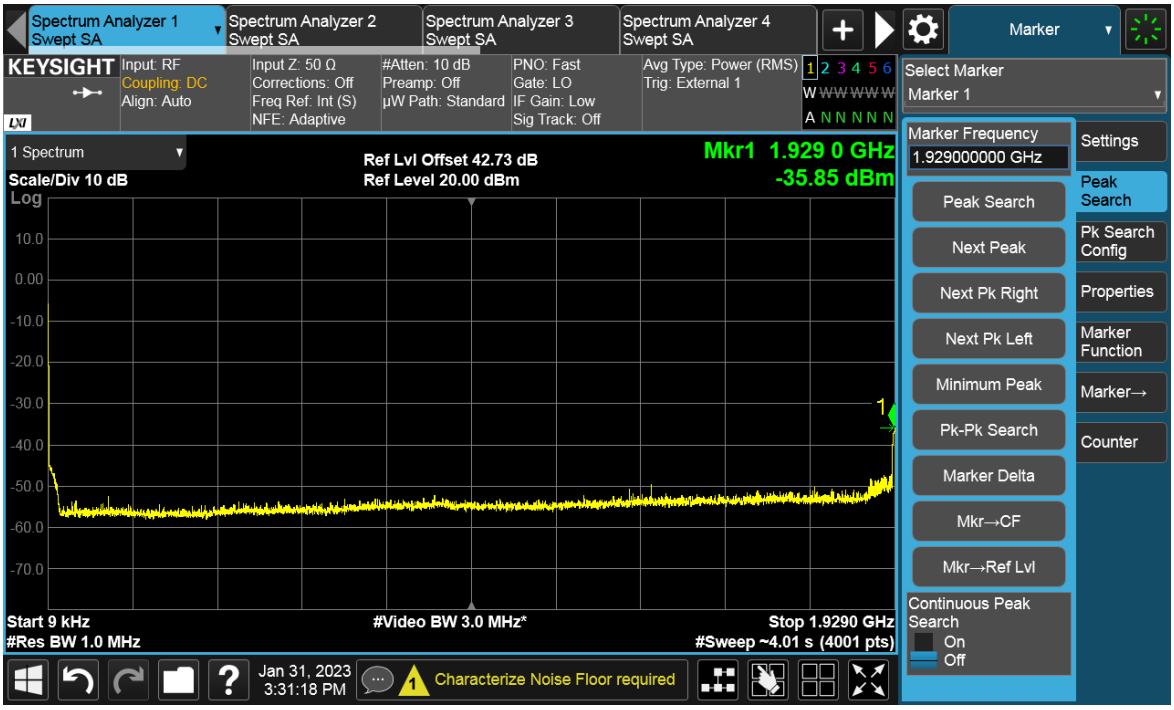
**TEST REPORT**

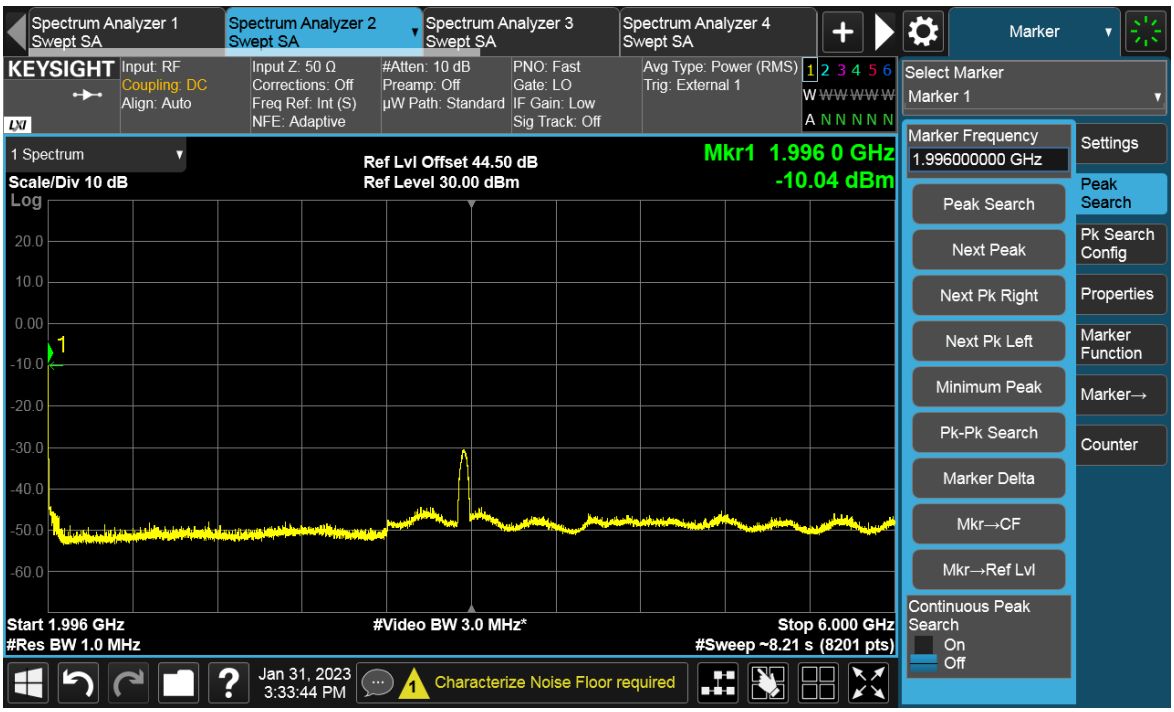

Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 12.08 dB
Ref Level 10.00 dBm
Mkr1 10.902 5 GHz
-64.34 dBm
Scale/Div 10 dB
Log
Marker Frequency
10.902500000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Start 6.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 13.000 GHz
#Sweep ~14.0 s (14001 pts)
Feb 01, 2023
9:13:55 AM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 35.00 dB
Ref Level 10.00 dBm
Mkr1 19.346 5 GHz
-42.60 dBm
Scale/Div 10 dB
Log
Marker Frequency
19.346500000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Start 13.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 20.000 GHz
#Sweep ~14.0 s (14001 pts)
Feb 01, 2023
10:19:13 AM
Characterize Noise Floor required

