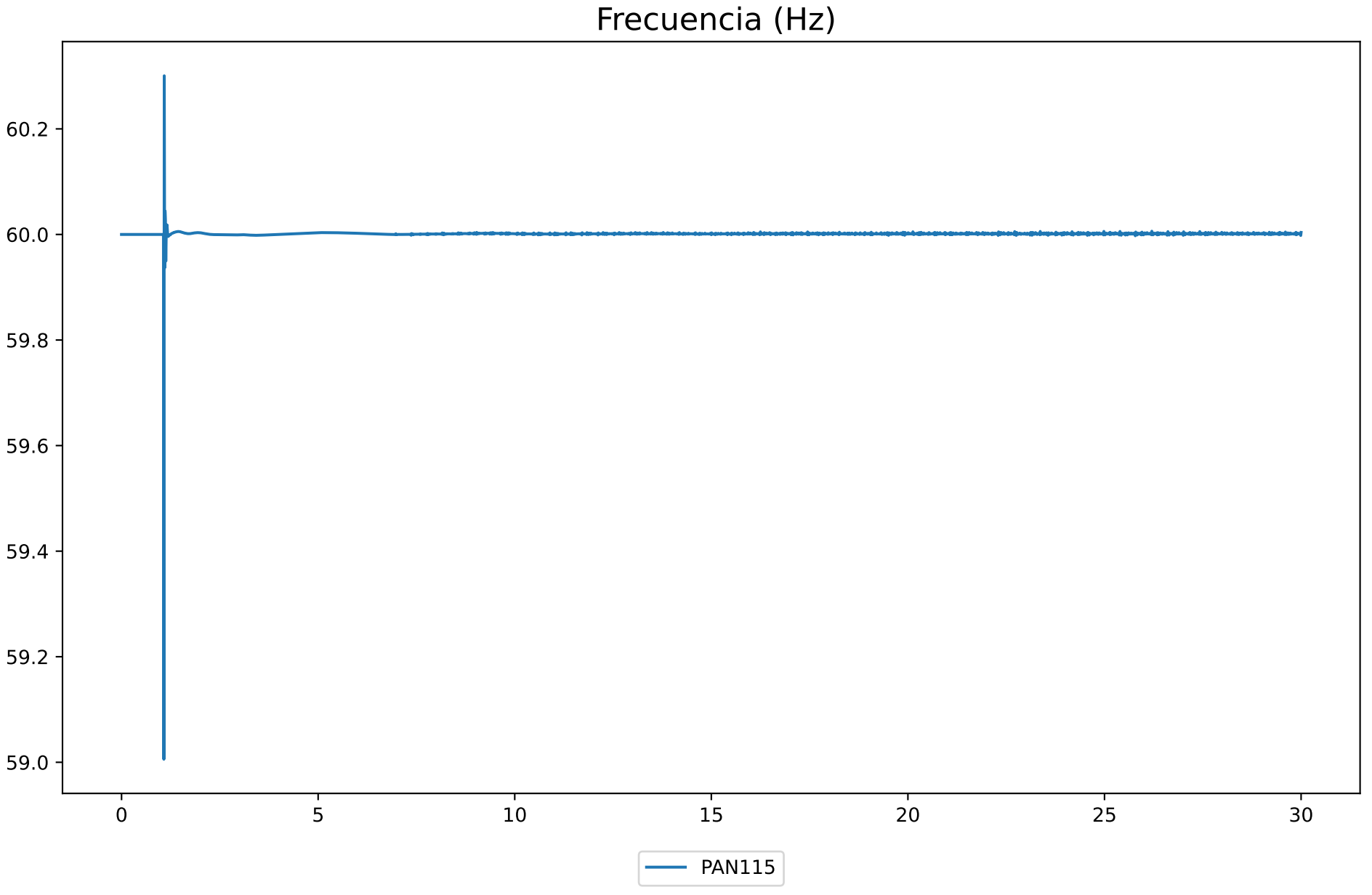
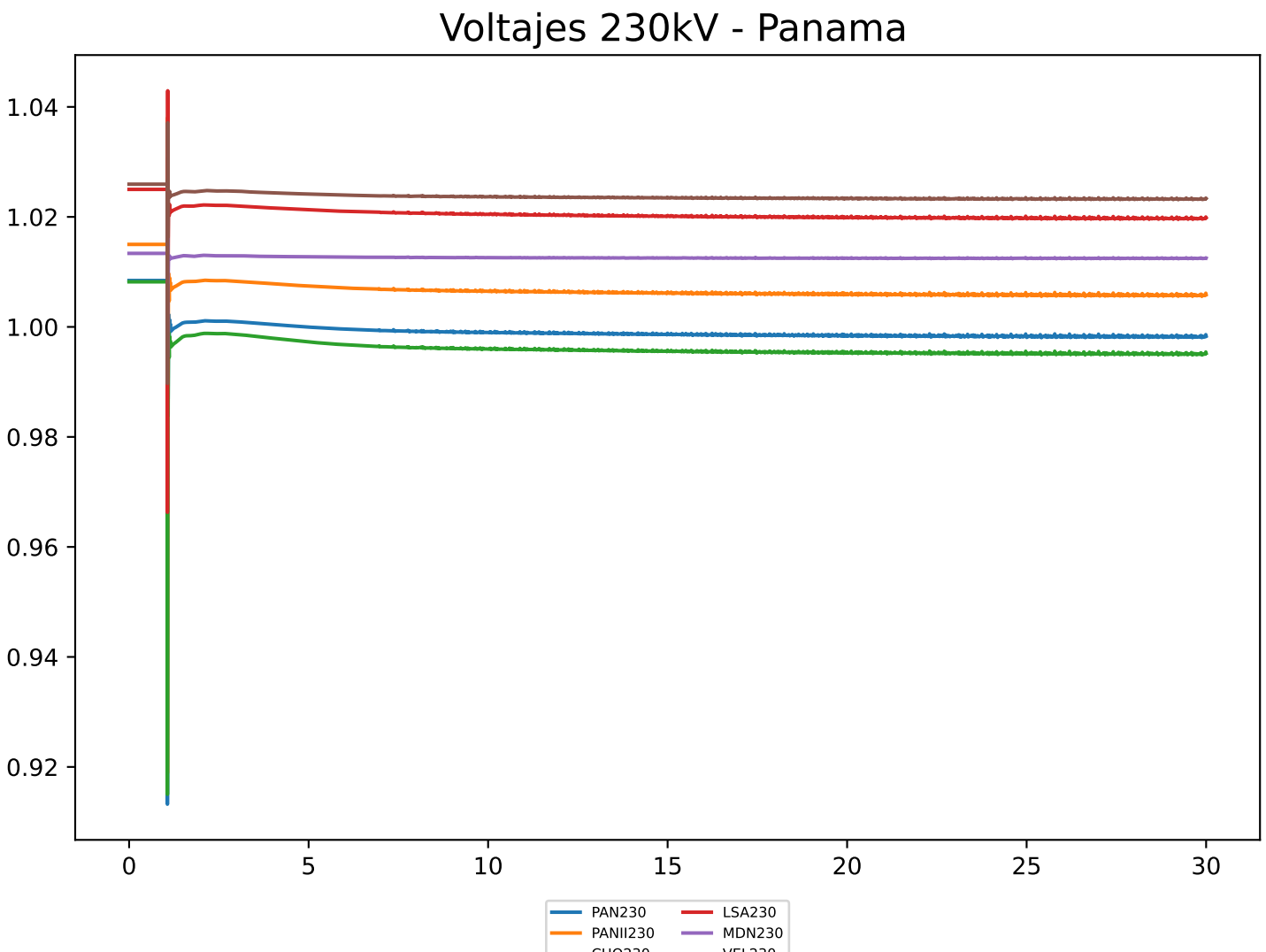
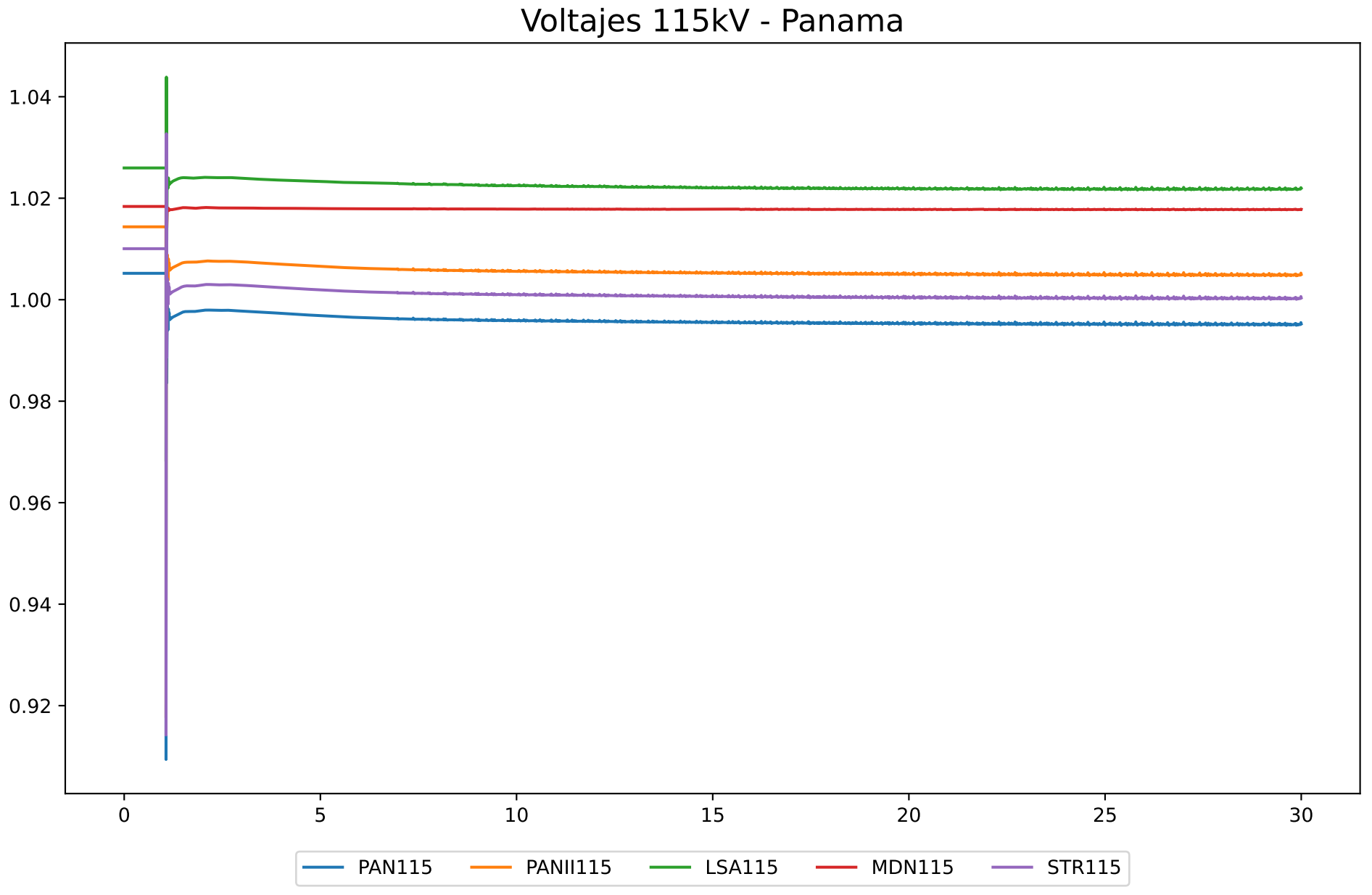
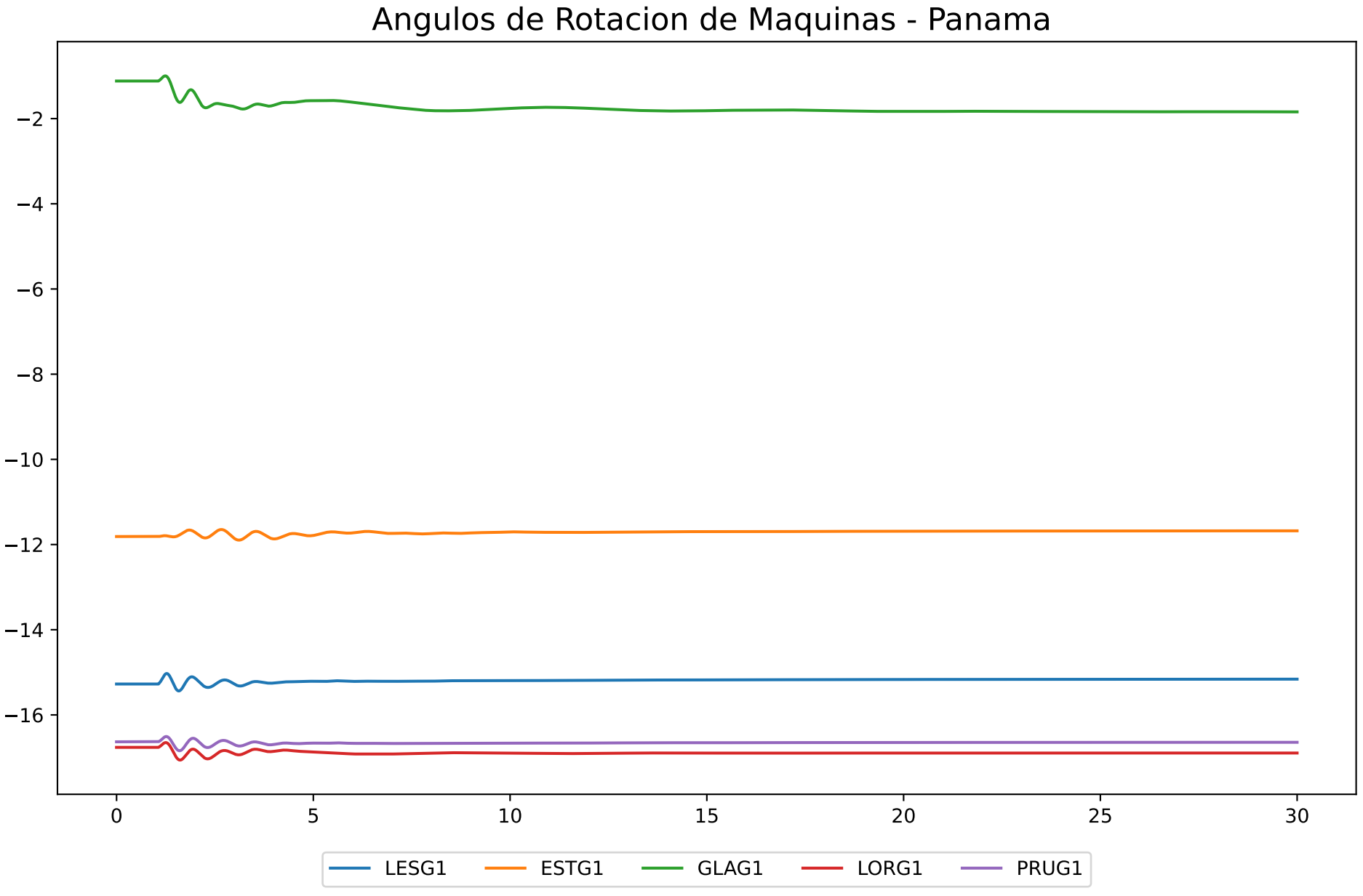
ANEXO VI
ANÁLISIS DINÁMICO