**TEST REPORT**

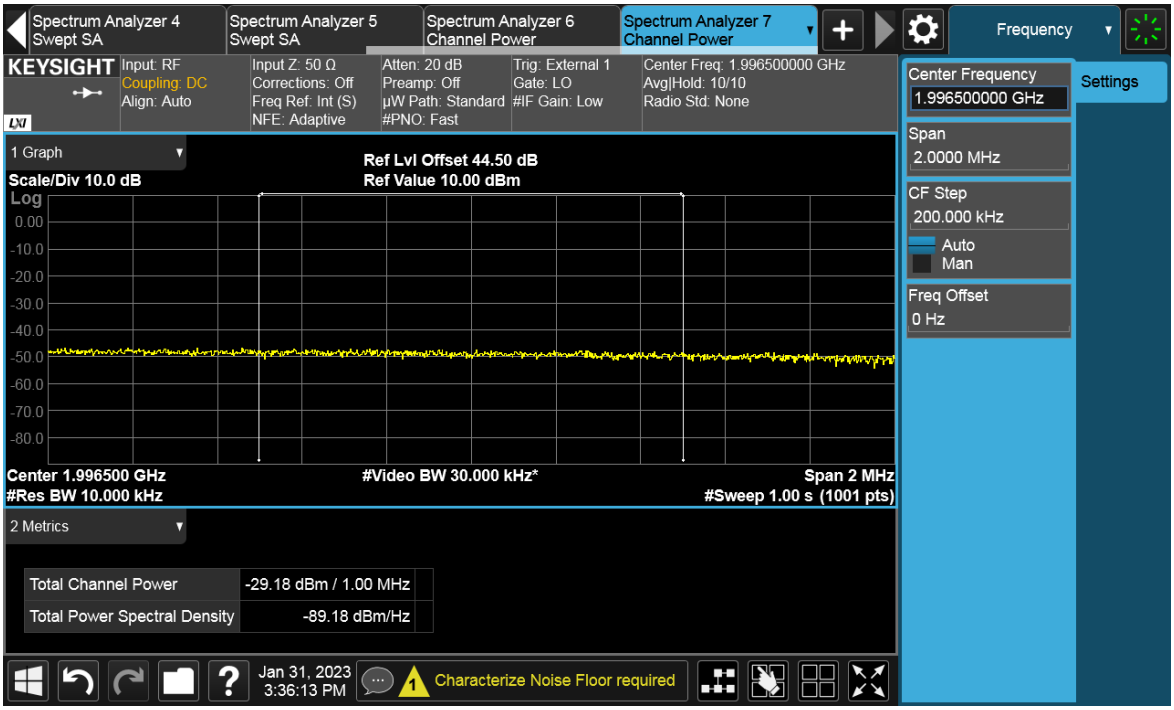
Channel Position T

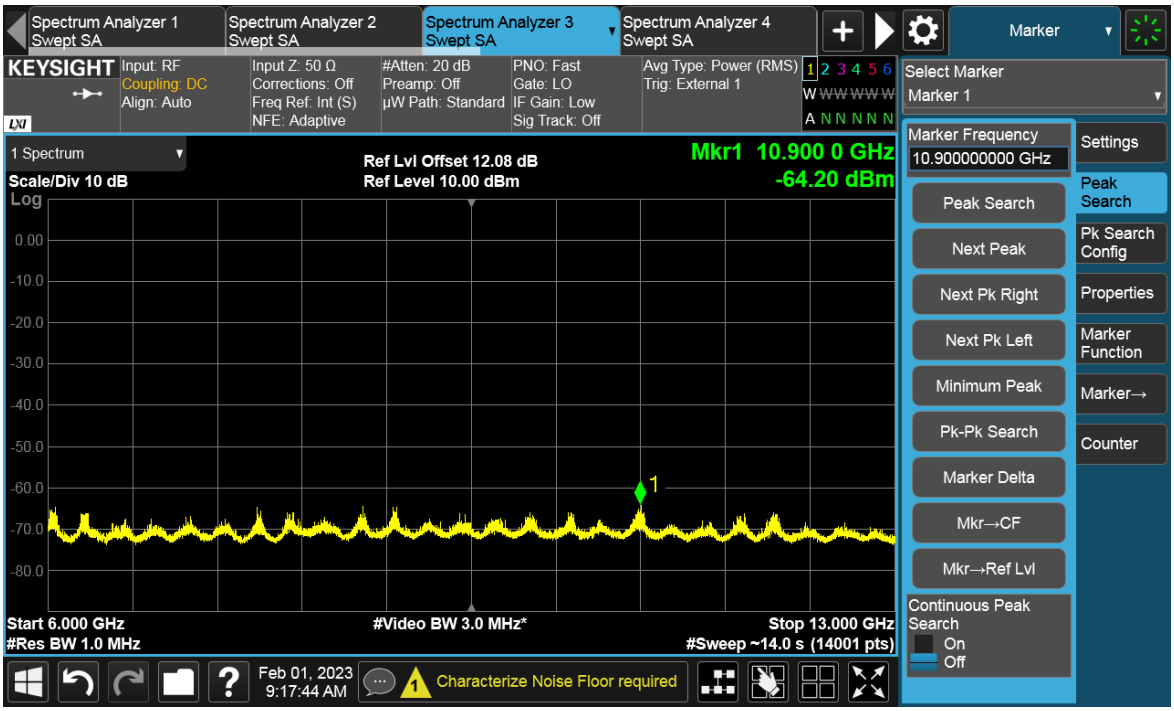


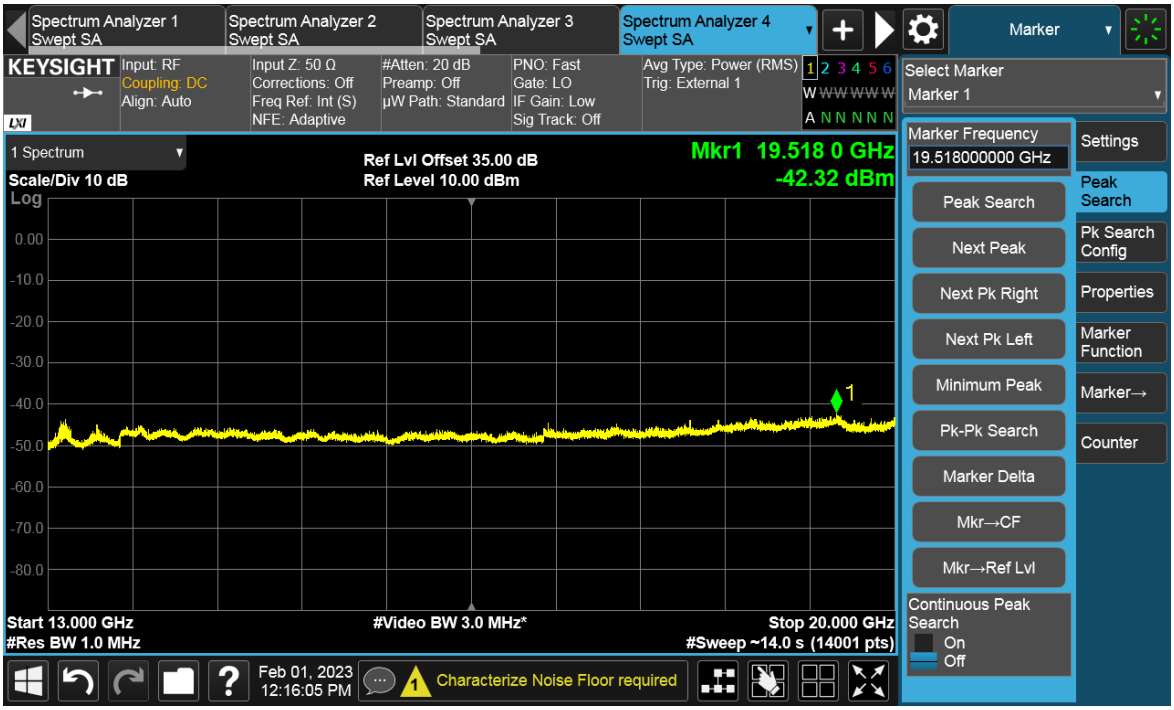
Total Quality. Assured.

**TEST REPORT**



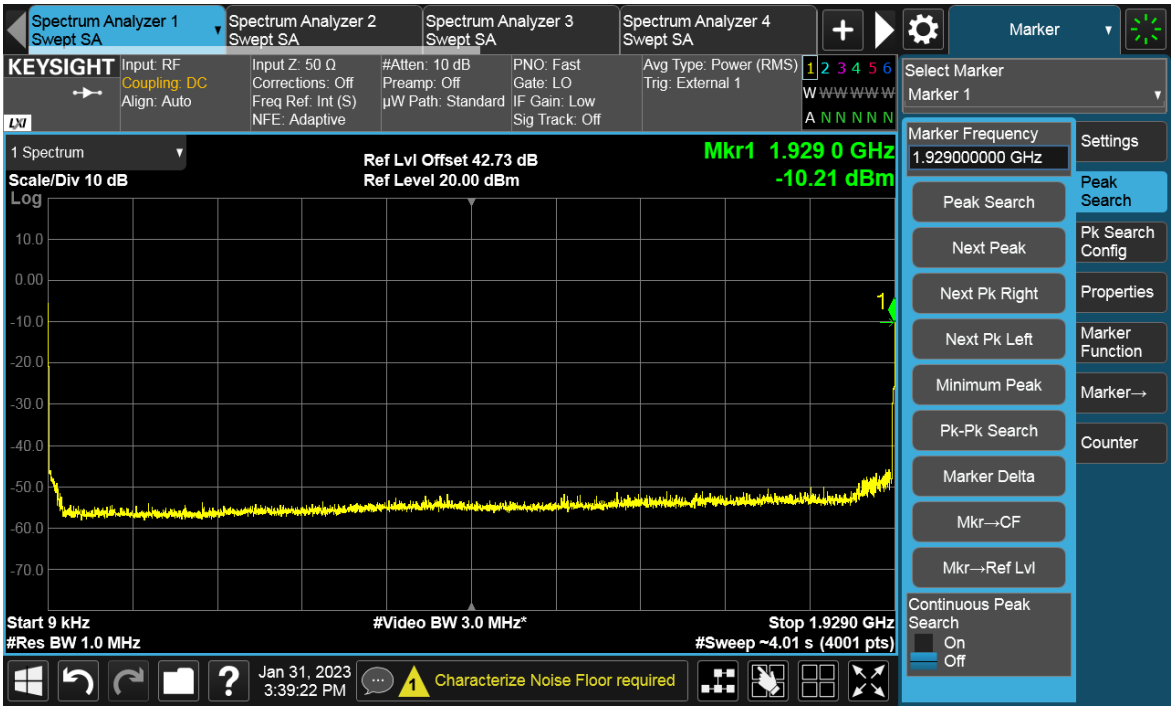



**TEST REPORT**

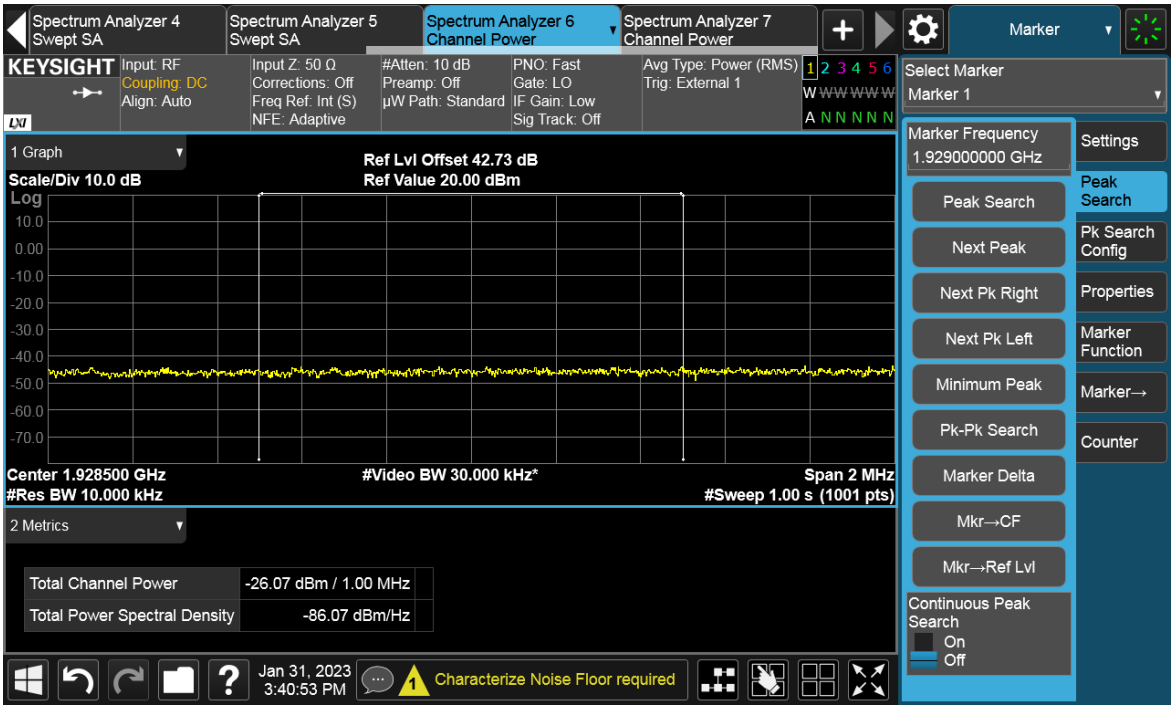


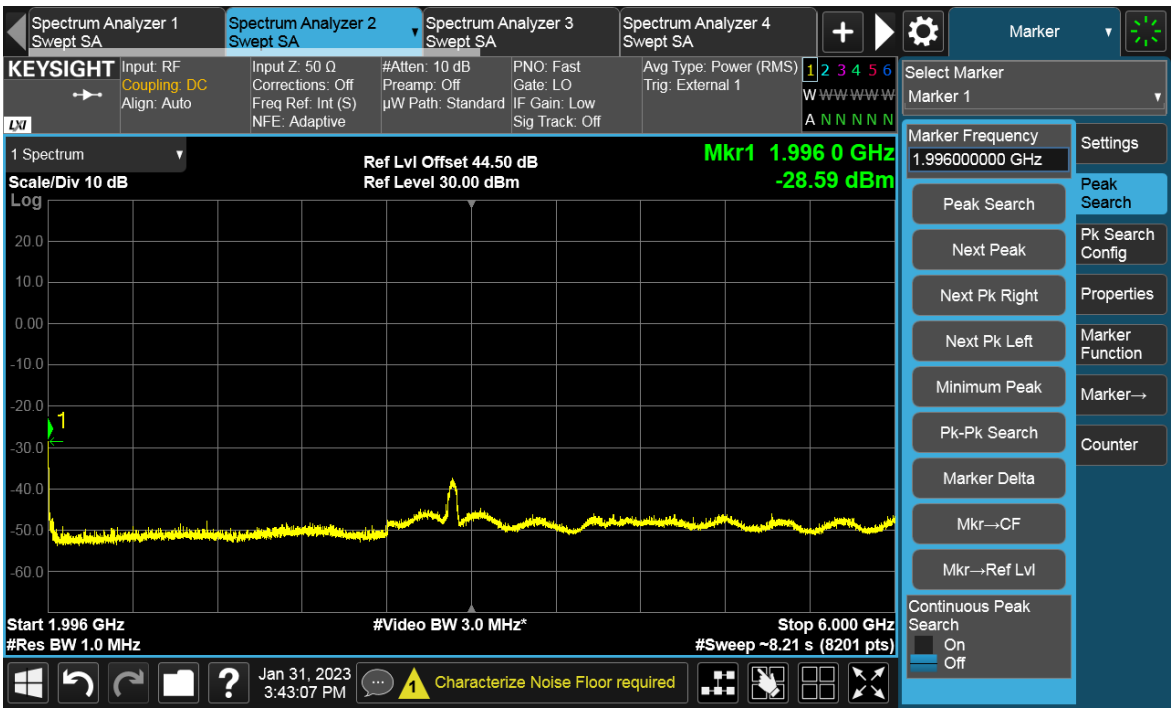

| Antenna Port | Channel Position | Modulation | Carrier BW (MHz) | RBW (kHz) | Limit (dBm) |
|---|---|---|---|---|---|
| D | B | 256QAM | 40 | 1000 | -19.02 |
| D | M | 256QAM | 40 | 1000 | -19.02 |
| D | T | 256QAM | 40 | 1000 | -19.02 |