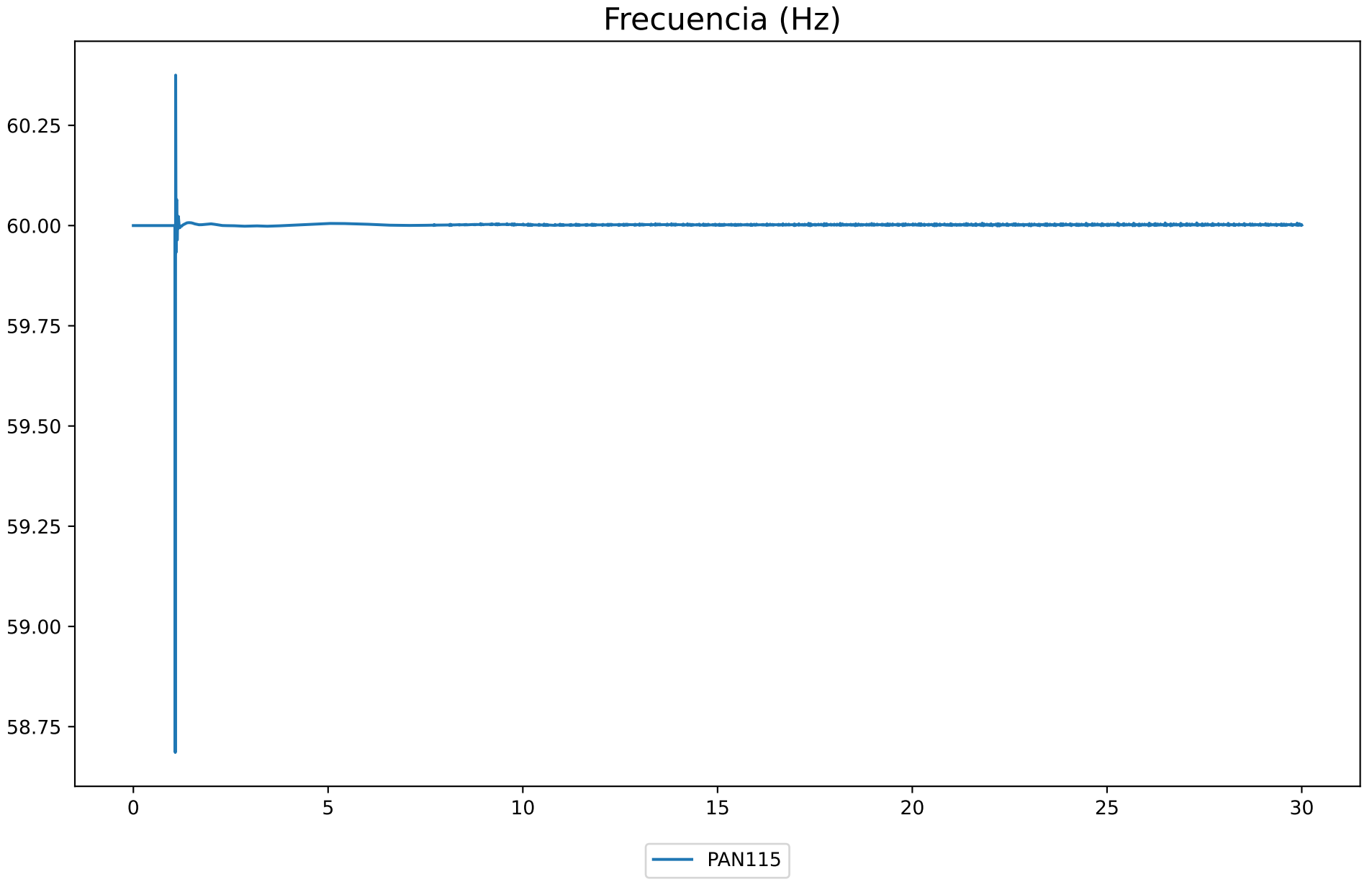
2029

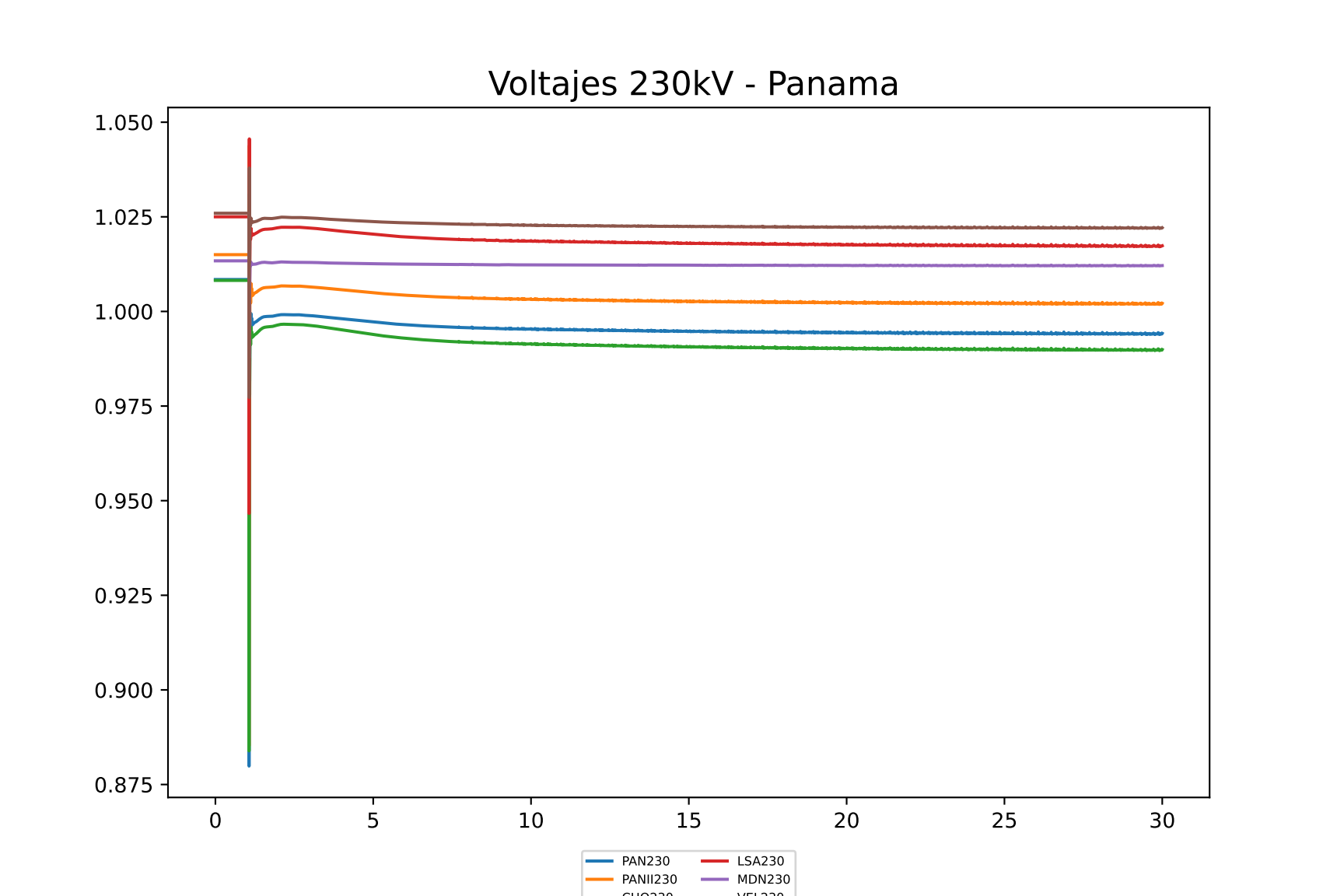

Frecuencia (Hz)
60.2
60.0
59.8
59.6
59.4
59.2
59.0
0
5
10
15
20
25
30
PAN115

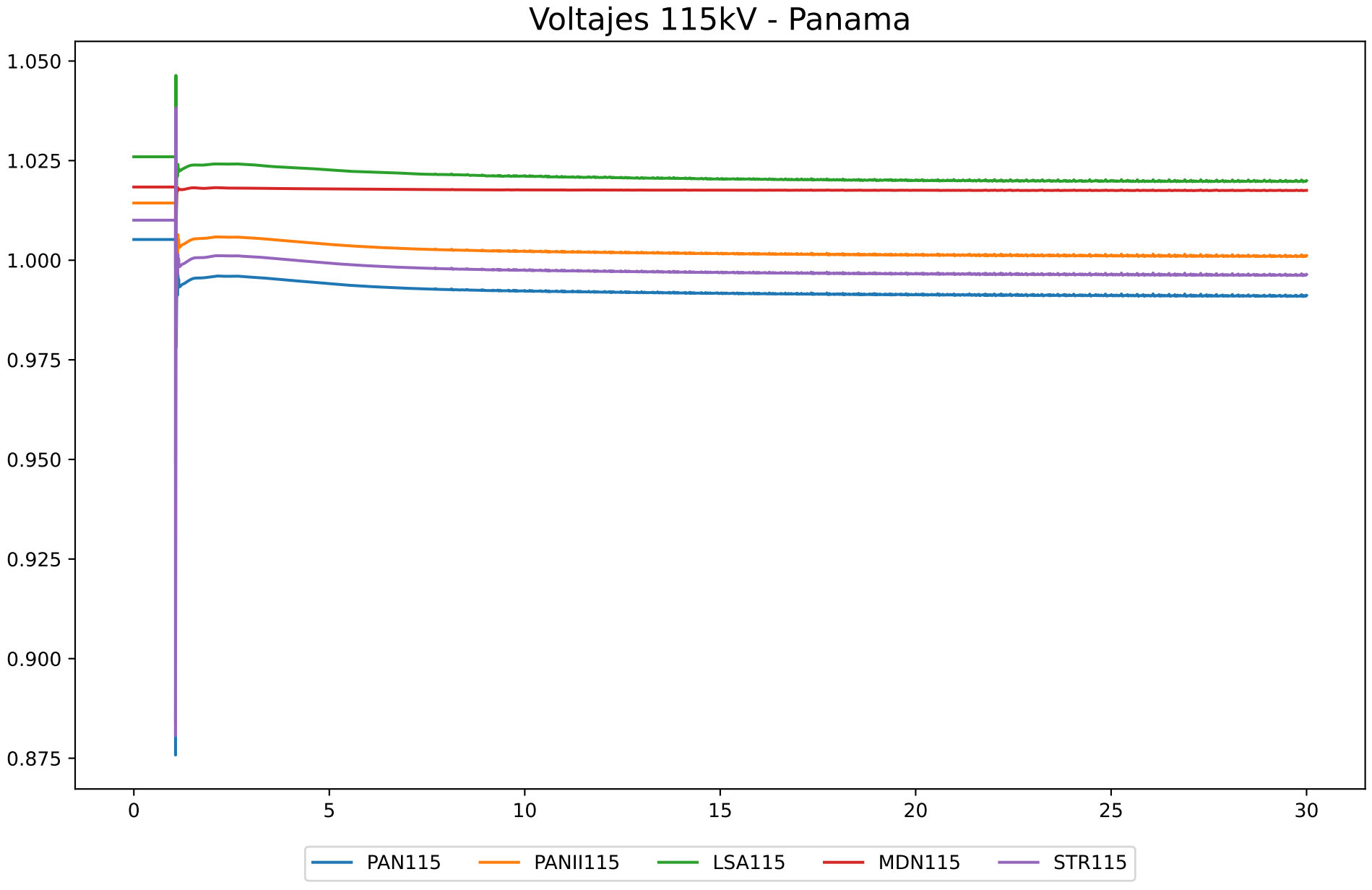

Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

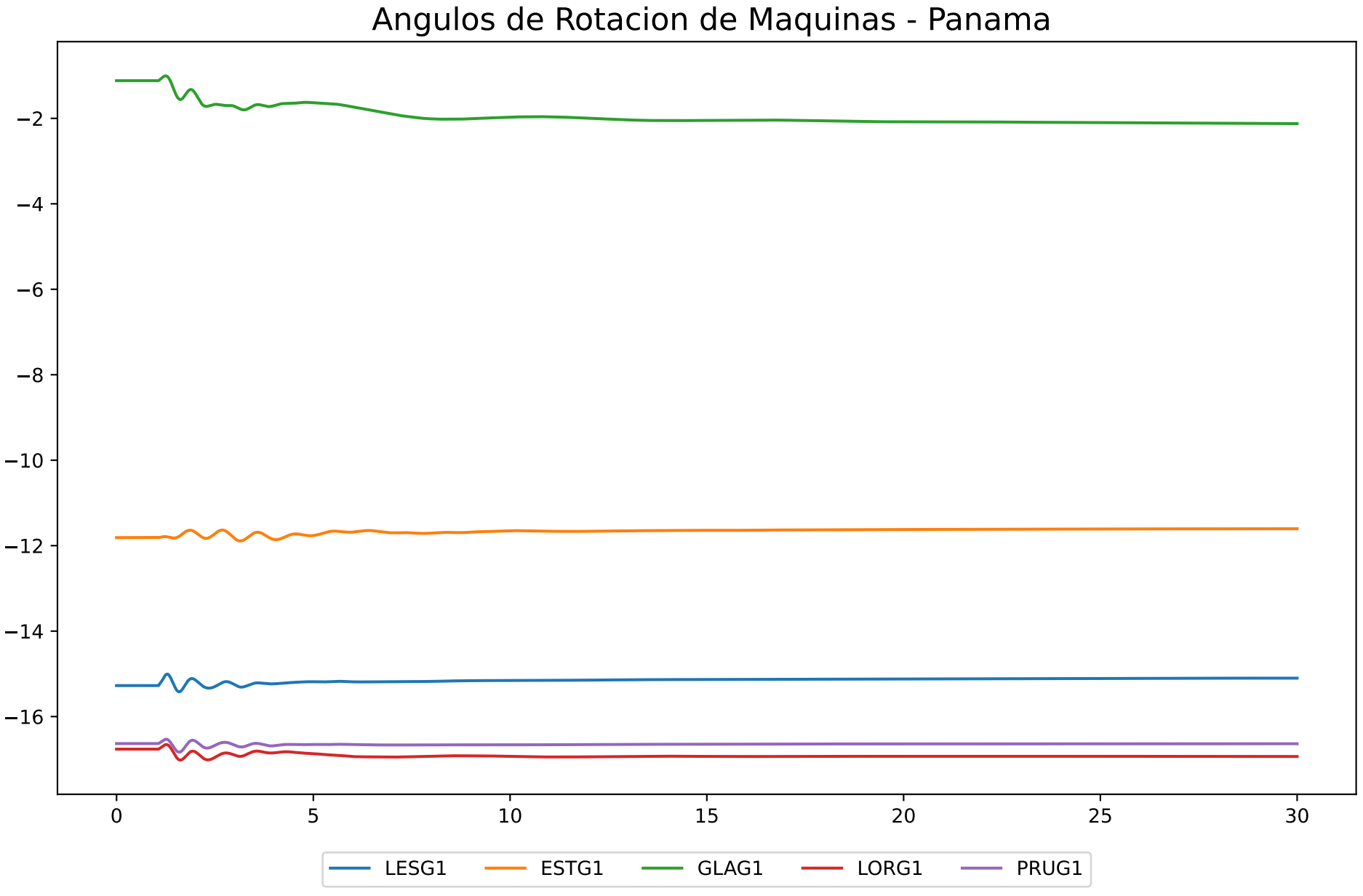

Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

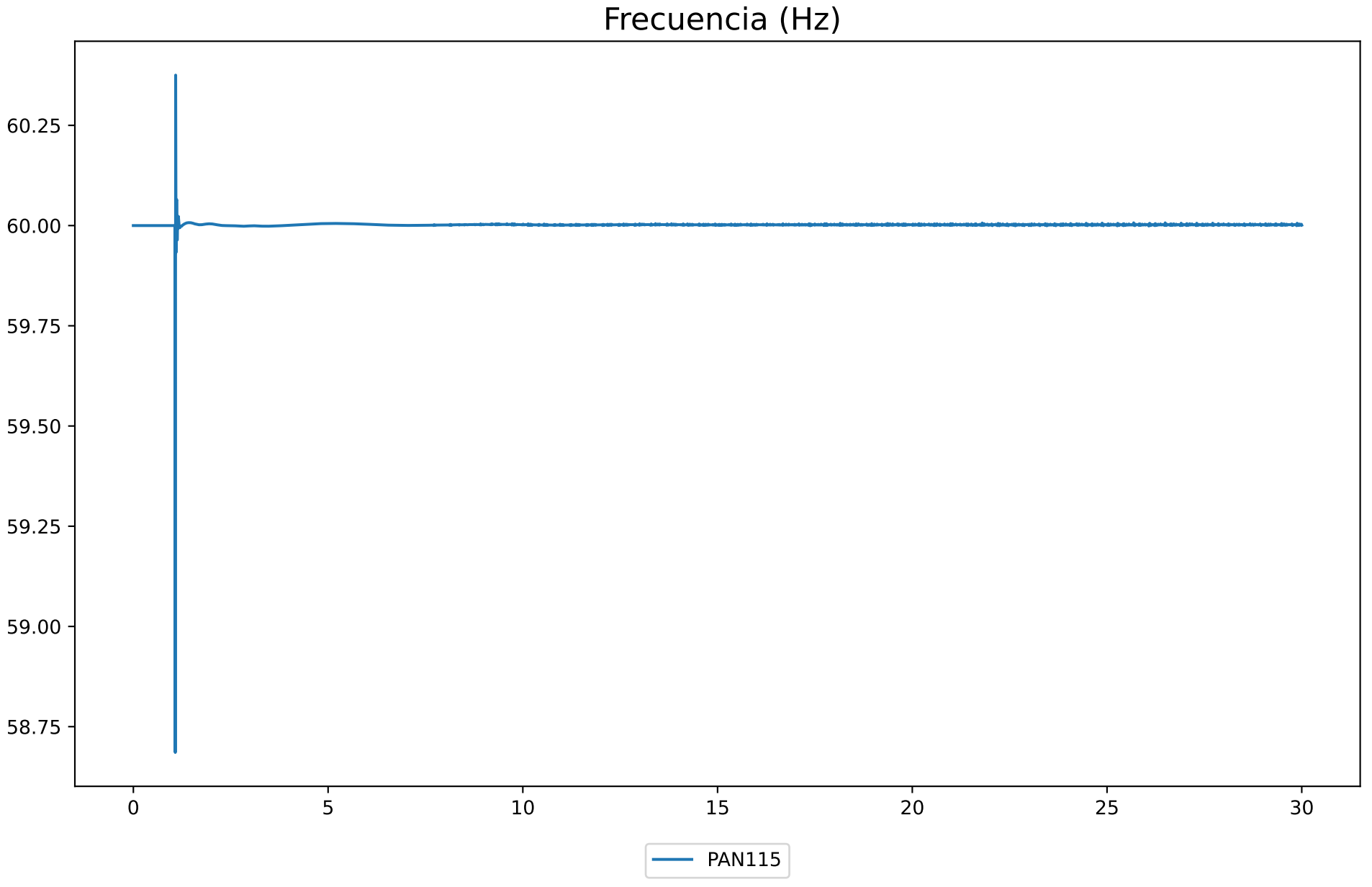

Angulos de Rotacion de Maquinas - Panama
−2
−4
−6
−8
−10
−12
−14
−16
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