Channel Position B

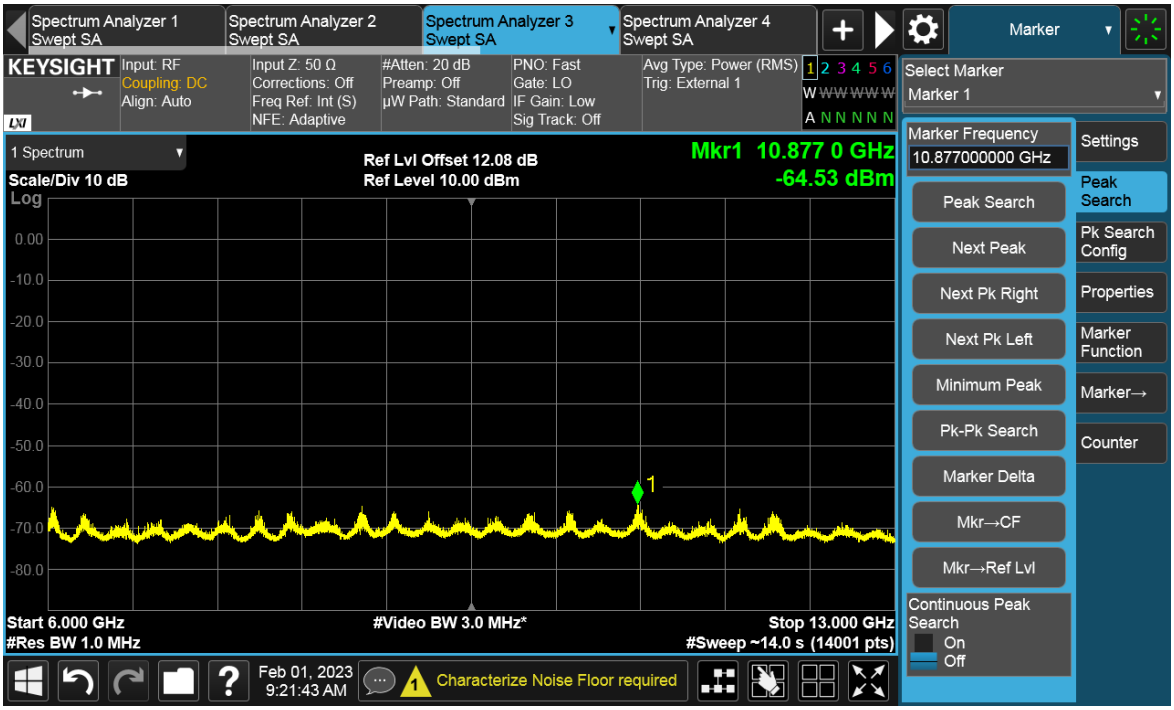


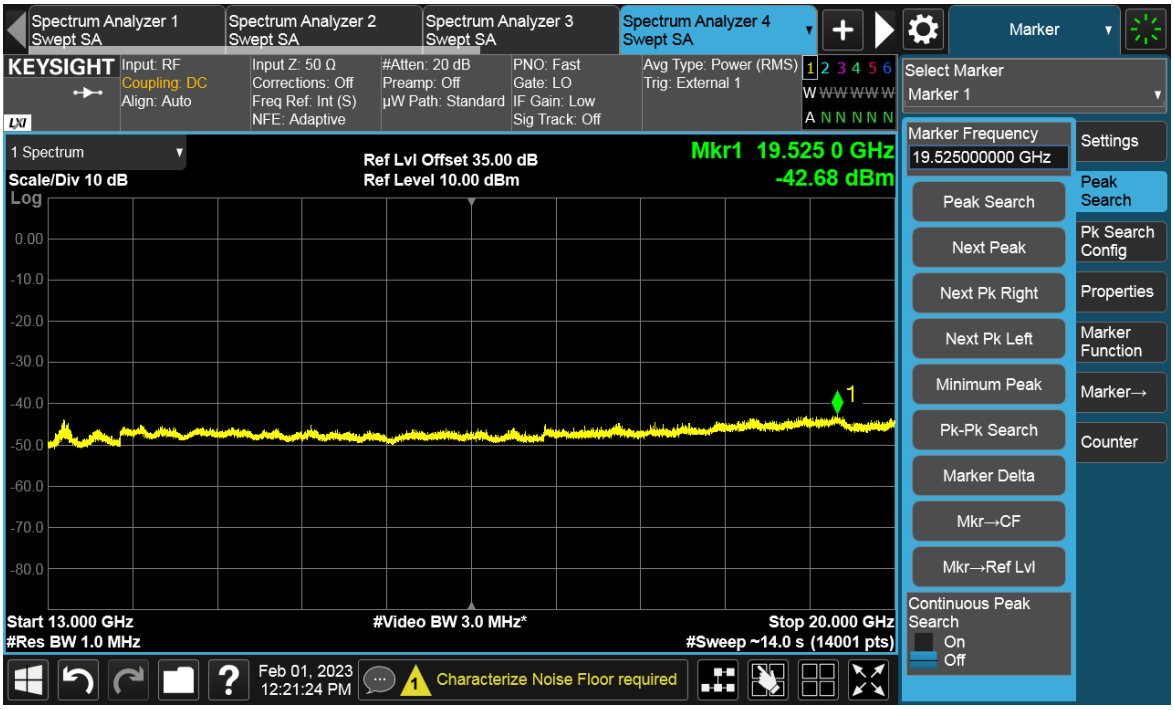
**TEST REPORT**


Spectrum Analyzer 4 Swept SA
Spectrum Analyzer 5 Swept SA
Spectrum Analyzer 6 Channel Power
Spectrum Analyzer 7 Channel Power
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Graph
Ref Lvl Offset 42.73 dB
Ref Value 20.00 dBm
Scale/Div 10.0 dB
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 1.928500 GHz
#Res BW 10.000 kHz
#Video BW 30.000 kHz*
Span 2 MHz
#Sweep 1.00 s (1001 pts)
2 Metrics
Total Channel Power
-26.07 dBm / 1.00 MHz
Total Power Spectral Density
-86.07 dBm/Hz
Marker Frequency
1.929000000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Jan 31, 2023
3:40:53 PM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 44.50 dB
Ref Level 30.00 dBm
Mkr1 1.996 0 GHz
-28.59 dBm
Scale/Div 10 dB
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Start 1.996 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 6.000 GHz
#Sweep ~8.21 s (8201 pts)
Marker Frequency
1.996000000 GHz
Settings
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Pk Search Config
Properties
Marker Function
Marker→
Counter
Continuous Peak Search
On
Off
Jan 31, 2023
3:43:07 PM
Characterize Noise Floor required

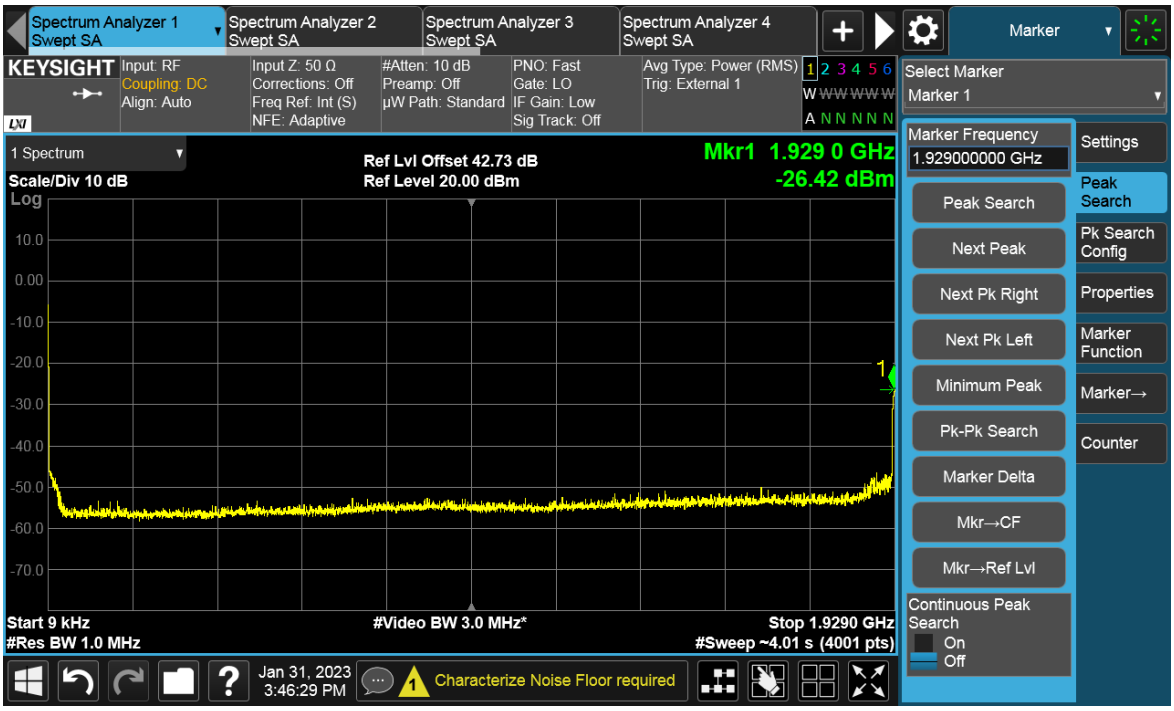
**TEST REPORT**

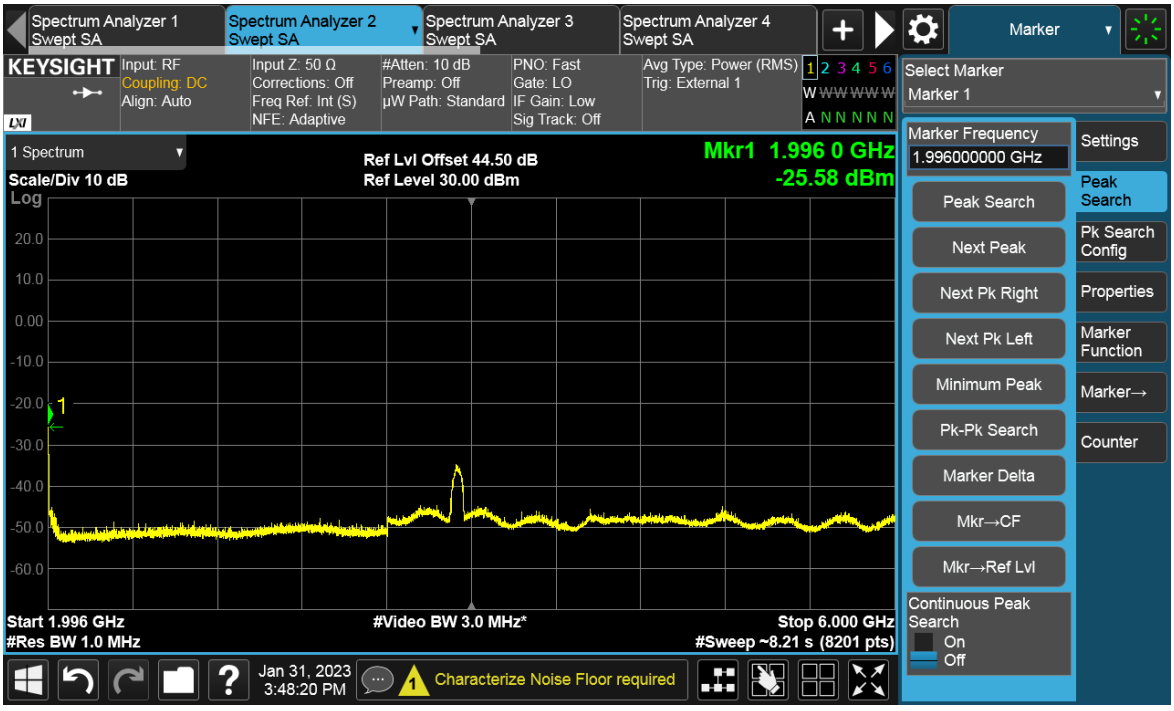

Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 12.08 dB
Ref Level 10.00 dBm
Mkr1 10.877 0 GHz
-64.53 dBm
Scale/Div 10 dB
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Start 6.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 13.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
10.877000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
9:21:43 AM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 35.00 dB
Ref Level 10.00 dBm
Mkr1 19.525 0 GHz
-42.68 dBm
Scale/Div 10 dB
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Start 13.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 20.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
19.525000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
12:21:24 PM
Characterize Noise Floor required