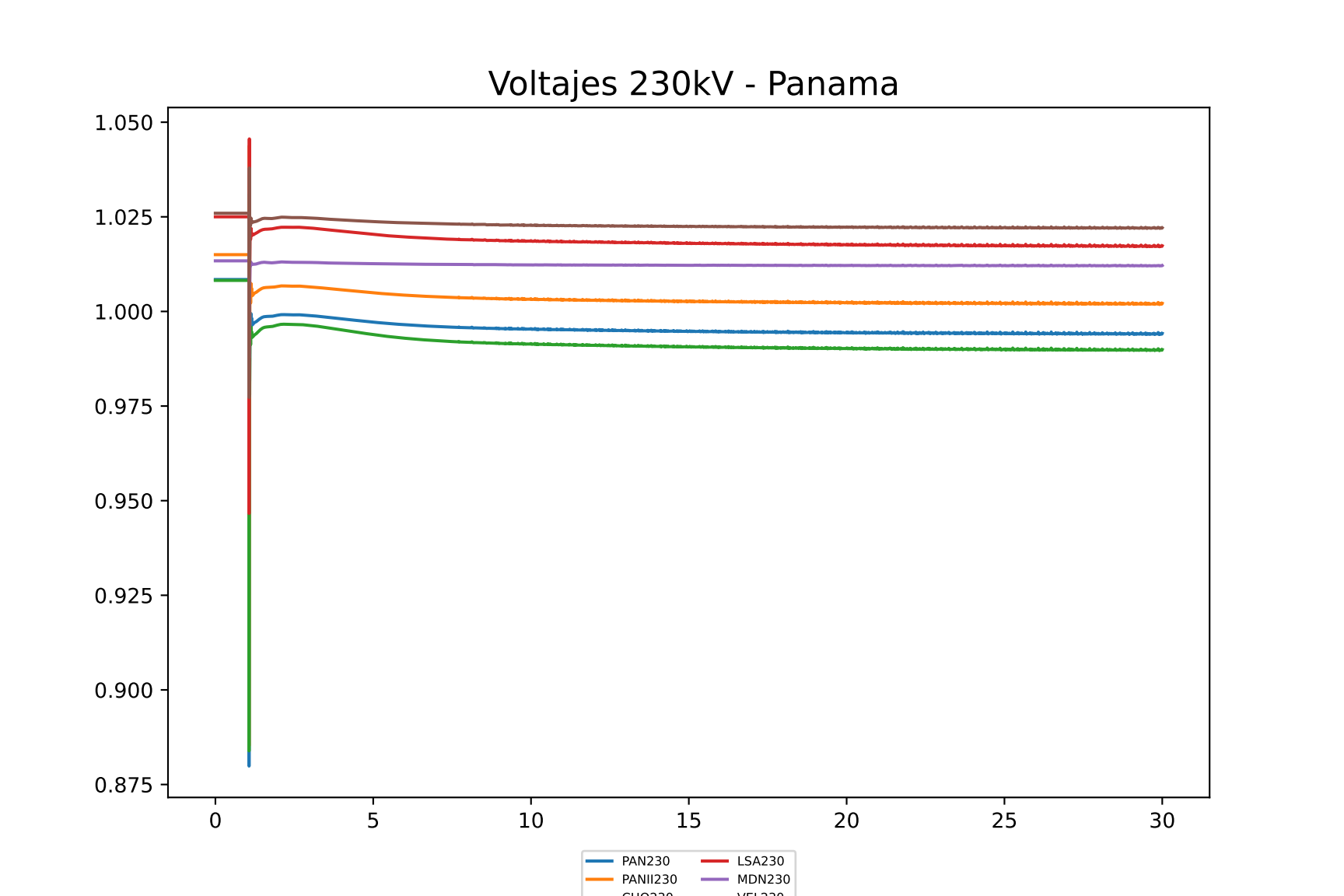

Frecuencia (Hz)
60.25
60.00
59.75
59.50
59.25
59.00
58.75
0
5
10
15
20
25
30
PAN115

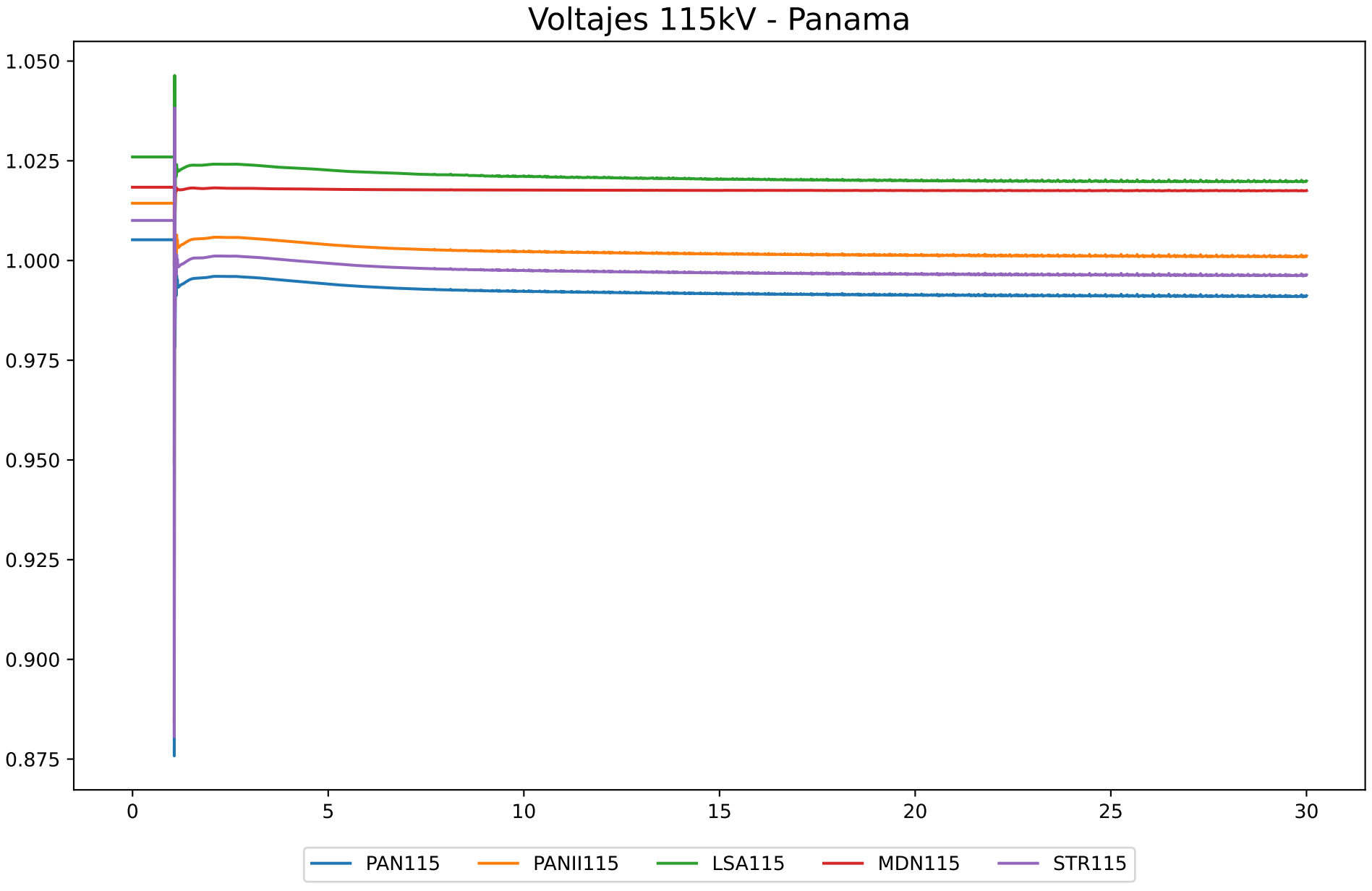

Voltajes 230kV - Panama
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

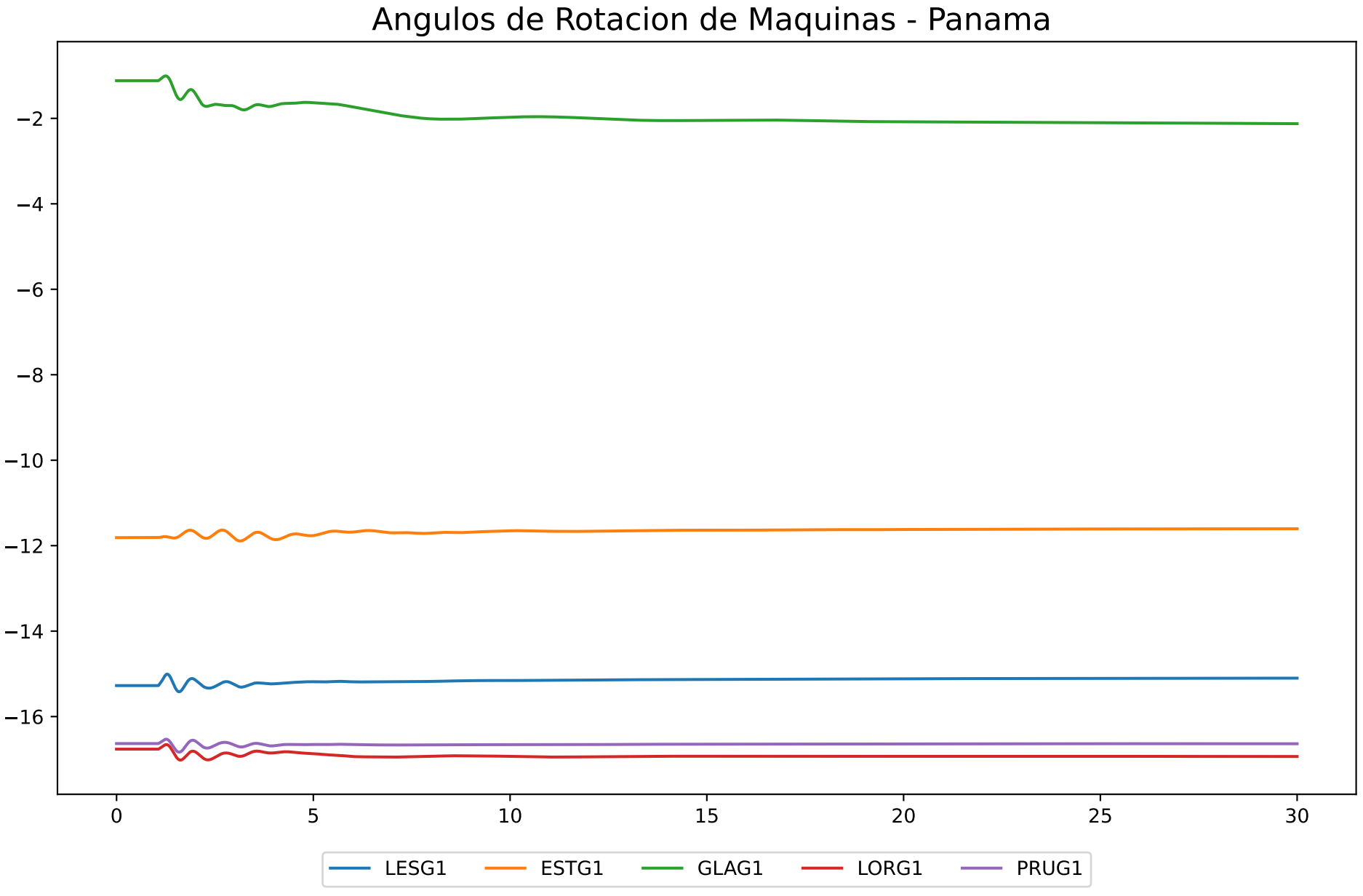

Voltajes 115kV - Panama
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

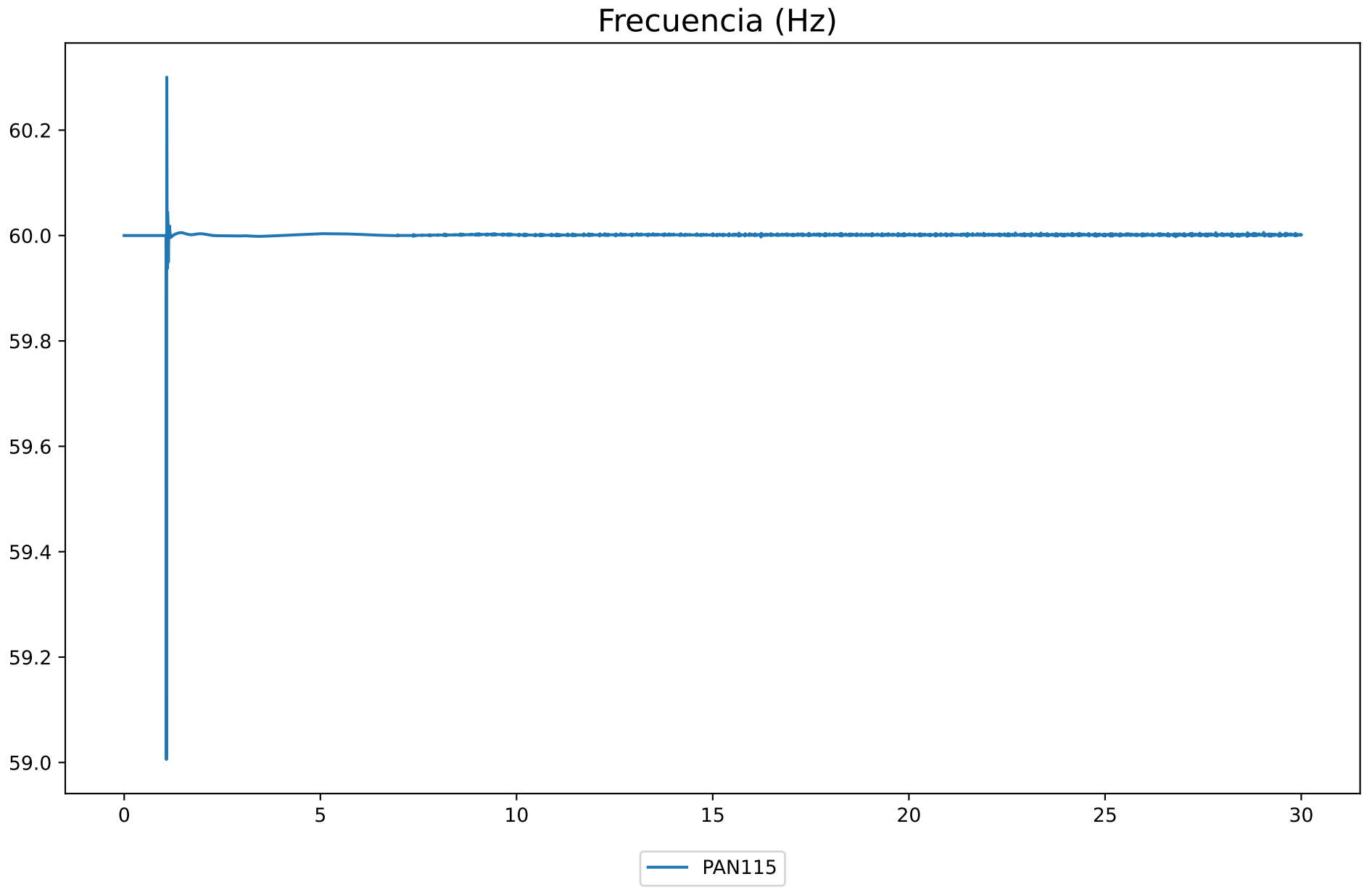

Angulos de Rotacion de Maquinas - Panama
−2
−4
−6
−8
−10
−12
−14
−16
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

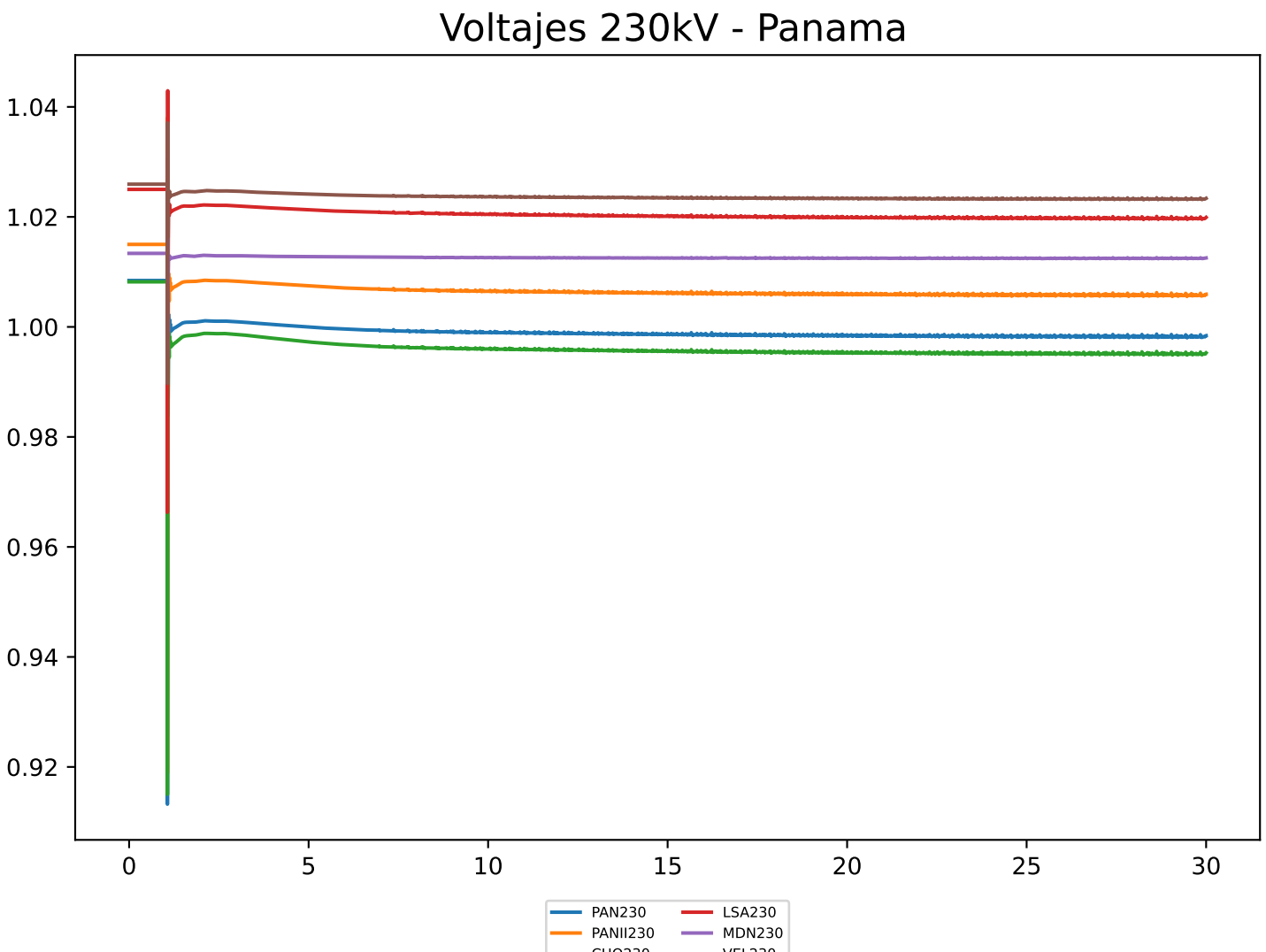

Frecuencia (Hz)
60.25
60.00
59.75
59.50
59.25
59.00
58.75
0
5
10
15
20
25
30
PAN115

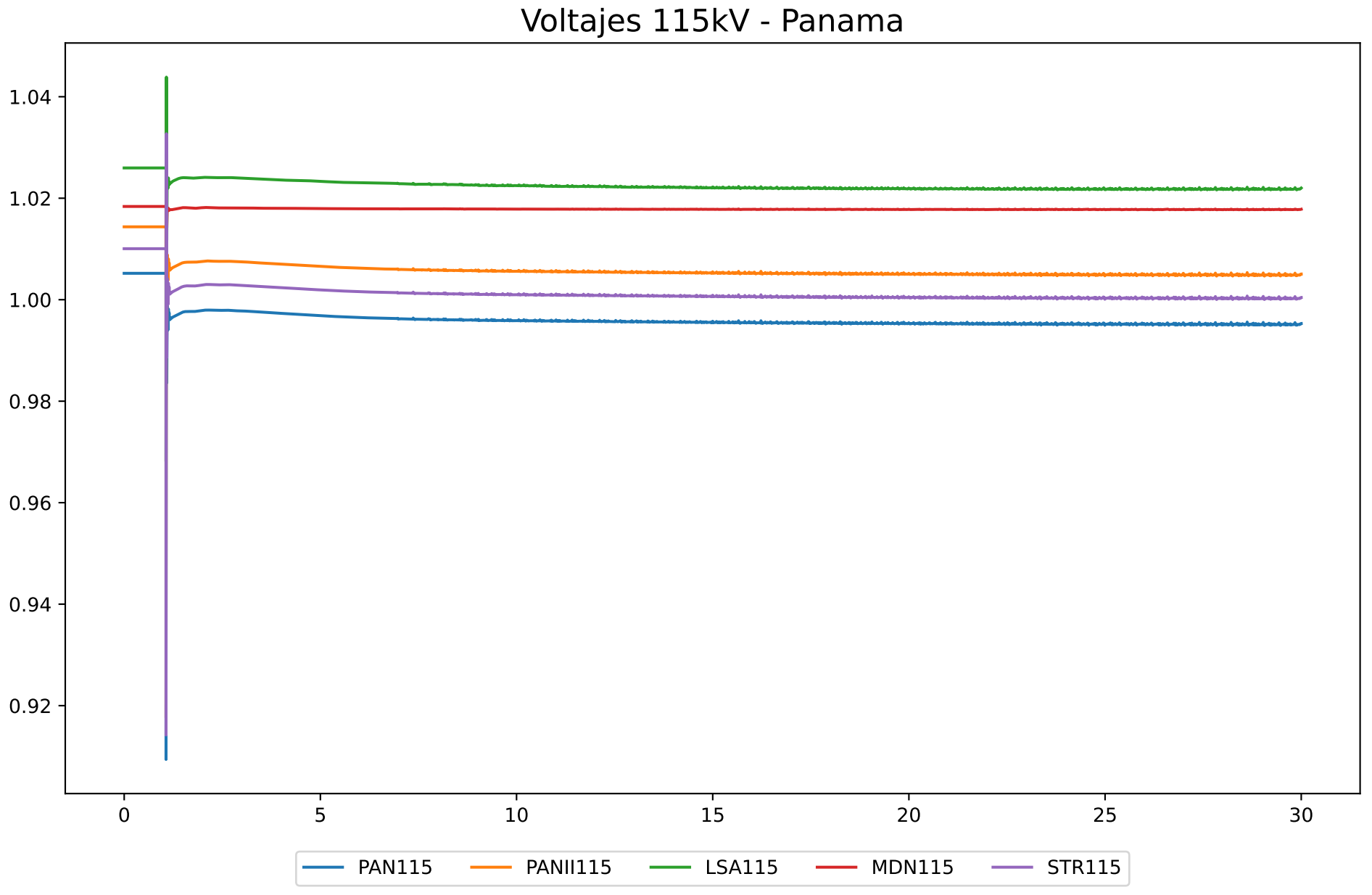

Voltajes 230kV - Panama
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

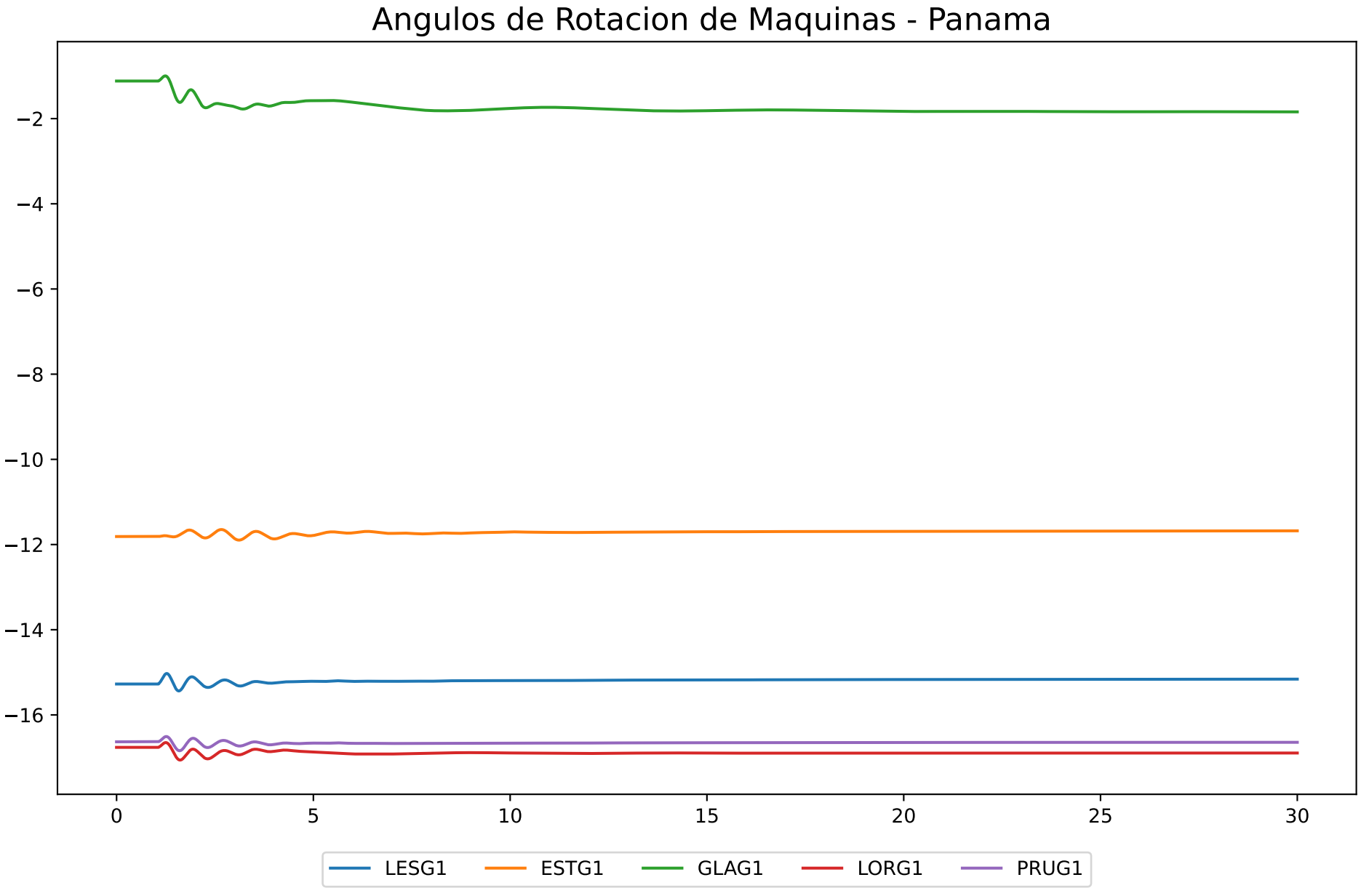

Voltajes 115kV - Panama
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

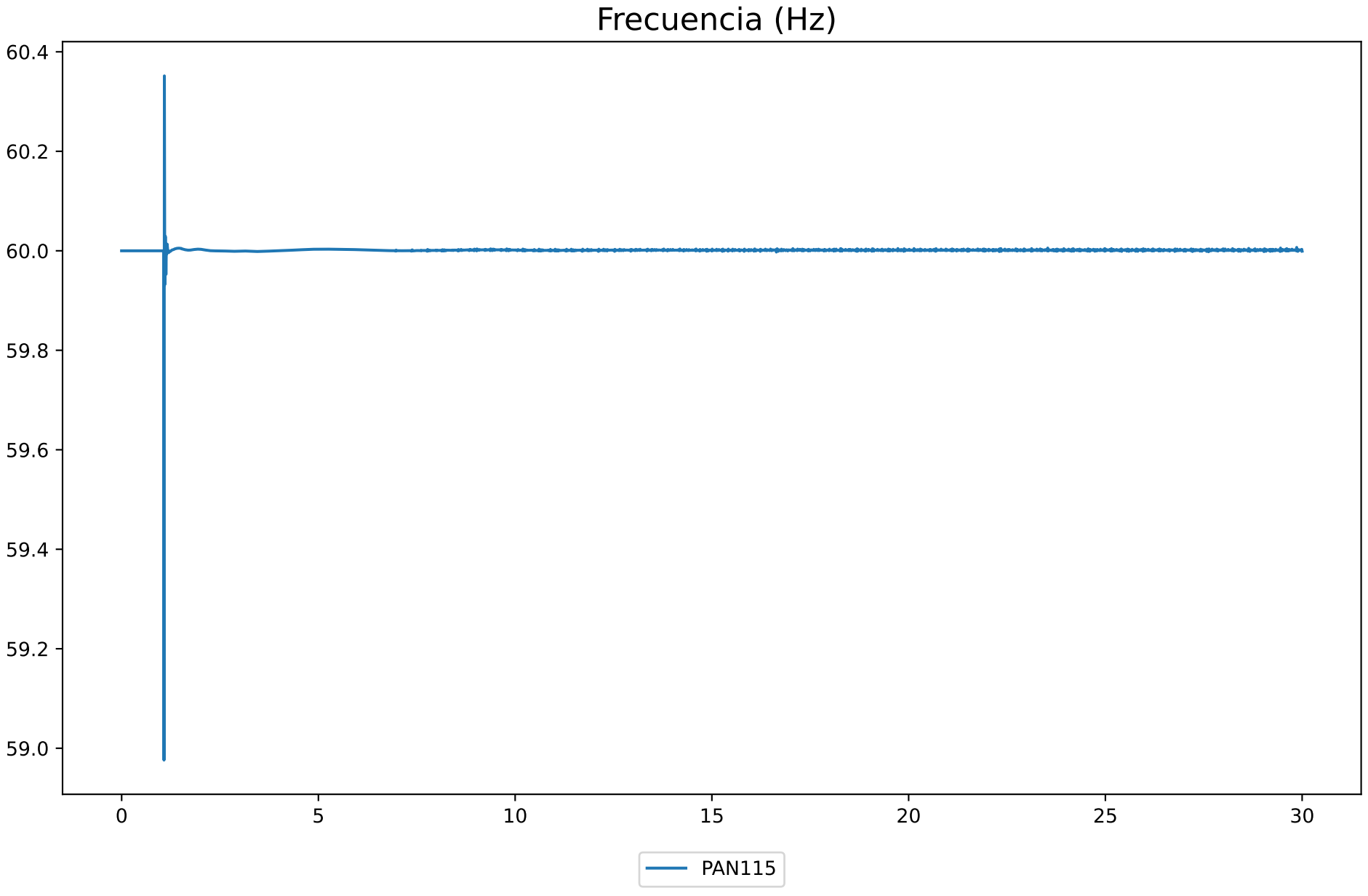

Angulos de Rotacion de Maquinas - Panama
−2
−4
−6
−8
−10
−12
−14
−16
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