**TEST REPORT**

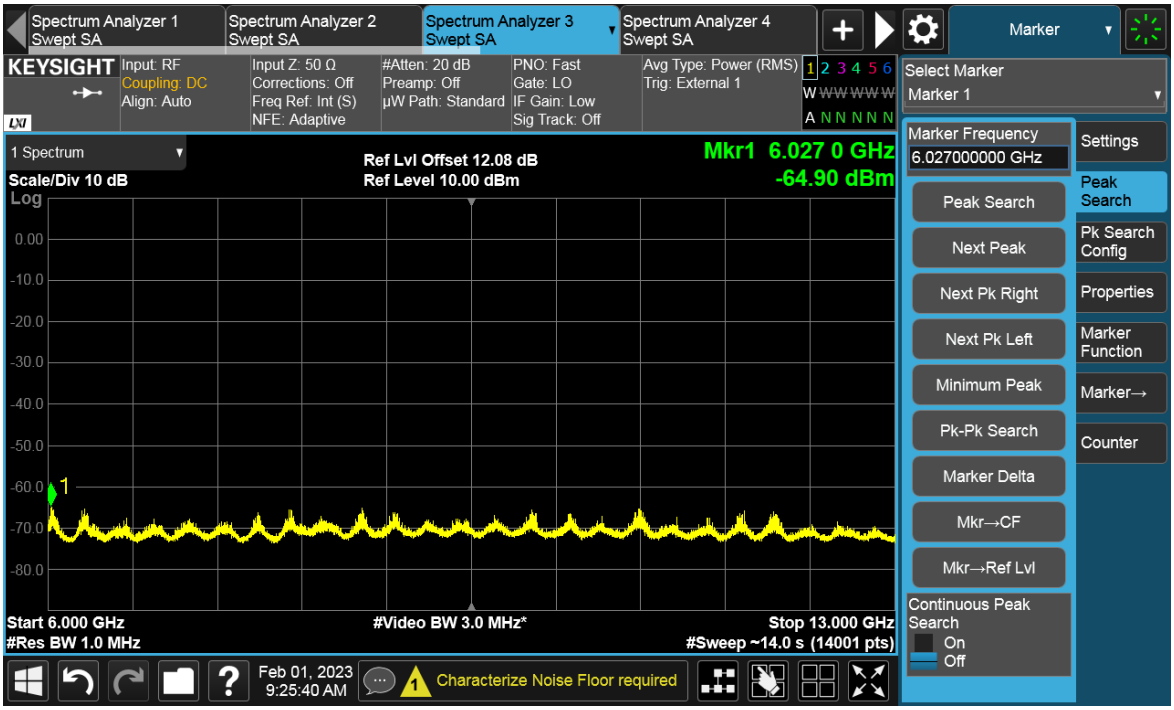
Channel Position M

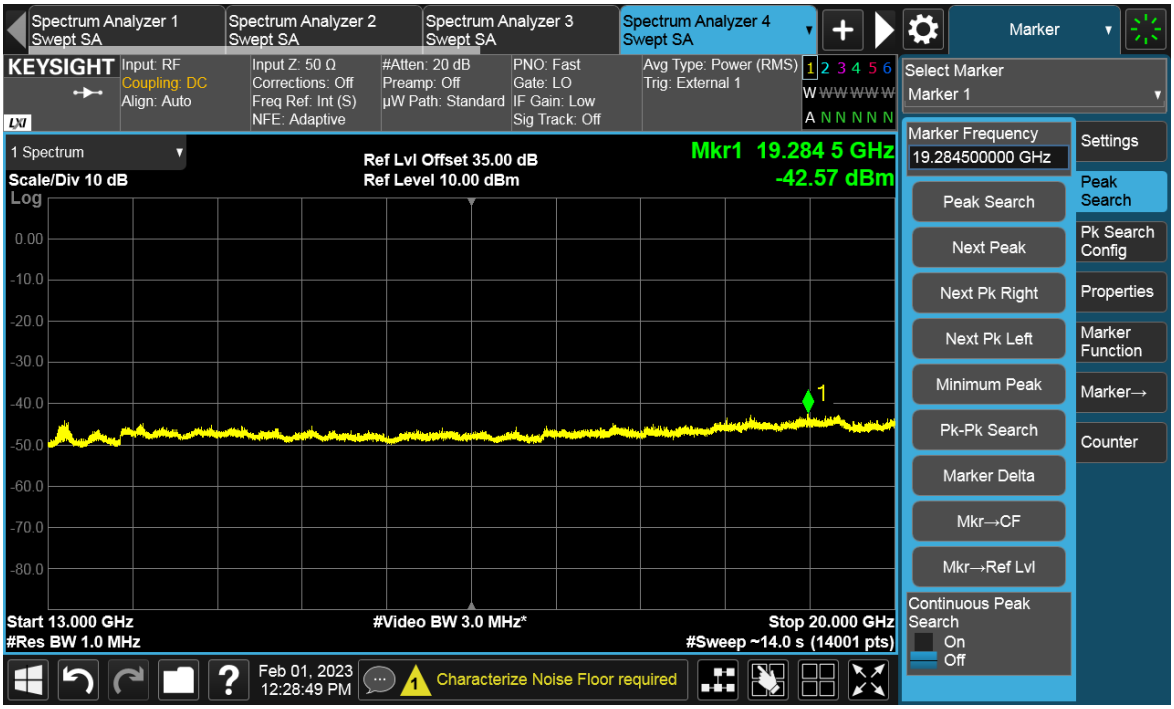


Total Quality. Assured.