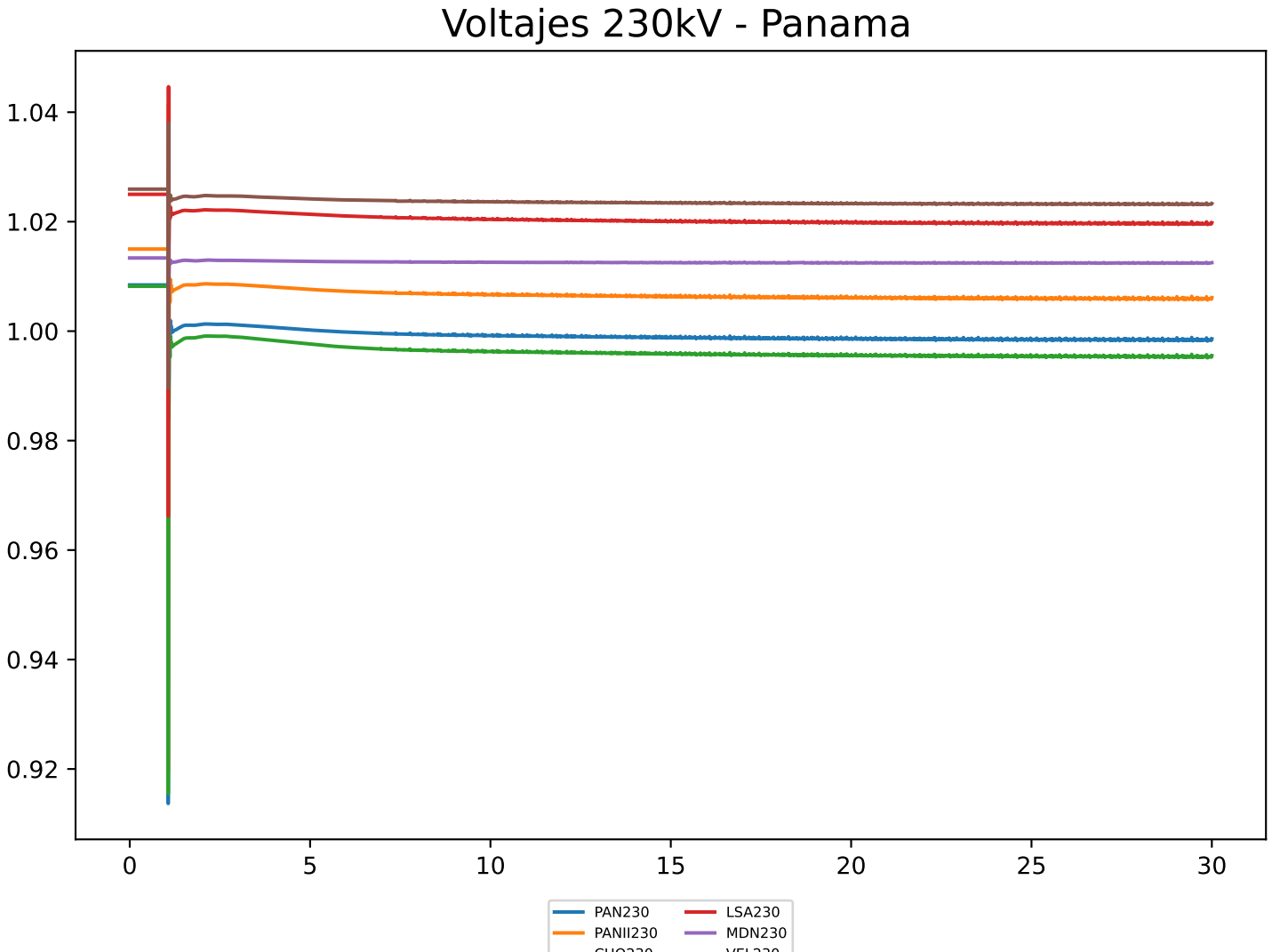

Frecuencia (Hz)
60.2
60.0
59.8
59.6
59.4
59.2
59.0
0
5
10
15
20
25
30
PAN115

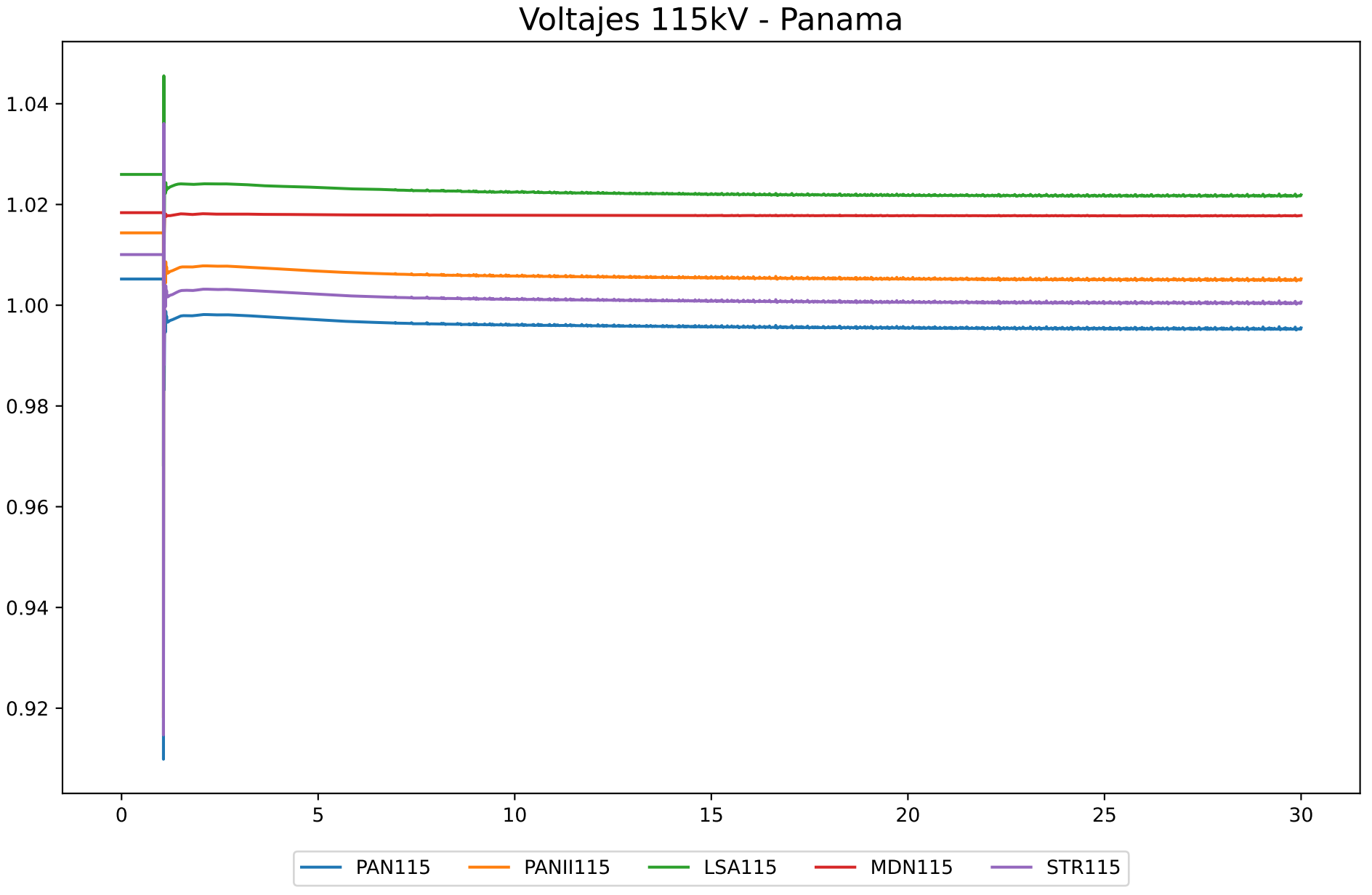

Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

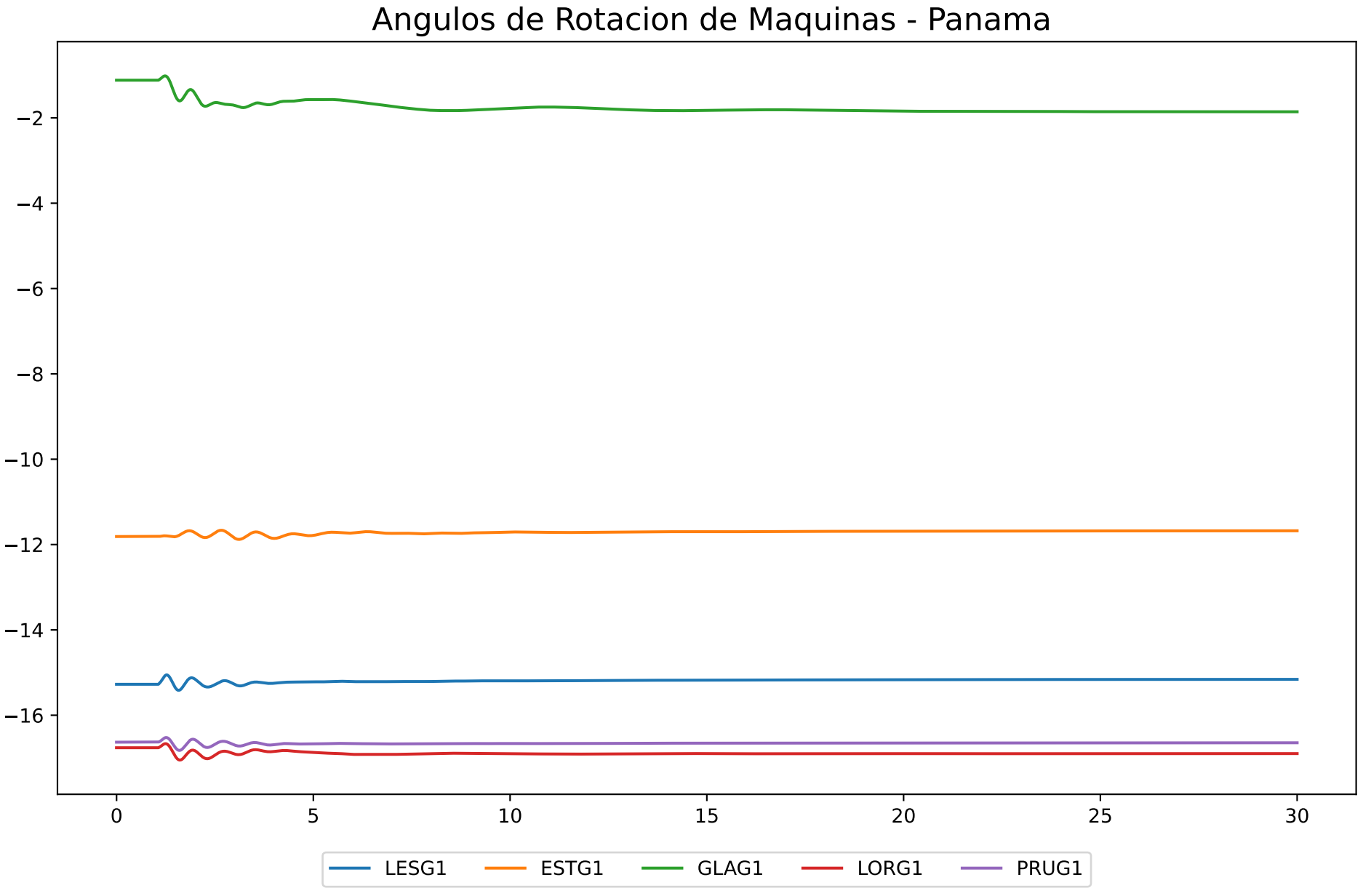

Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

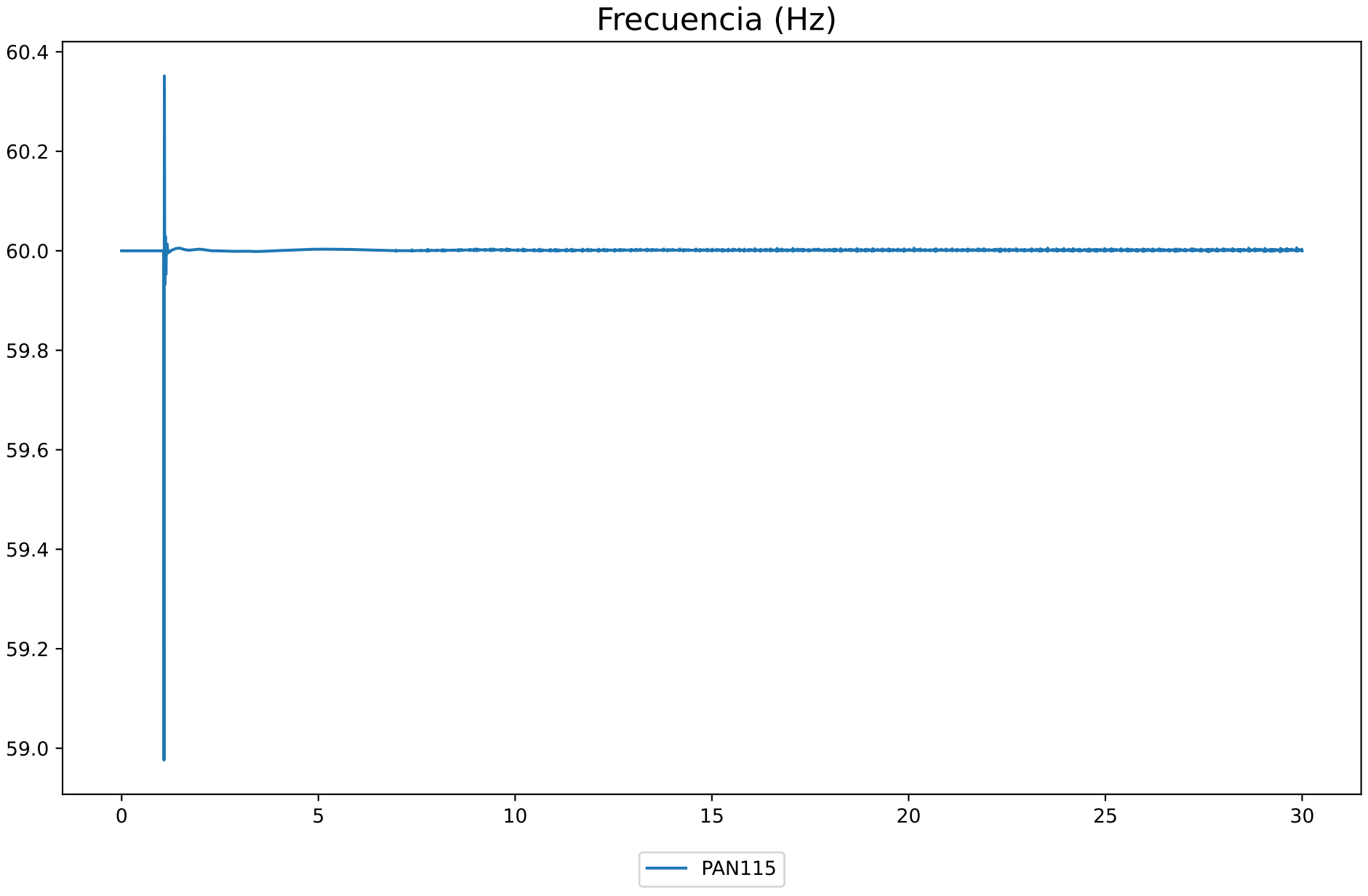

Angulos de Rotacion de Maquinas - Panama
−2
−4
−6
−8
−10
−12
−14
−16
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

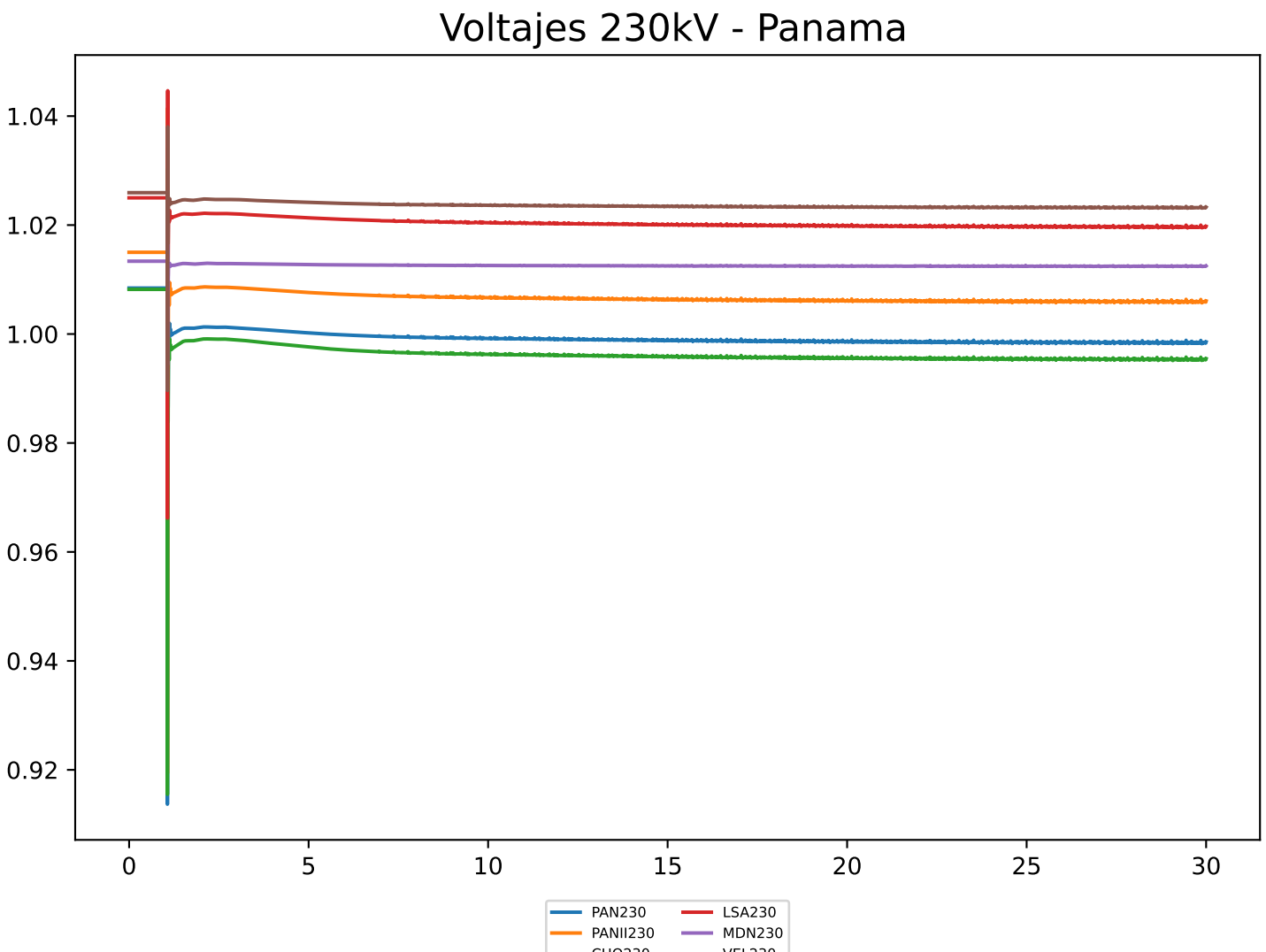

Frecuencia (Hz)
60.4
60.2
60.0
59.8
59.6
59.4
59.2
59.0
0
5
10
15
20
25
30
PAN115

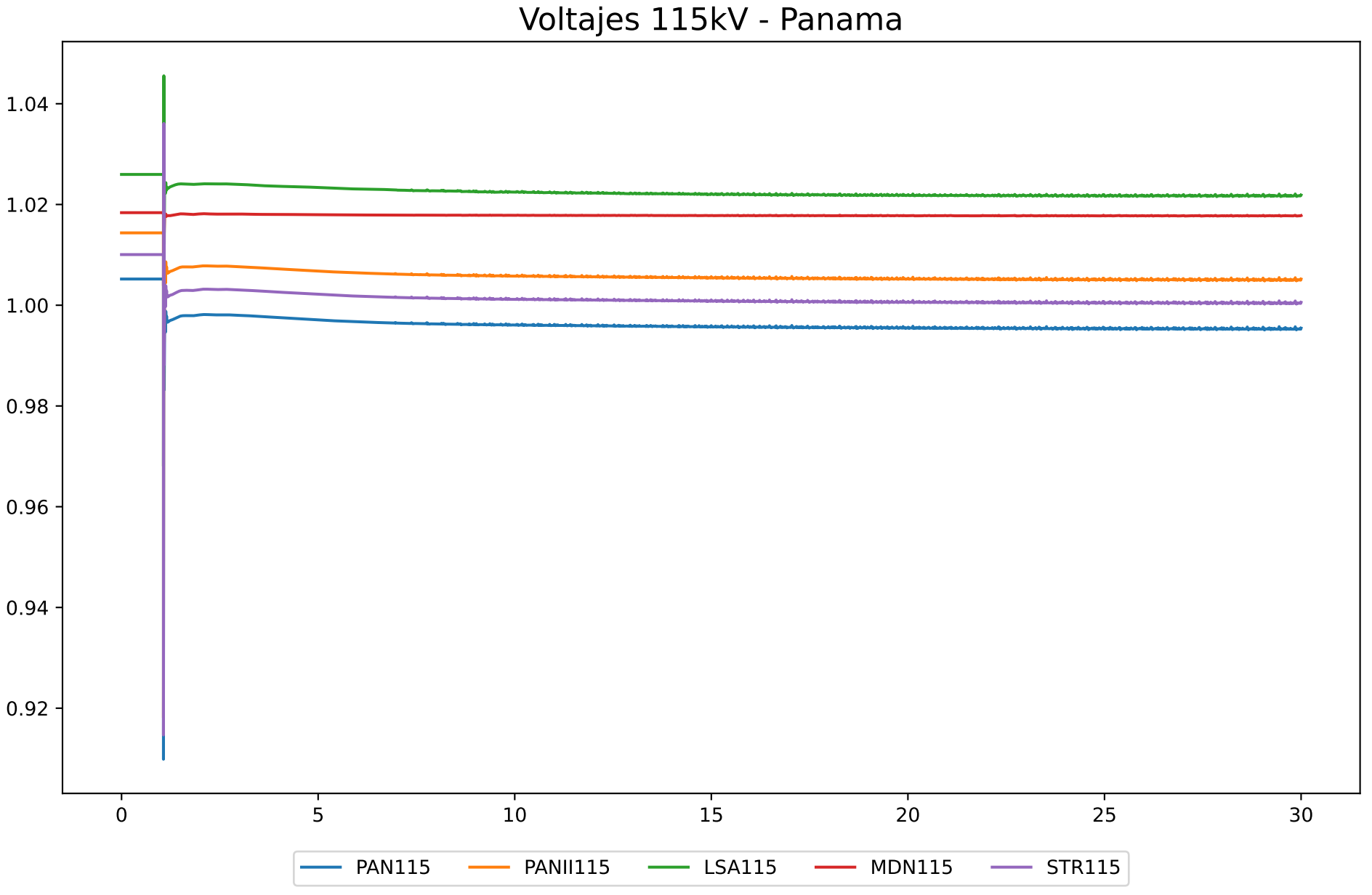

Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

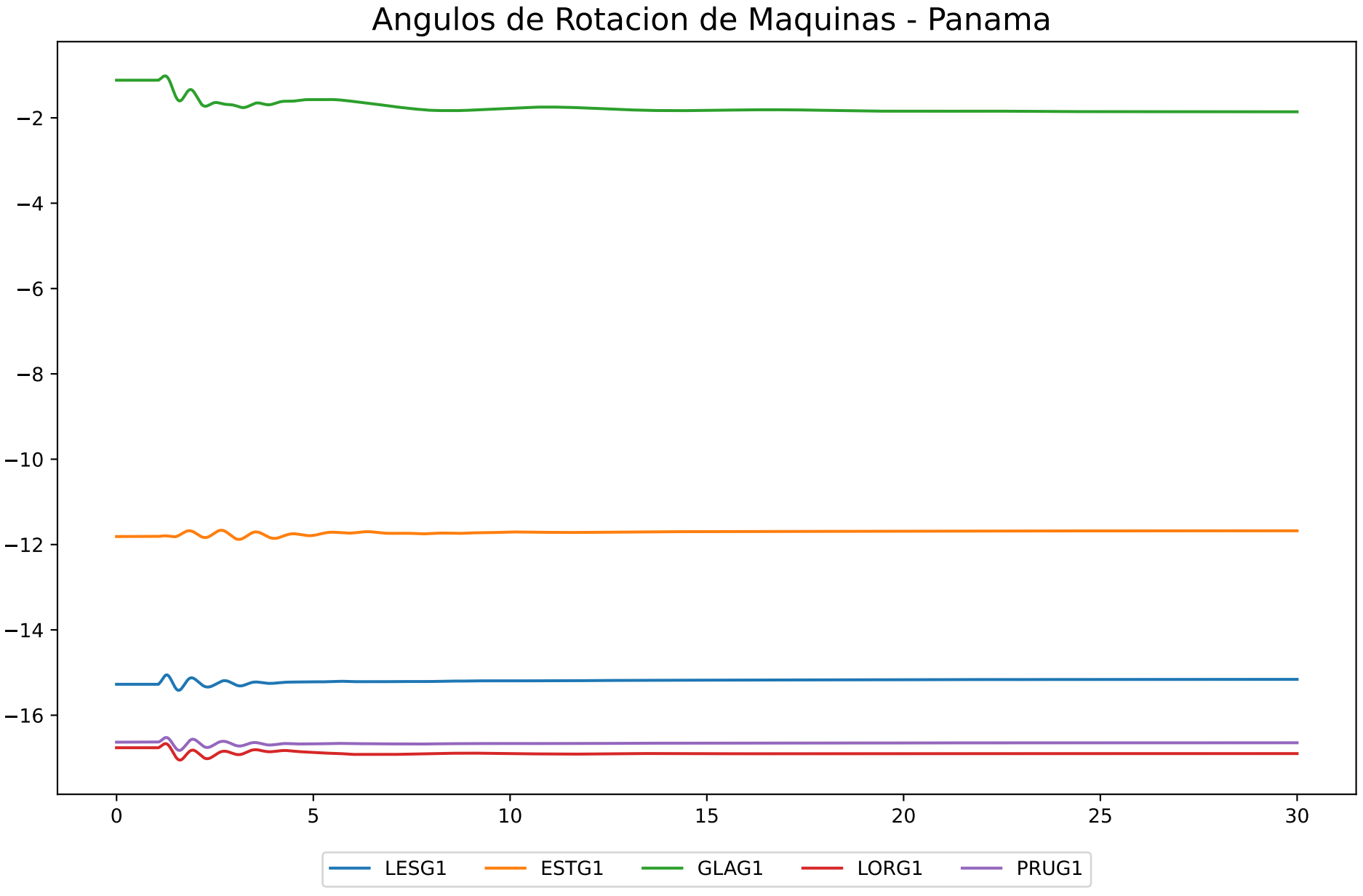

Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

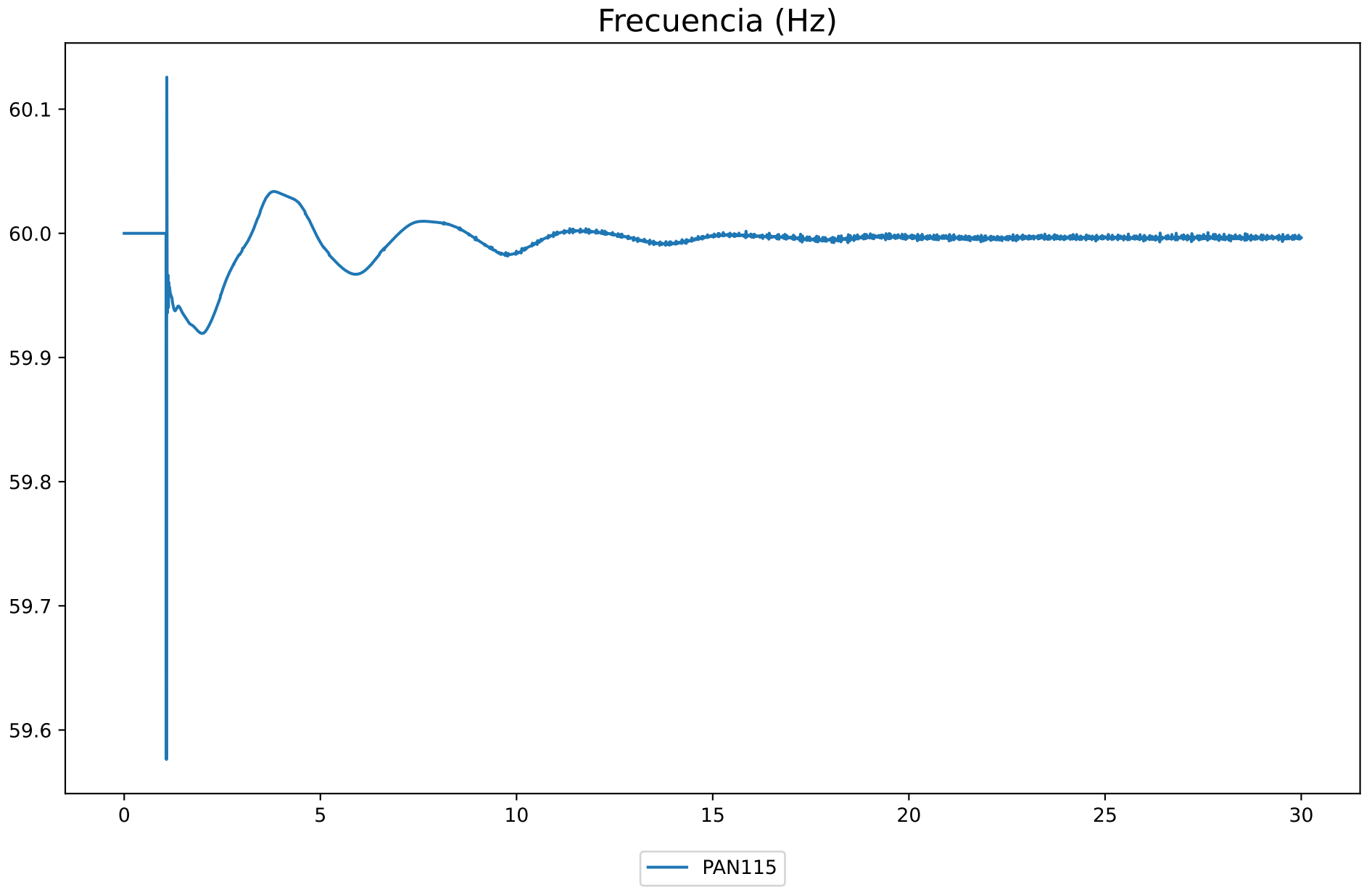

Angulos de Rotacion de Maquinas - Panama
−2
−4
−6
−8
−10
−12
−14
−16
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

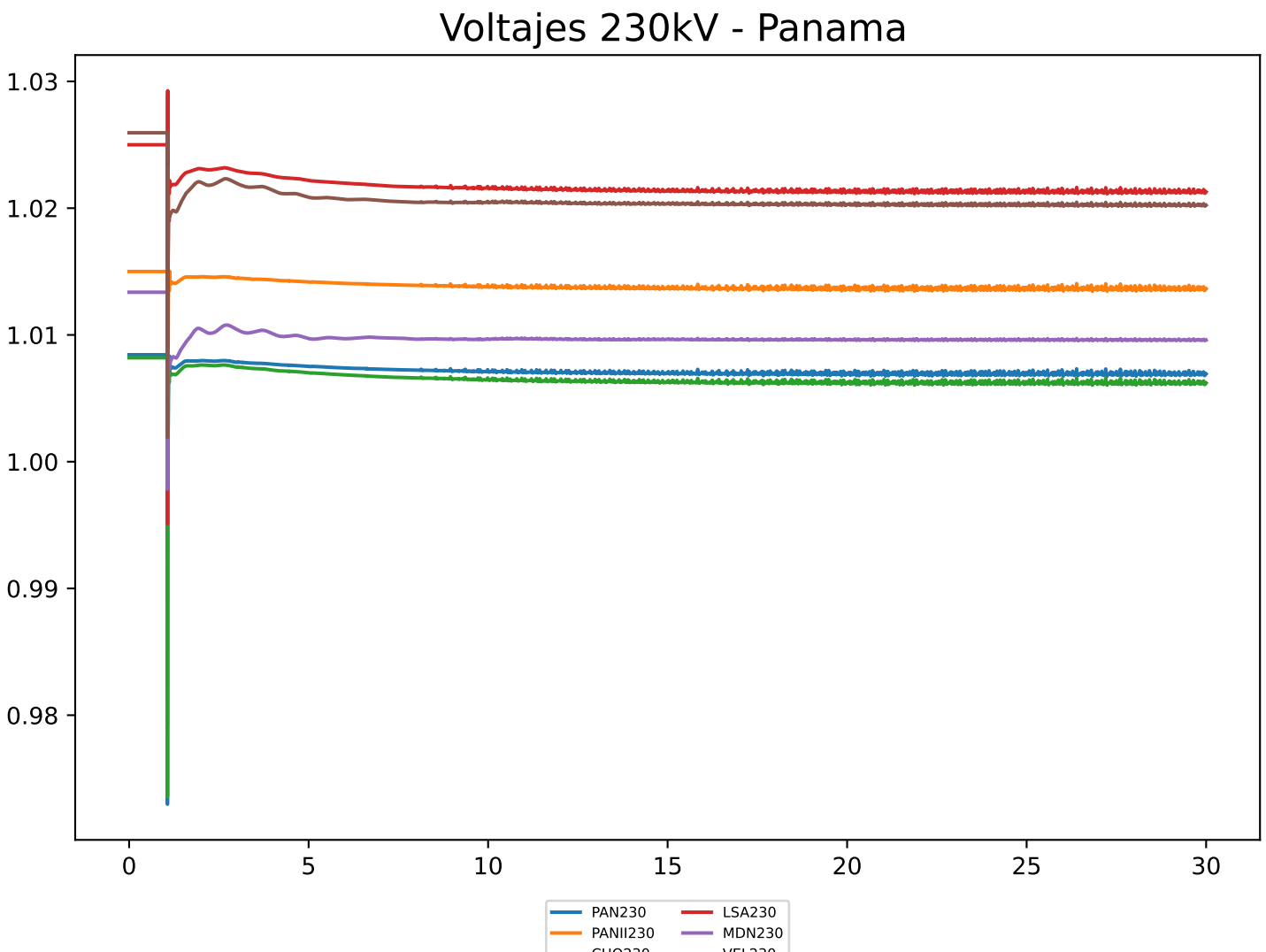

Frecuencia (Hz)
60.4
60.2
60.0
59.8
59.6
59.4
59.2
59.0
0
5
10
15
20
25
30
PAN115

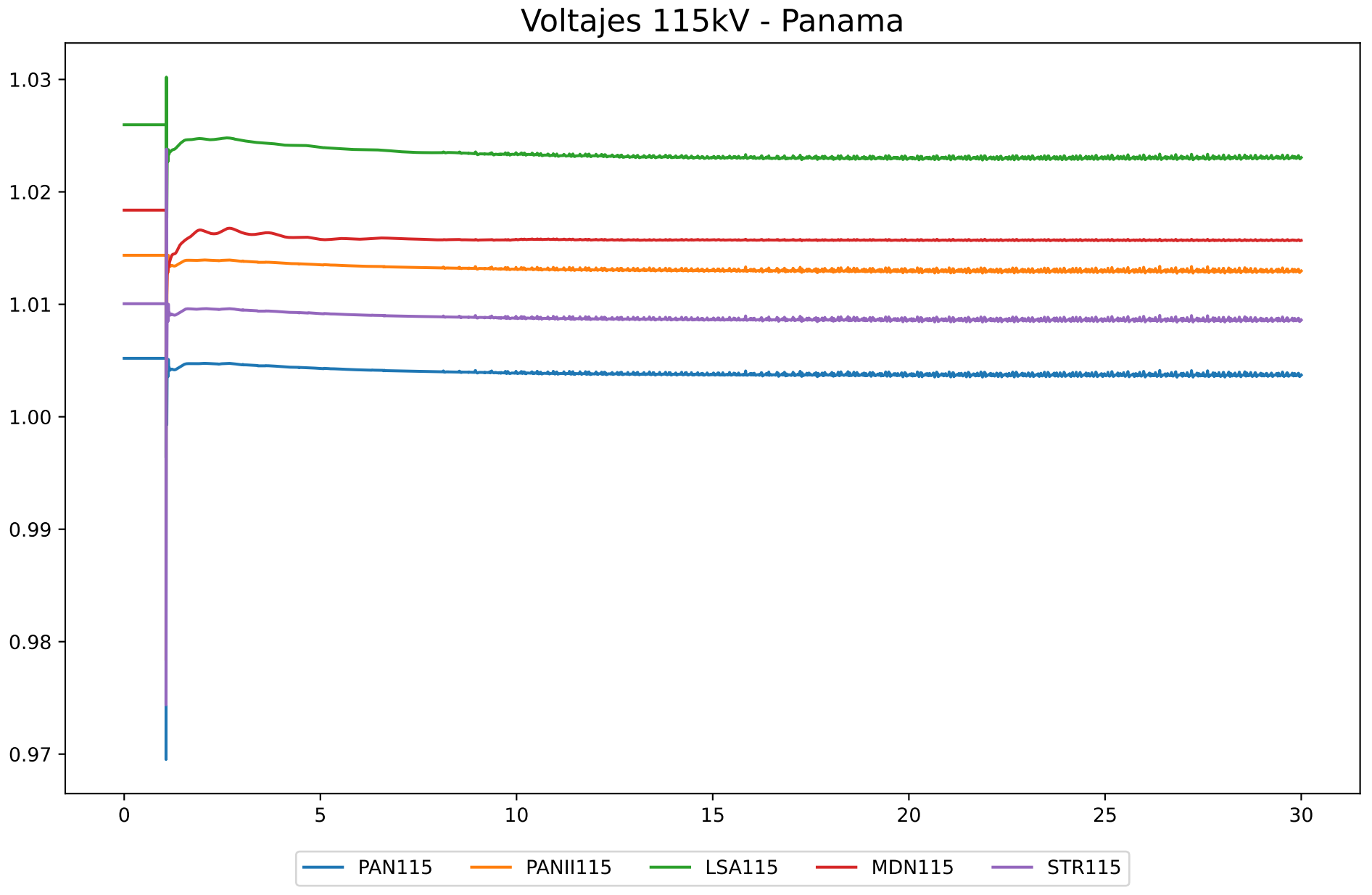

Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

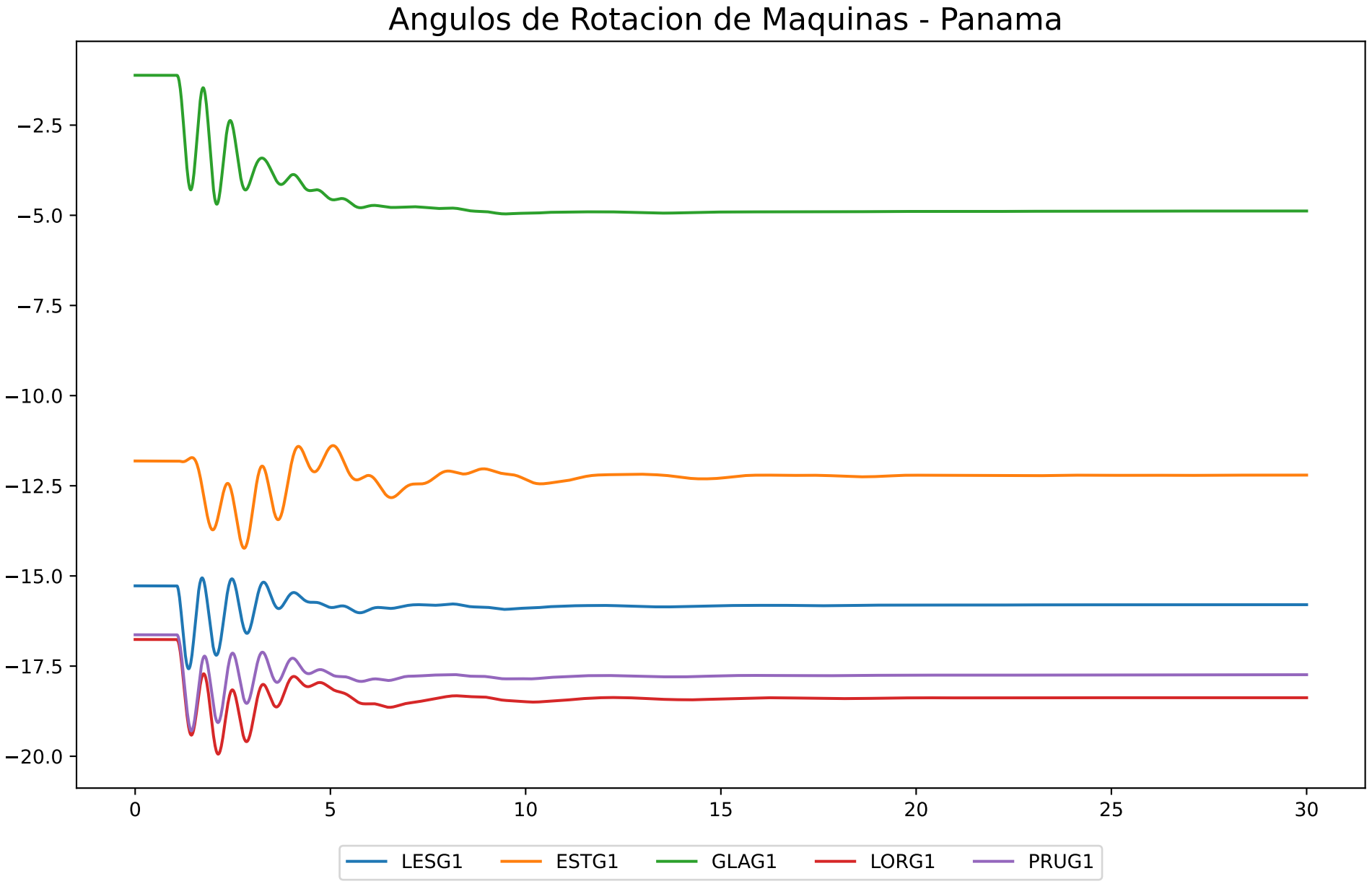

Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0.92
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