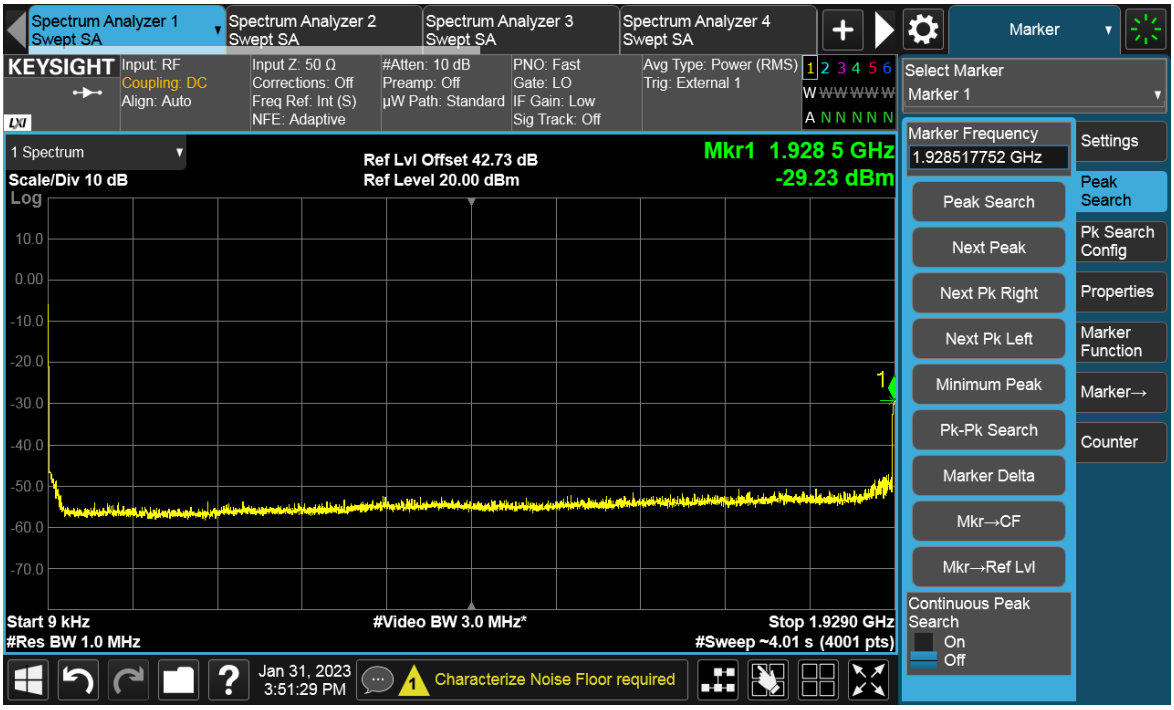
**TEST REPORT**

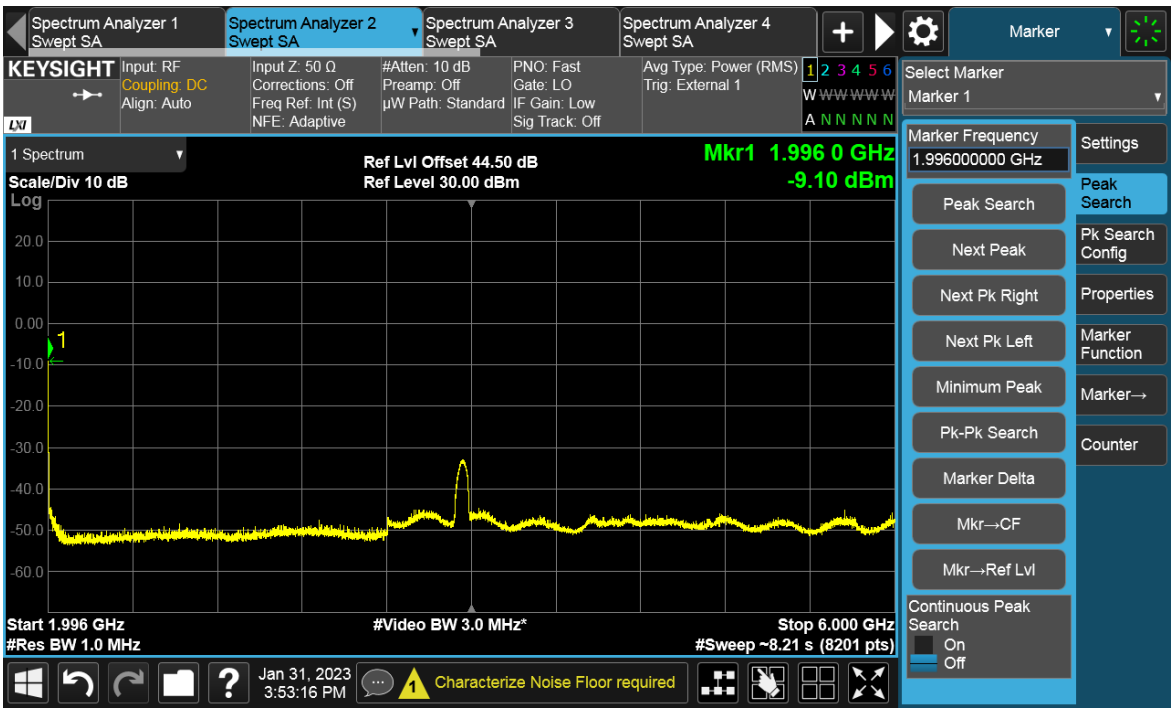


**TEST REPORT**

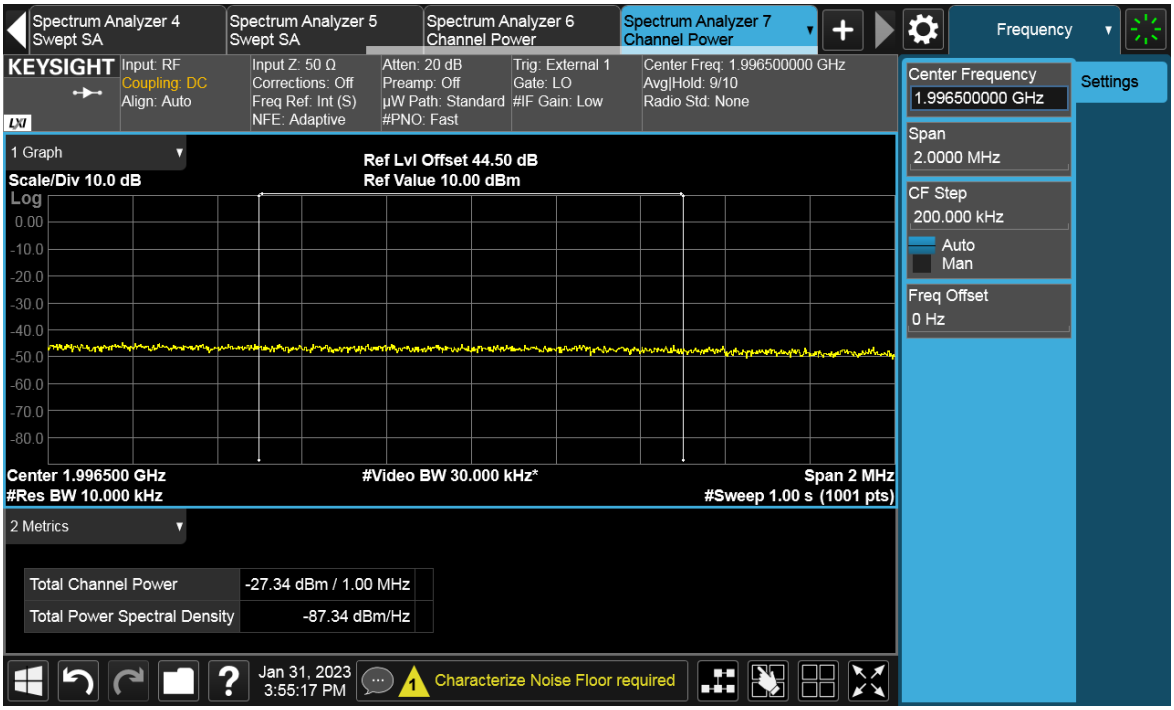
Channel Position T

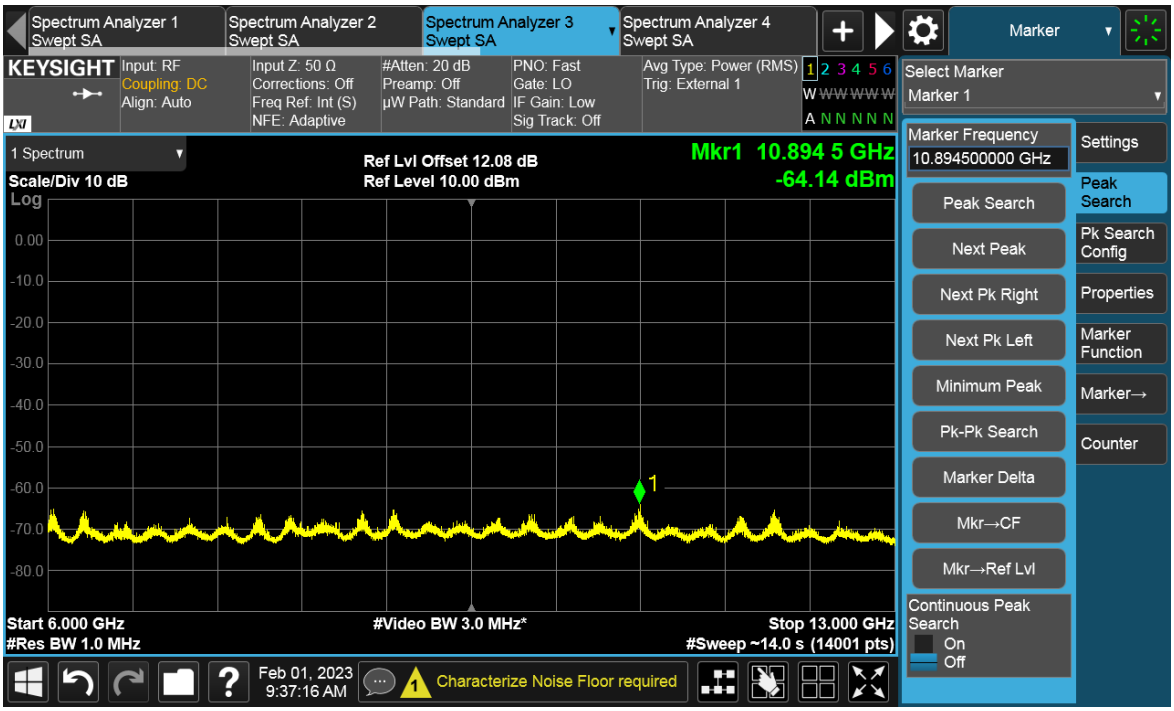


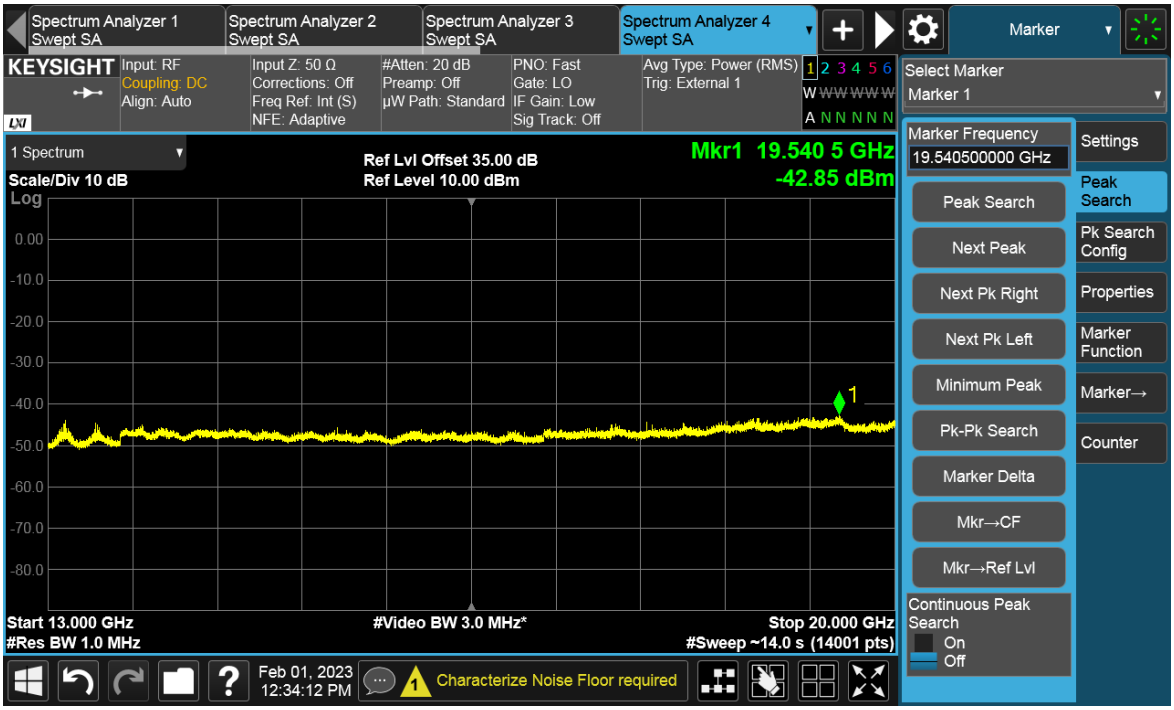
Total Quality. Assured.