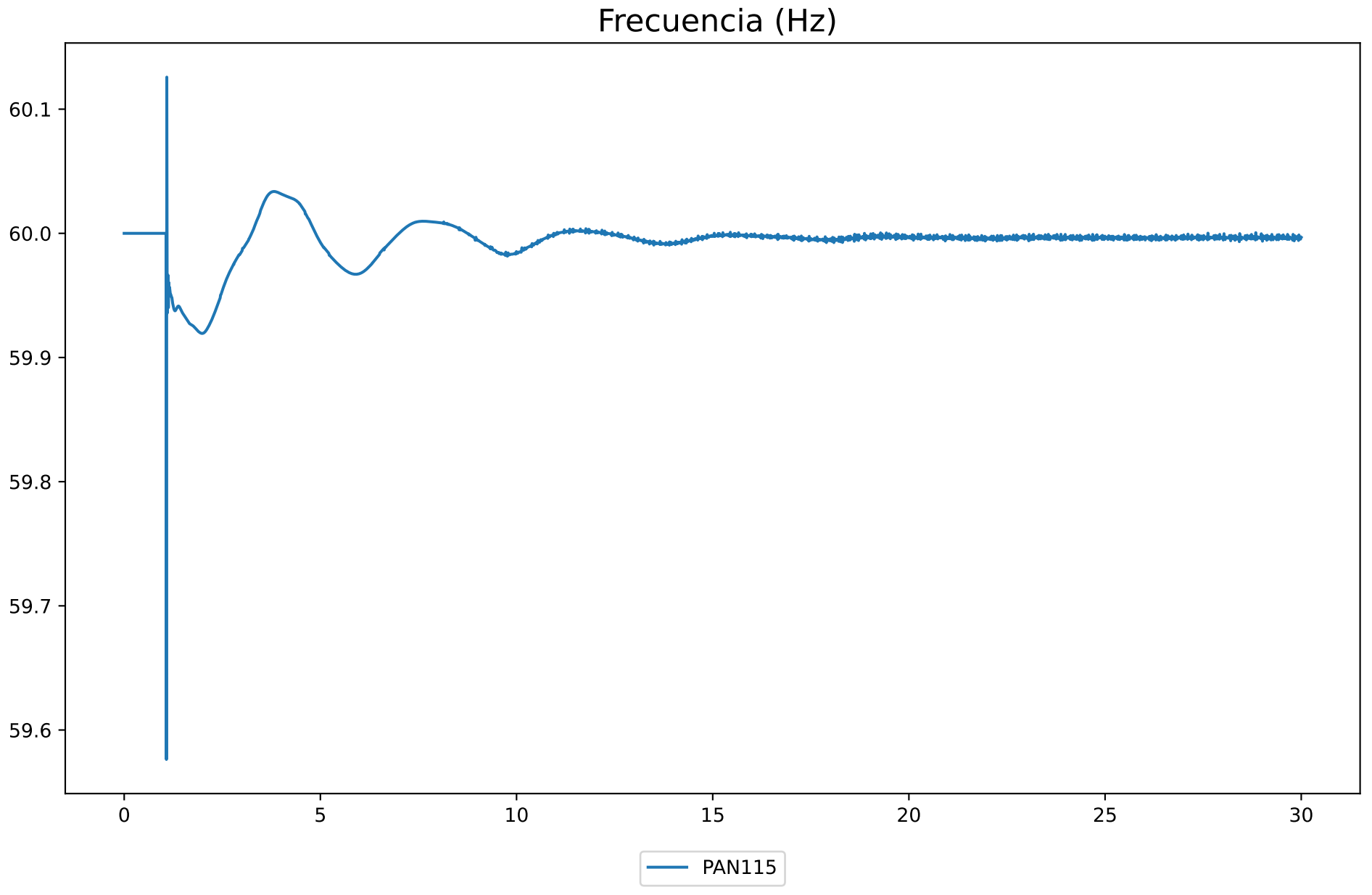

Angulos de Rotacion de Maquinas - Panama
−2
−4
−6
−8
−10
−12
−14
−16
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