**TEST REPORT**



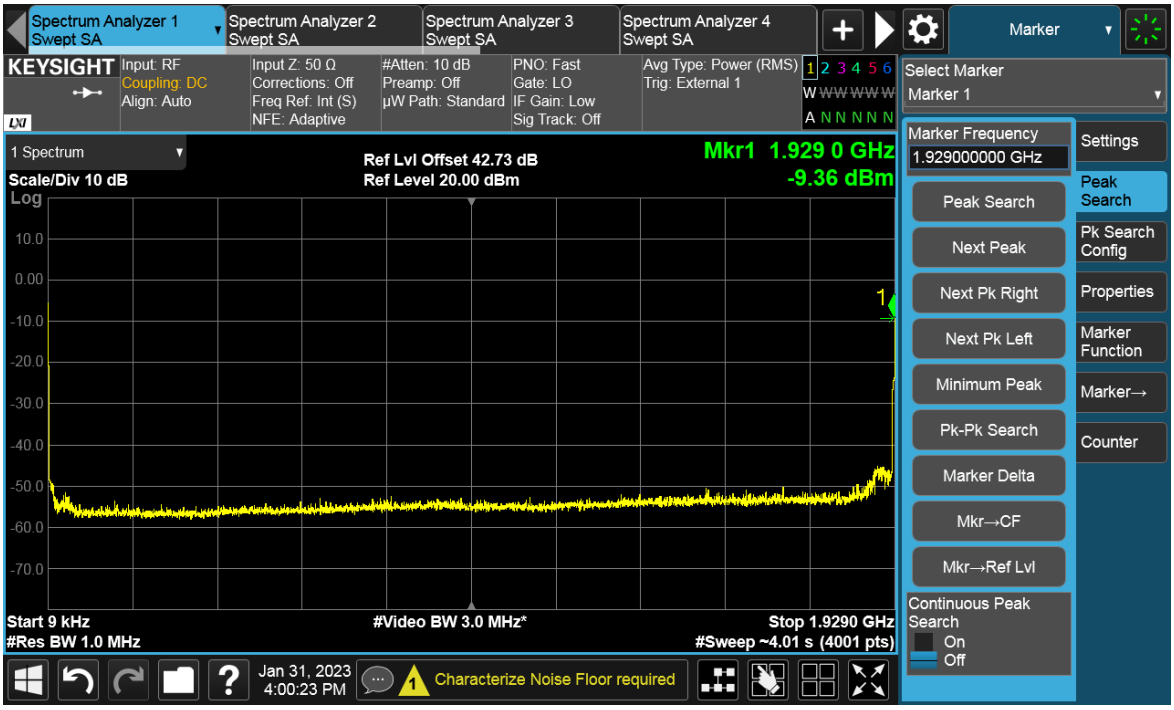
**TEST REPORT**



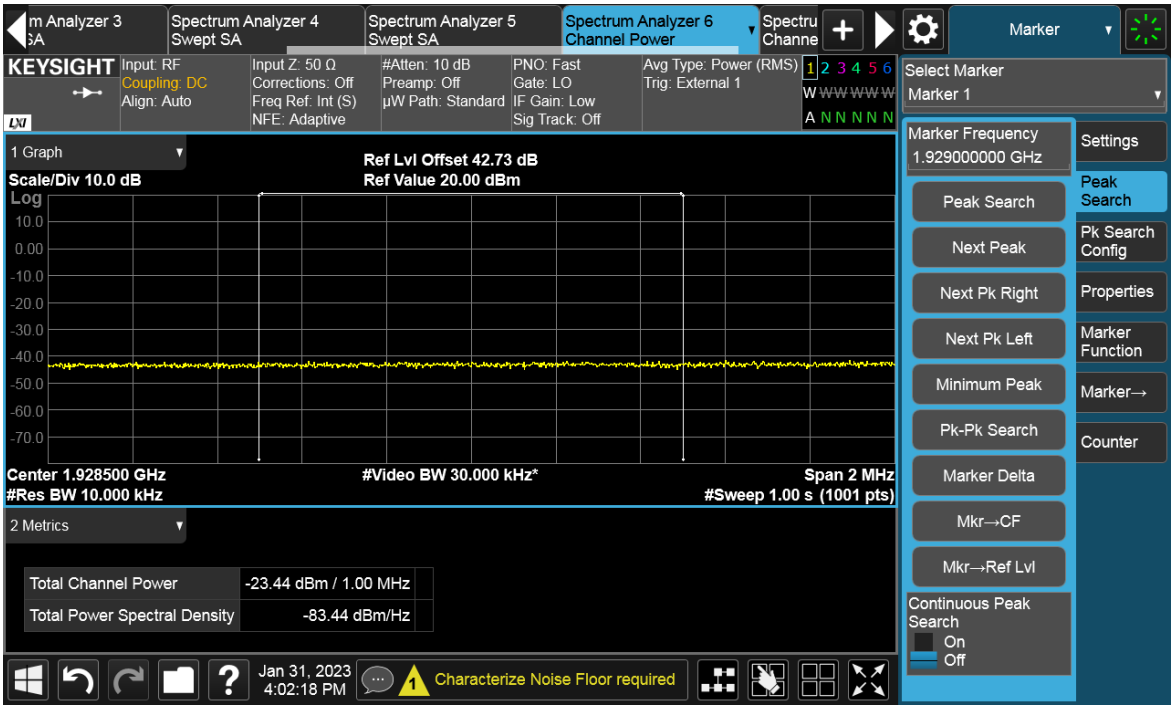

NR-2C

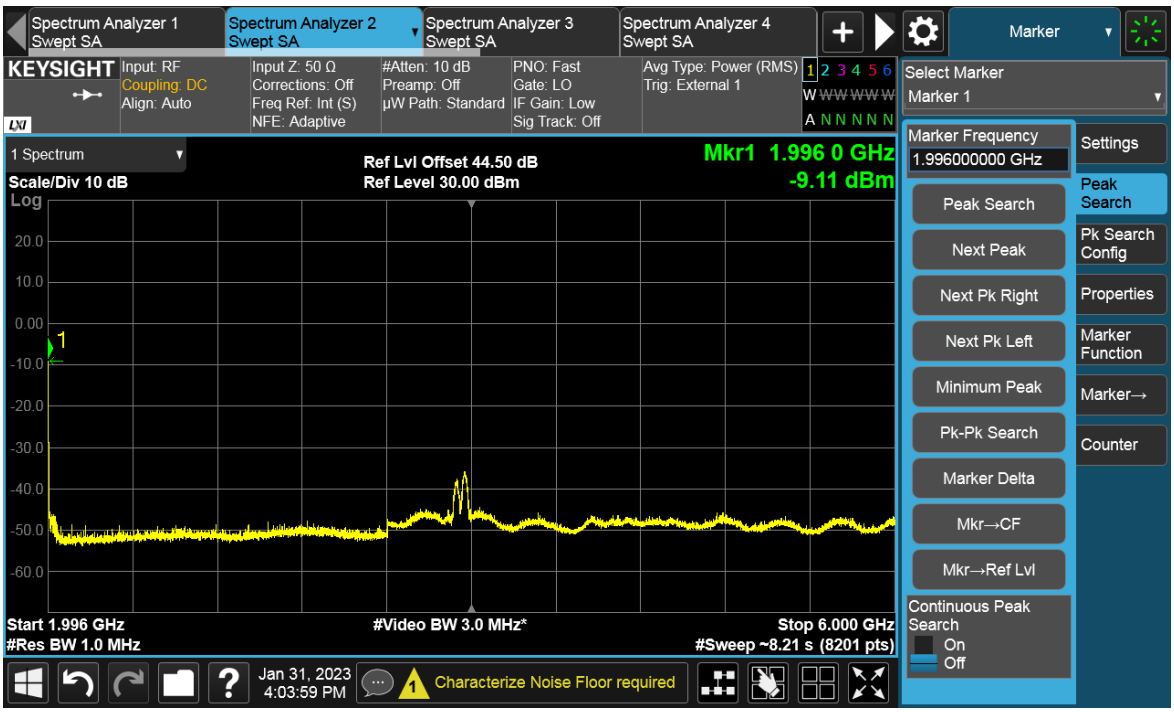
| Antenna Port | Channel Position | Modulation | Carrier BW (MHz) | RBW (kHz) | Limit (dBm) |
|---|---|---|---|---|---|
| D | M | 256QAM | 25 | 1000 | -19.02 |

Channel Position M



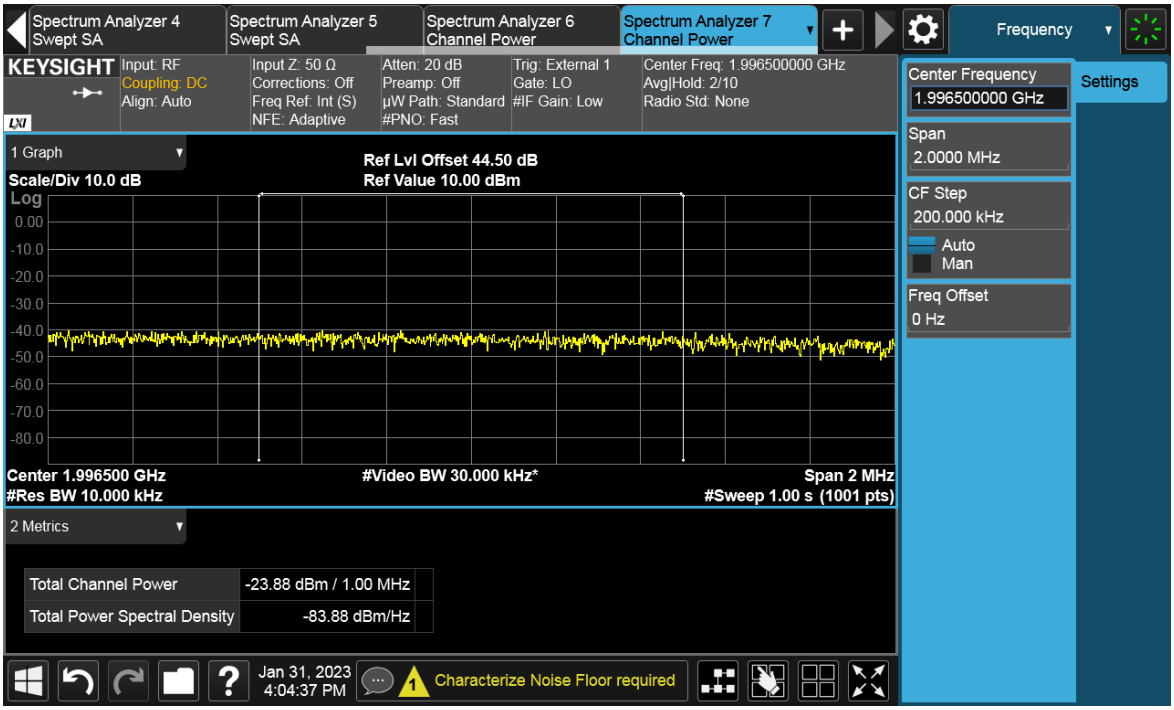
**TEST REPORT**

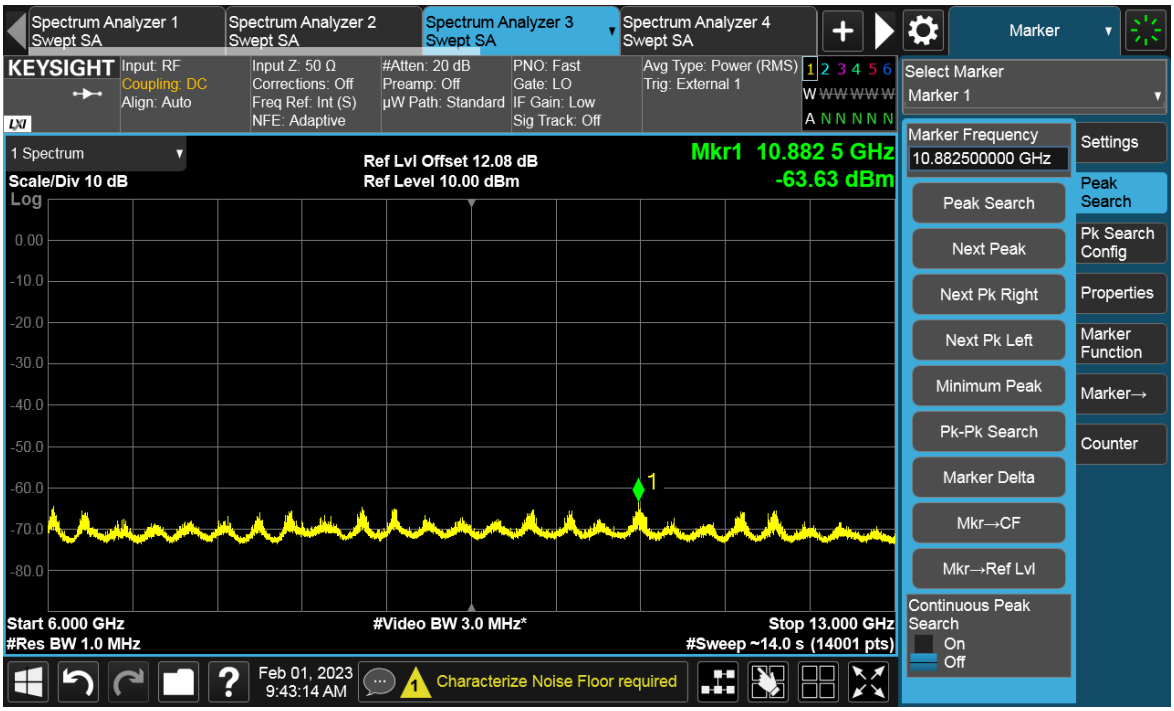

Spectrum Analyzer 3
Spectrum Analyzer 4
Swept SA
Spectrum Analyzer 5
Swept SA
Spectrum Analyzer 6
Channel Power
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Graph
Ref Lvl Offset 42.73 dB
Scale/Div 10.0 dB
Ref Value 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 1.928500 GHz
#Res BW 10.000 kHz
#Video BW 30.000 kHz*
Span 2 MHz
#Sweep 1.00 s (1001 pts)
2 Metrics
Total Channel Power
-23.44 dBm / 1.00 MHz
Total Power Spectral Density
-83.44 dBm/Hz
Marker Frequency
1.929000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Jan 31, 2023
4:02:18 PM
Characterize Noise Floor required


Spectrum Analyzer 1
Swept SA
Spectrum Analyzer 2
Swept SA
Spectrum Analyzer 3
Swept SA
Spectrum Analyzer 4
Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 44.50 dB
Scale/Div 10 dB
Ref Level 30.00 dBm
Mkr1 1.996 0 GHz
-9.11 dBm
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Start 1.996 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 6.000 GHz
#Sweep ~8.21 s (8201 pts)
Marker Frequency
1.996000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Jan 31, 2023
4:03:59 PM
Characterize Noise Floor required

Total Quality. Assured.

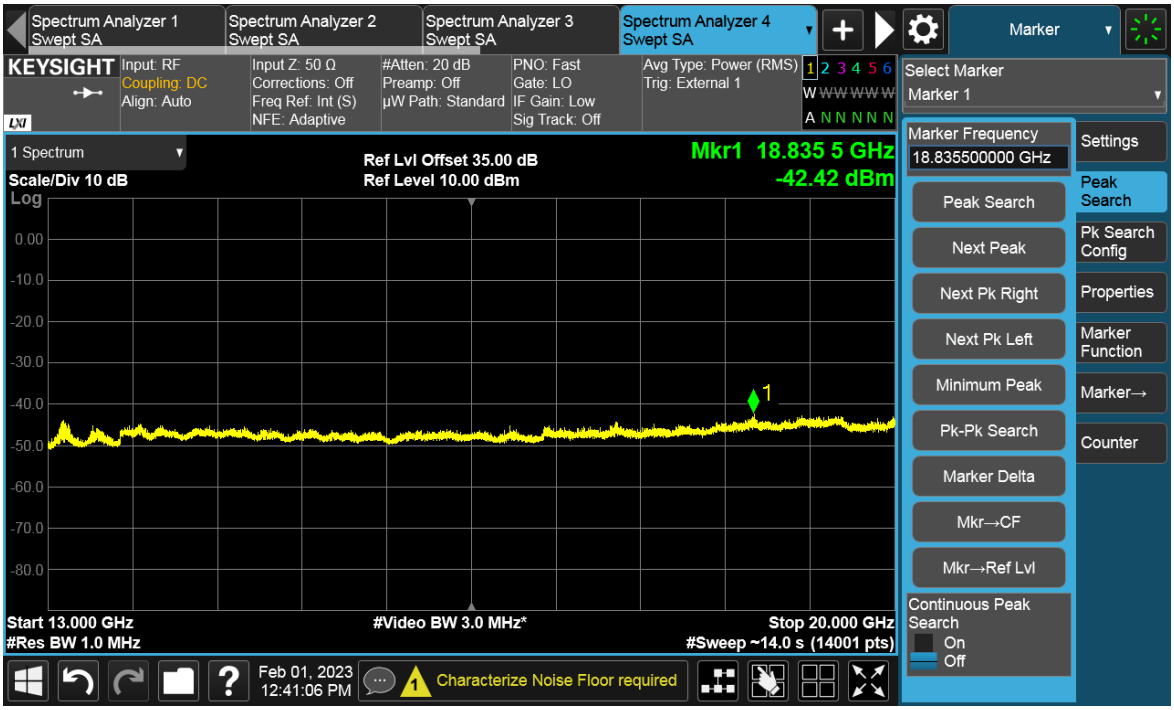
**TEST REPORT**



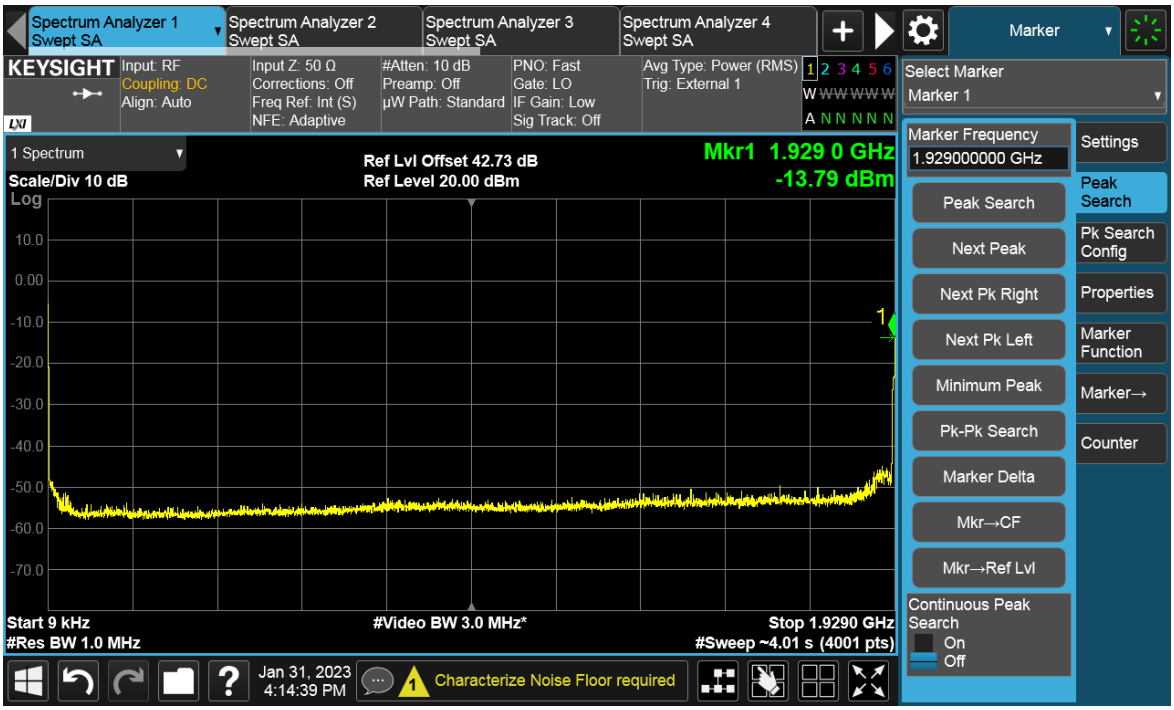
Total Quality. Assured.

**TEST REPORT**

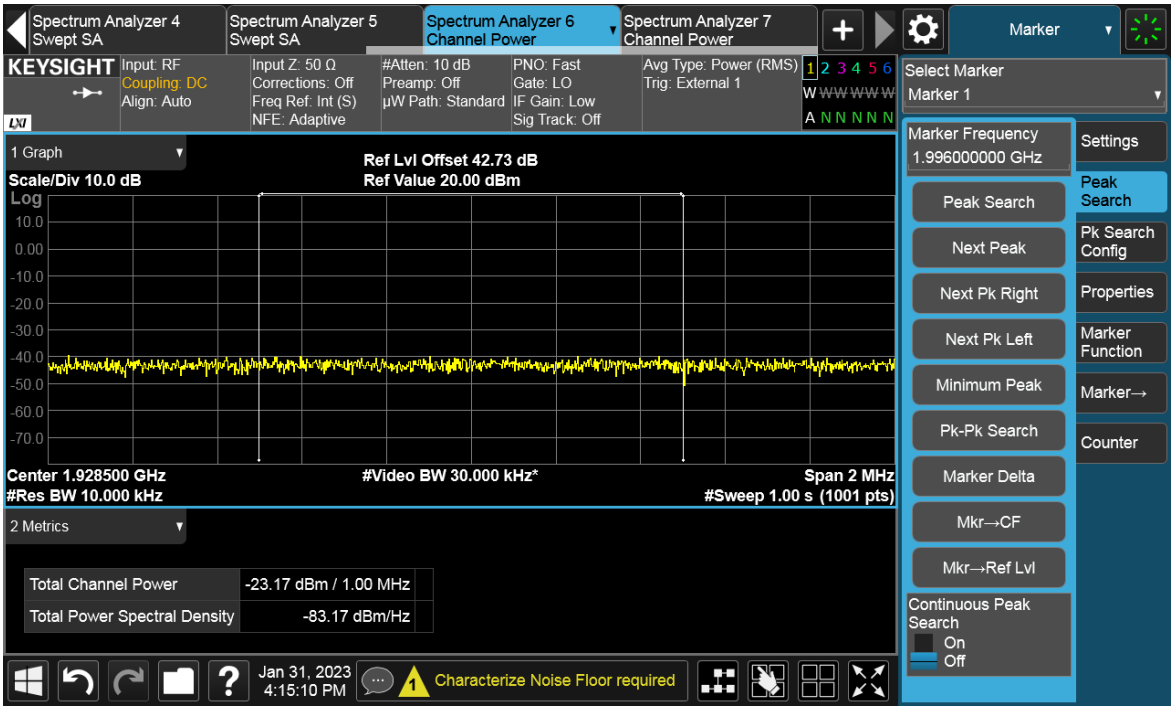


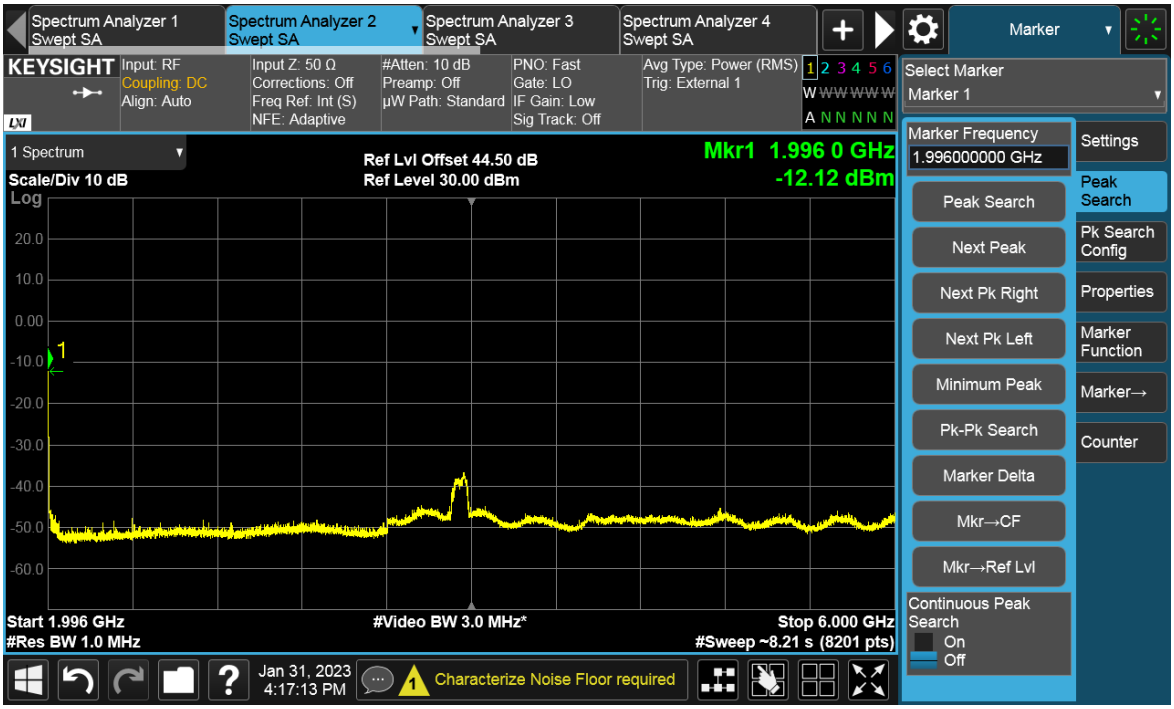

| Antenna Port | Channel Position | Modulation | Carrier BW (MHz) | RBW (kHz) | Limit (dBm) |
|---|---|---|---|---|---|
| D | M | 256QAM | 30 | 1000 | -19.02 |

Channel Position M



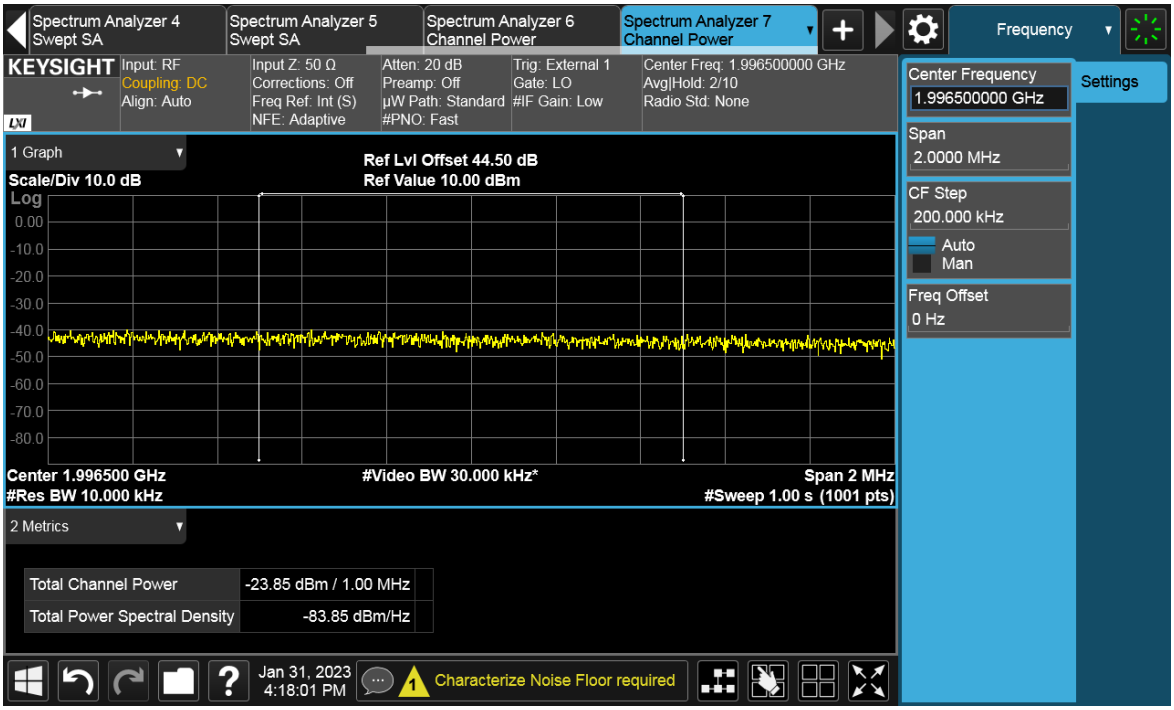
**TEST REPORT**

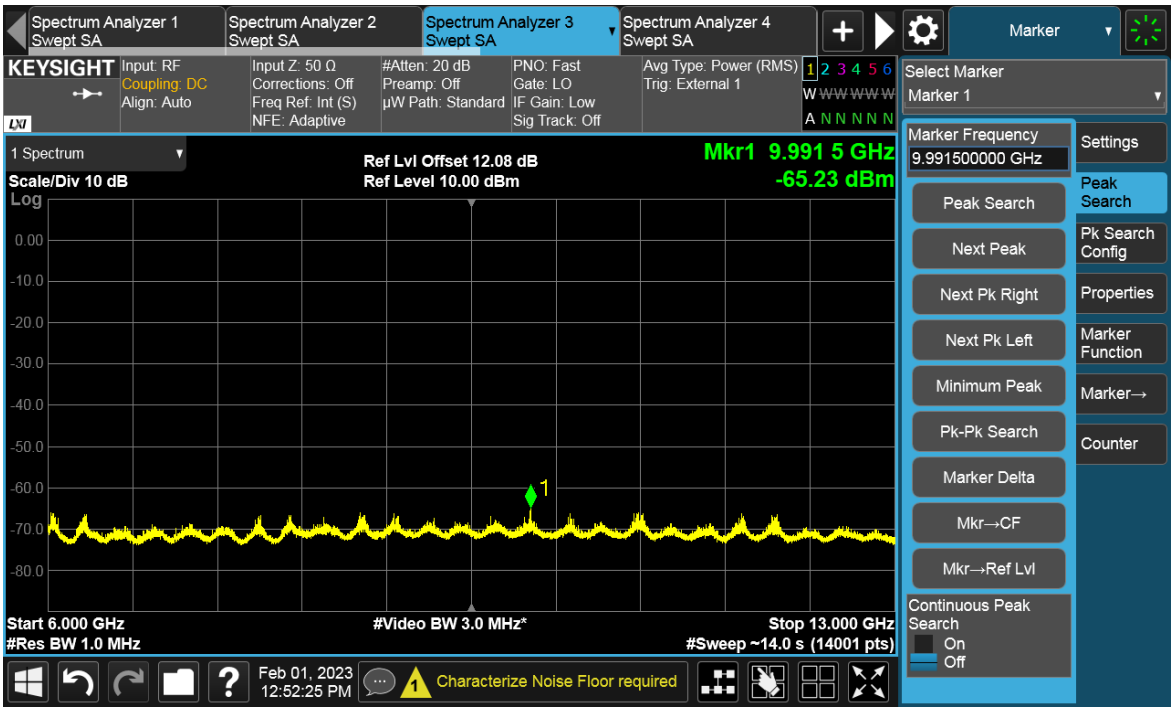

Spectrum Analyzer 4 Swept SA
Spectrum Analyzer 5 Swept SA
Spectrum Analyzer 6 Channel Power
Spectrum Analyzer 7 Channel Power
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Graph
Ref Lvl Offset 42.73 dB
Ref Value 20.00 dBm
Scale/Div 10.0 dB
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 1.928500 GHz
#Res BW 10.000 kHz
#Video BW 30.000 kHz*
Span 2 MHz
#Sweep 1.00 s (1001 pts)
2 Metrics
Total Channel Power
-23.17 dBm / 1.00 MHz
Total Power Spectral Density
-83.17 dBm/Hz
Marker Frequency
1.996000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Jan 31, 2023
4:15:10 PM
Characterize Noise Floor required


Spectrum Analyzer 1 Swept SA
Spectrum Analyzer 2 Swept SA
Spectrum Analyzer 3 Swept SA
Spectrum Analyzer 4 Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 10 dB
Preamp: Off
µW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Ref Lvl Offset 44.50 dB
Ref Level 30.00 dBm
Mkr1 1.996 0 GHz
-12.12 dBm
Scale/Div 10 dB
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Start 1.996 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 6.000 GHz
#Sweep ~8.21 s (8201 pts)
Marker Frequency
1.996000000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Jan 31, 2023
4:17:13 PM
Characterize Noise Floor required

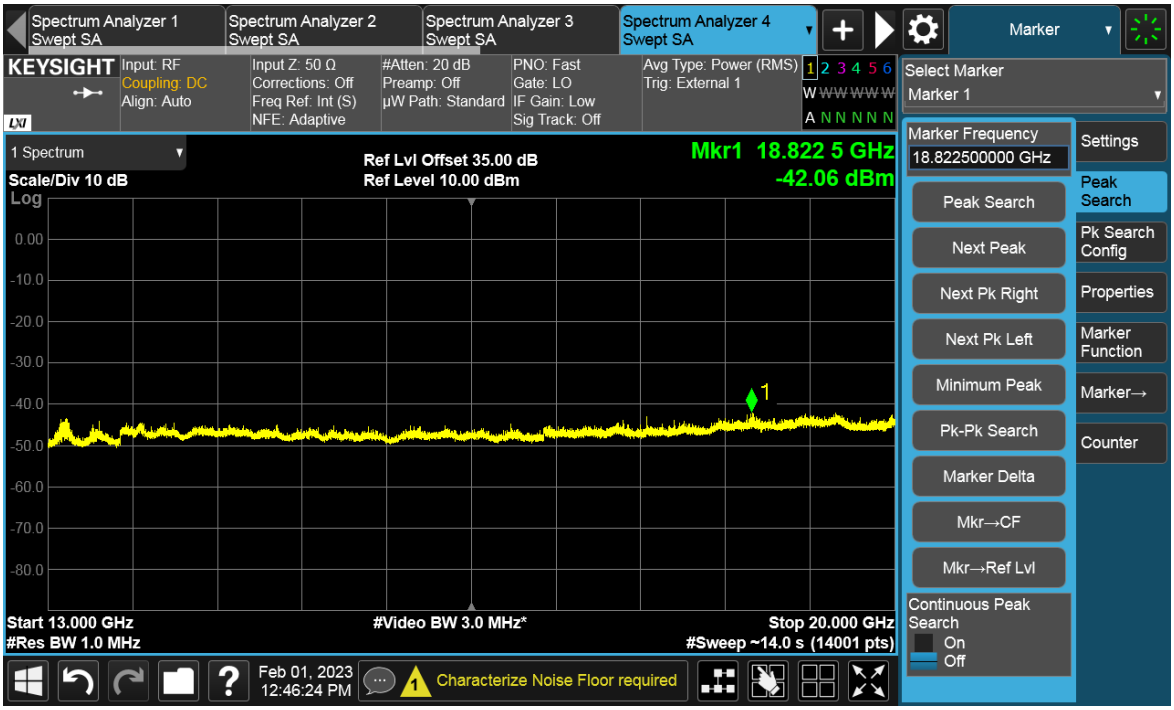
Total Quality. Assured.

**TEST REPORT**



**TEST REPORT**


Spectrum Analyzer 1
Swept SA
Spectrum Analyzer 2
Swept SA
Spectrum Analyzer 3
Swept SA
Spectrum Analyzer 4
Swept SA
Marker
KEYSIGHT
Input: RF
Coupling: DC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)
NFE: Adaptive
#Atten: 20 dB
Preamp: Off
μW Path: Standard
PNO: Fast
Gate: LO
IF Gain: Low
Sig Track: Off
Avg Type: Power (RMS)
Trig: External 1
Select Marker
Marker 1
1 Spectrum
Scale/Div 10 dB
Ref Lvl Offset 35.00 dB
Ref Level 10.00 dBm
Mkr1 18.822 5 GHz
-42.06 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Start 13.000 GHz
#Res BW 1.0 MHz
#Video BW 3.0 MHz*
Stop 20.000 GHz
#Sweep ~14.0 s (14001 pts)
Marker Frequency
18.822500000 GHz
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Minimum Peak
Pk-Pk Search
Marker Delta
Mkr→CF
Mkr→Ref Lvl
Continuous Peak Search
On
Off
Settings
Peak Search
Pk Search Config
Properties
Marker Function
Marker→
Counter
Feb 01, 2023
12:46:24 PM
Characterize Noise Floor required

# 7 Frequency Stability

**Test result:** **Tested**

## 7.1 Limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

## 7.2 Measurement Procedure

Temperature Variation
The EUT was tested over the temperature range -30°C to +50°C in 10°C steps with -48 VDC Power Supply. At each temperature step, the Base Station was configured to transmit at maximum power on the middle channel of the operating band.

Voltage Variation
The EUT was tested at the supplied voltages varied from 85 to 115 percent of the nominal values of -48 VDC. At +20°C, the Base Station was configured to transmit at maximum power on the middle channel of the frequency block.

## 7.3 Measurement result

Frequency Error – Temperature Variation

NR-1C, Channel Bandwidth: 40MHz

| Antenna Port | Modulation | Temperature (°C) | Frequency Stability (Hz) | | |
|---|---|---|---|---|---|
| | | | Channel Position B | Channel Position M | Channel Position T |
| D | 256QAM | -30 | 0.24 | 0.38 | 0.18 |
| | | -20 | 0.22 | 0.75 | 0.08 |
| | | -10 | 0.67 | 0.26 | 0.25 |
| | | 0 | 0.19 | 0.56 | 0.33 |
| | | 10 | 0.22 | 3.83 | 1.18 |
| | | 20 | 1.45 | 1.53 | 2.09 |
| | | 30 | 0.17 | 0.38 | 0.68 |
| | | 40 | 0.86 | 0.35 | 0.01 |
| | | 50 | 0.57 | 0.30 | 0.35 |

Frequency Error – Voltage Variation

NR-1C, Channel Bandwidth: 40MHz

| Antenna Port | Modulation | Temperature (°C) | Supply Voltage (V) | Frequency Stability (Hz) | | |
|---|---|---|---|---|---|---|
| | | | | Channel Position B | Channel Position M | Channel Position T |
| D | 256QAM | 20 | -40.8 | 1.43 | 0.56 | 0.99 |
| | | | -48.0 | 1.45 | 1.53 | 2.09 |
| | | | -55.2 | 0.94 | 2.23 | 1.92 |

********** END **********