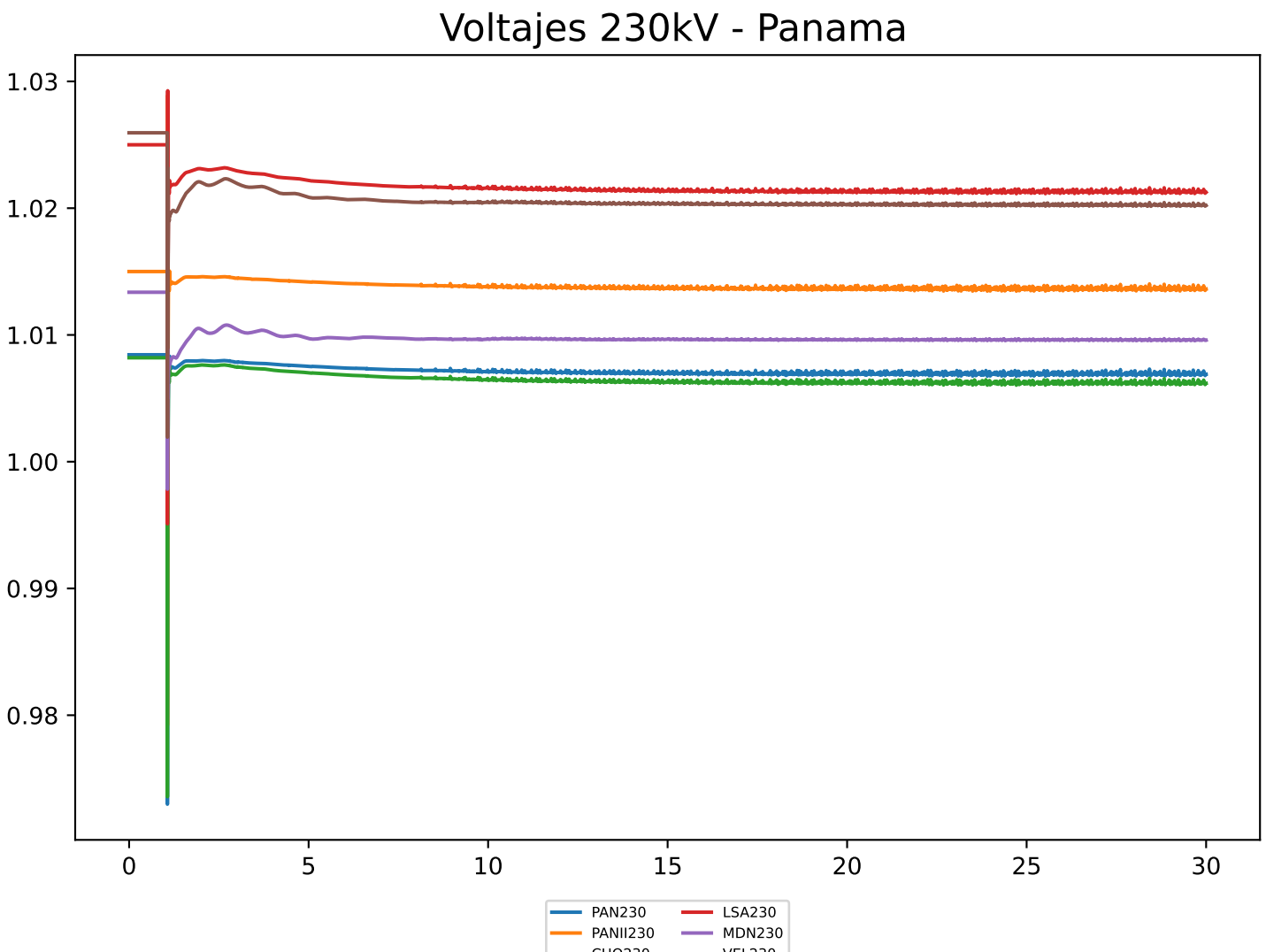

Frecuencia (Hz)
60.1
60.0
59.9
59.8
59.7
59.6
0
5
10
15
20
25
30
PAN115

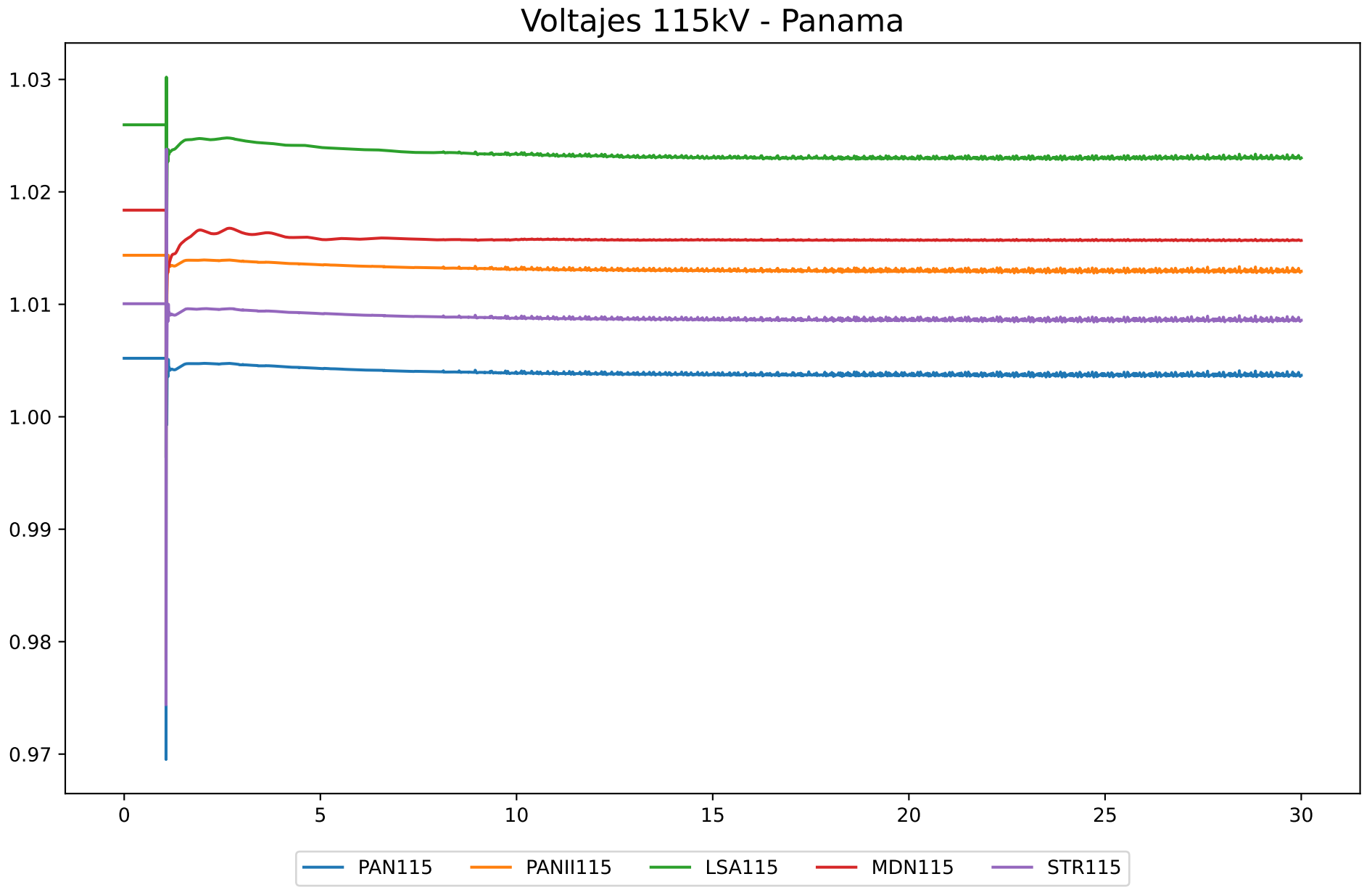

Voltajes 230kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

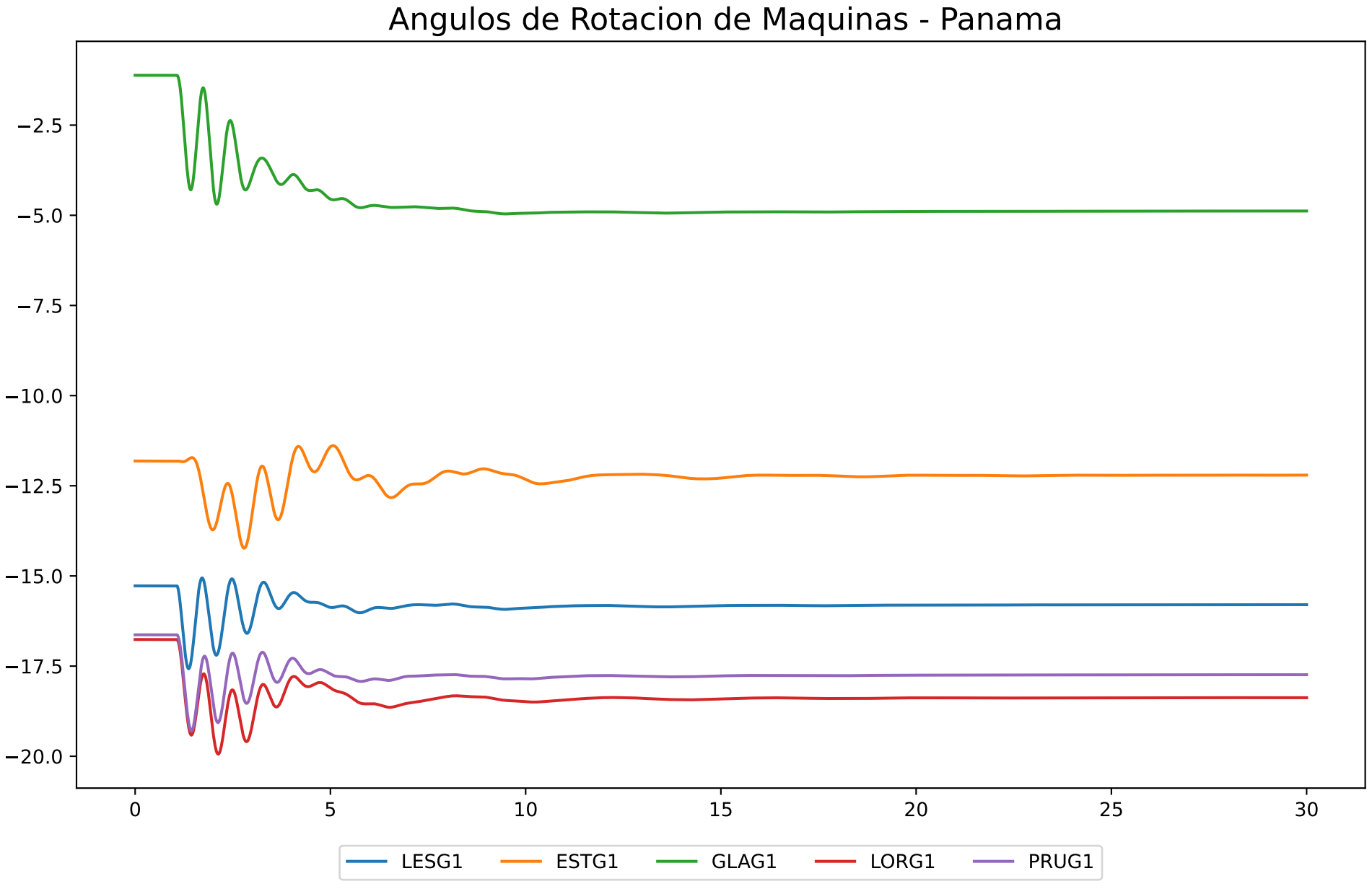

Voltajes 115kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−2.5
−5.0
−7.5
−10.0
−12.5
−15.0
−17.5
−20.0
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.1
60.0
59.9
59.8
59.7
59.6
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−2.5
−5.0
−7.5
−10.0
−12.5
−15.0
−17.5
−20.0
0
5
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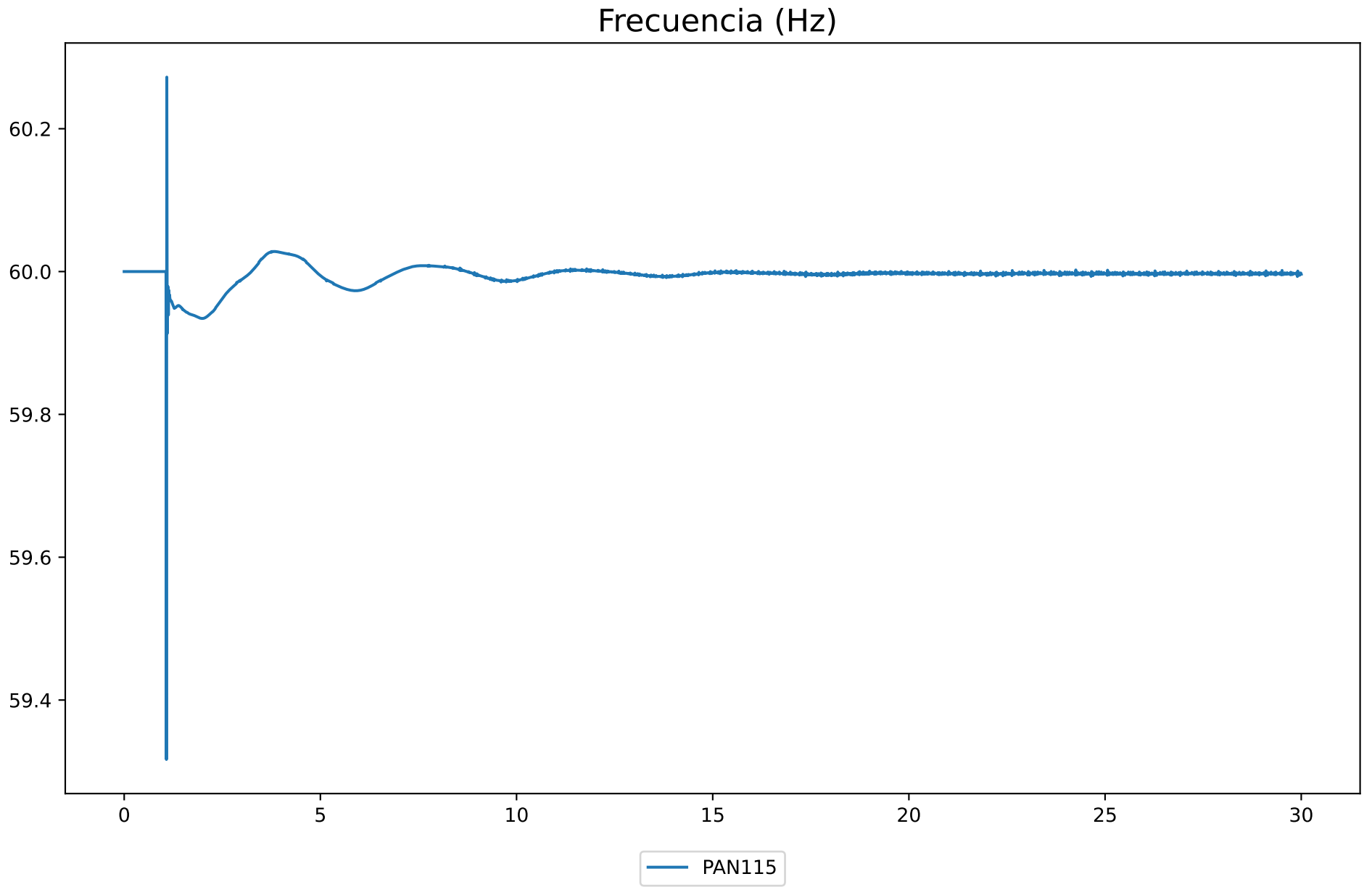
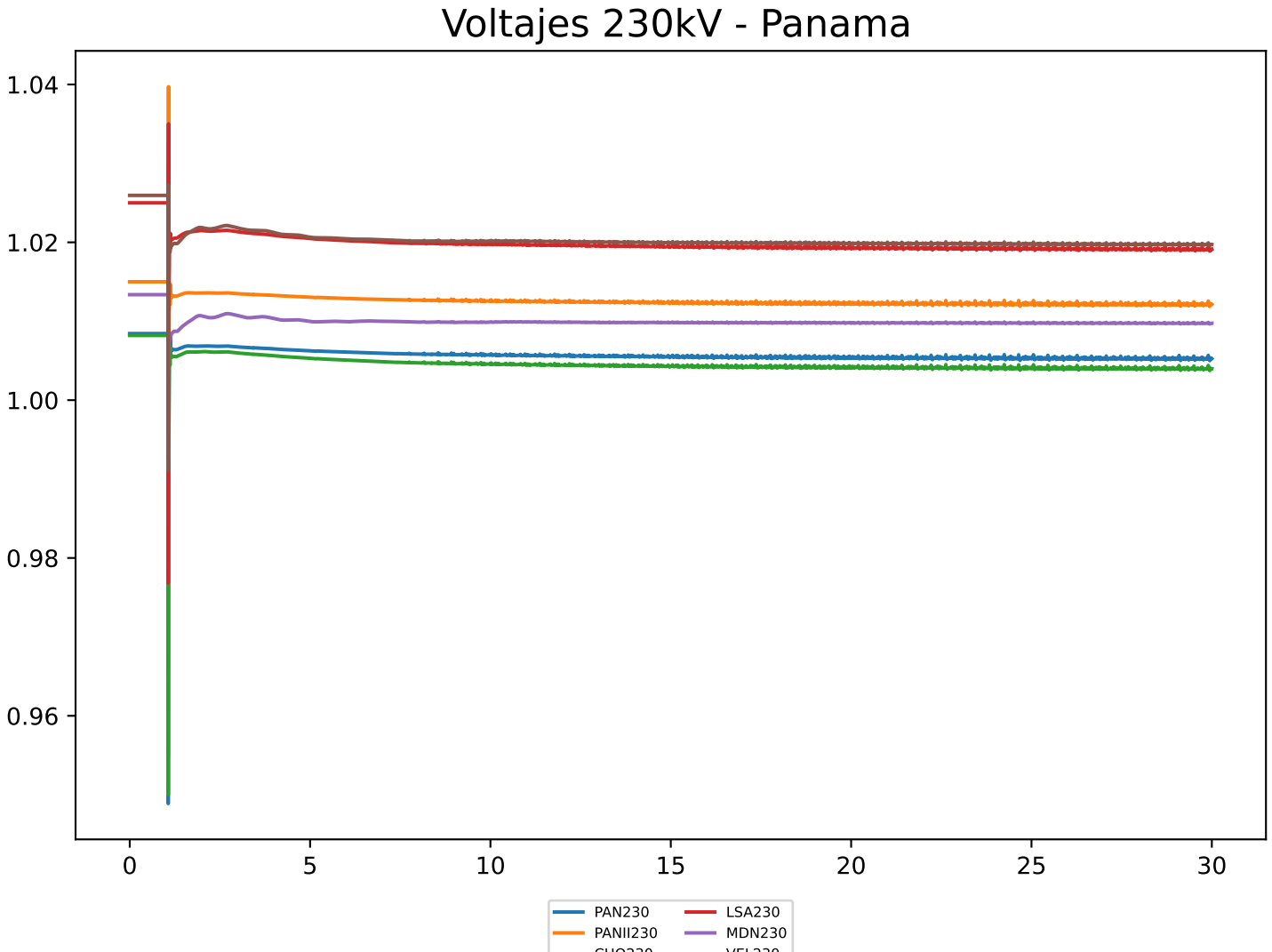
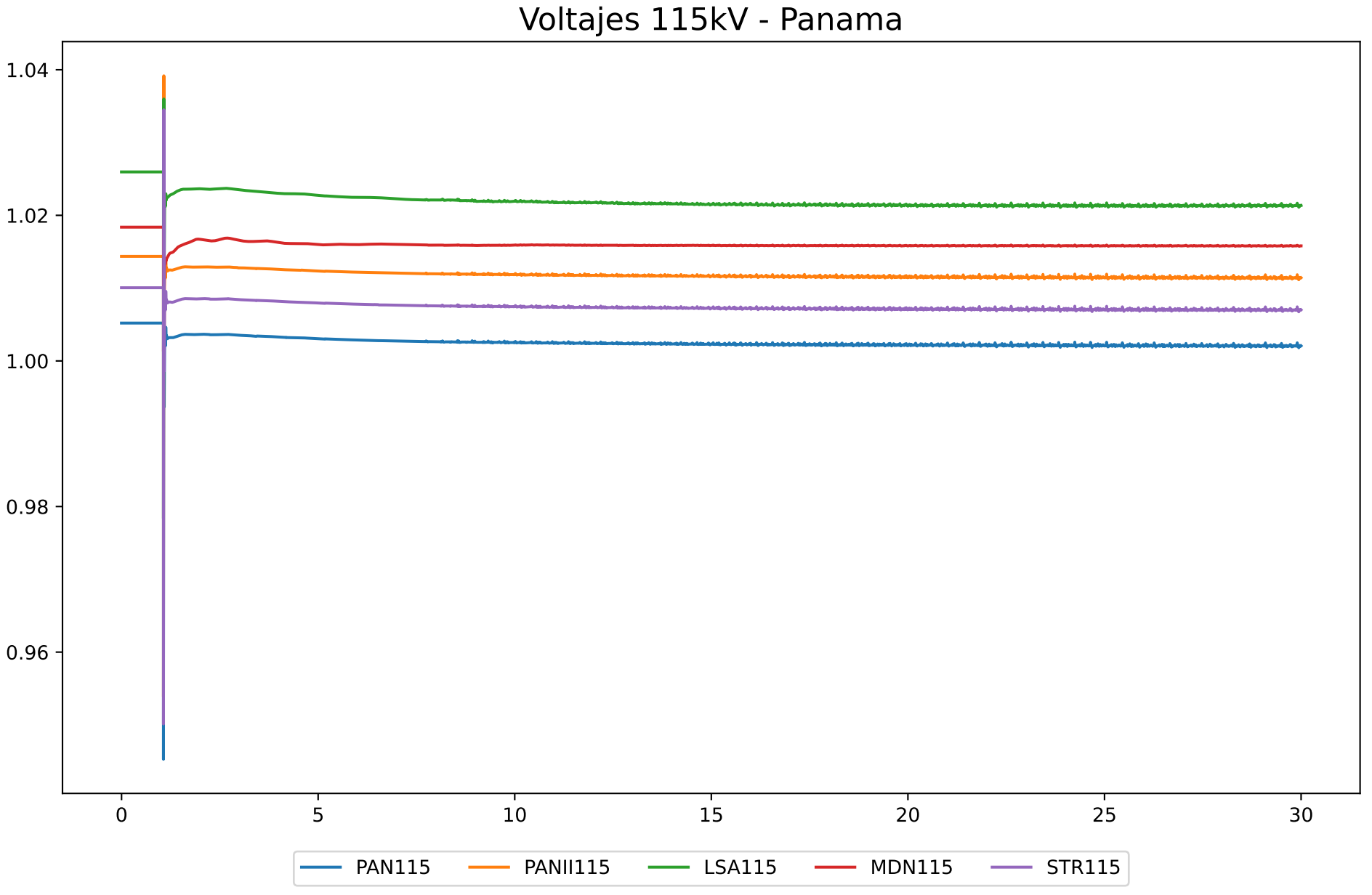
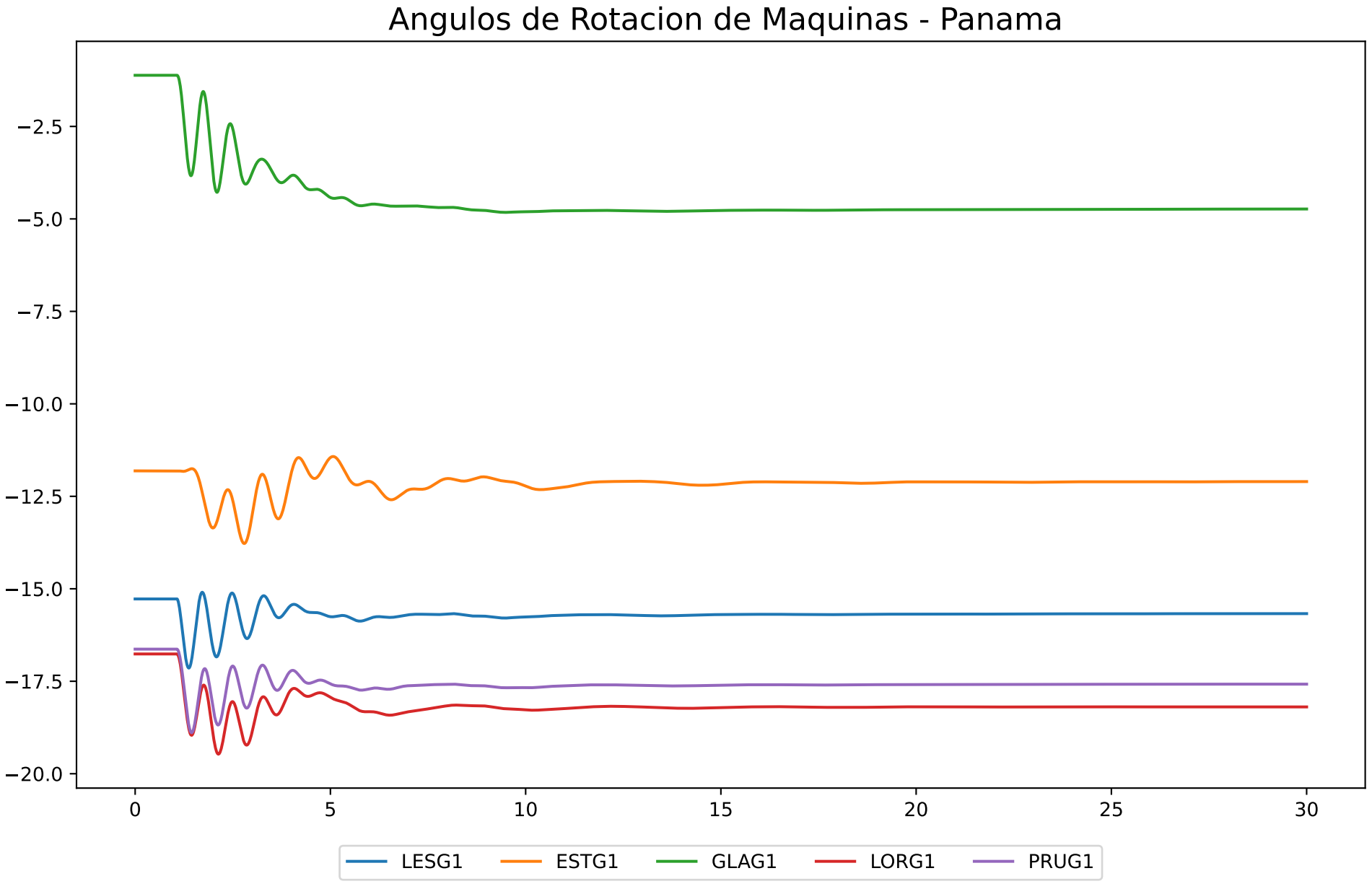
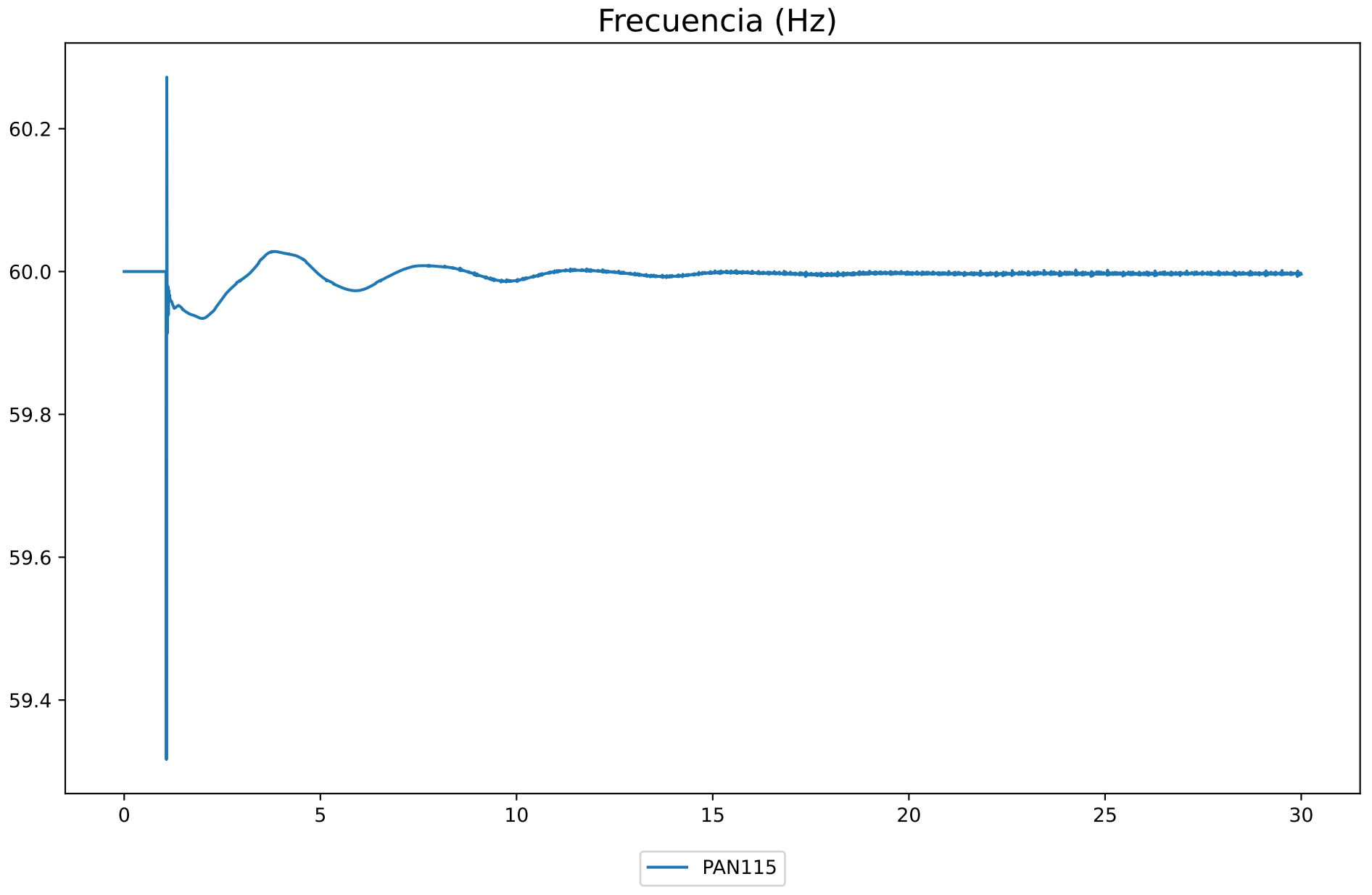
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

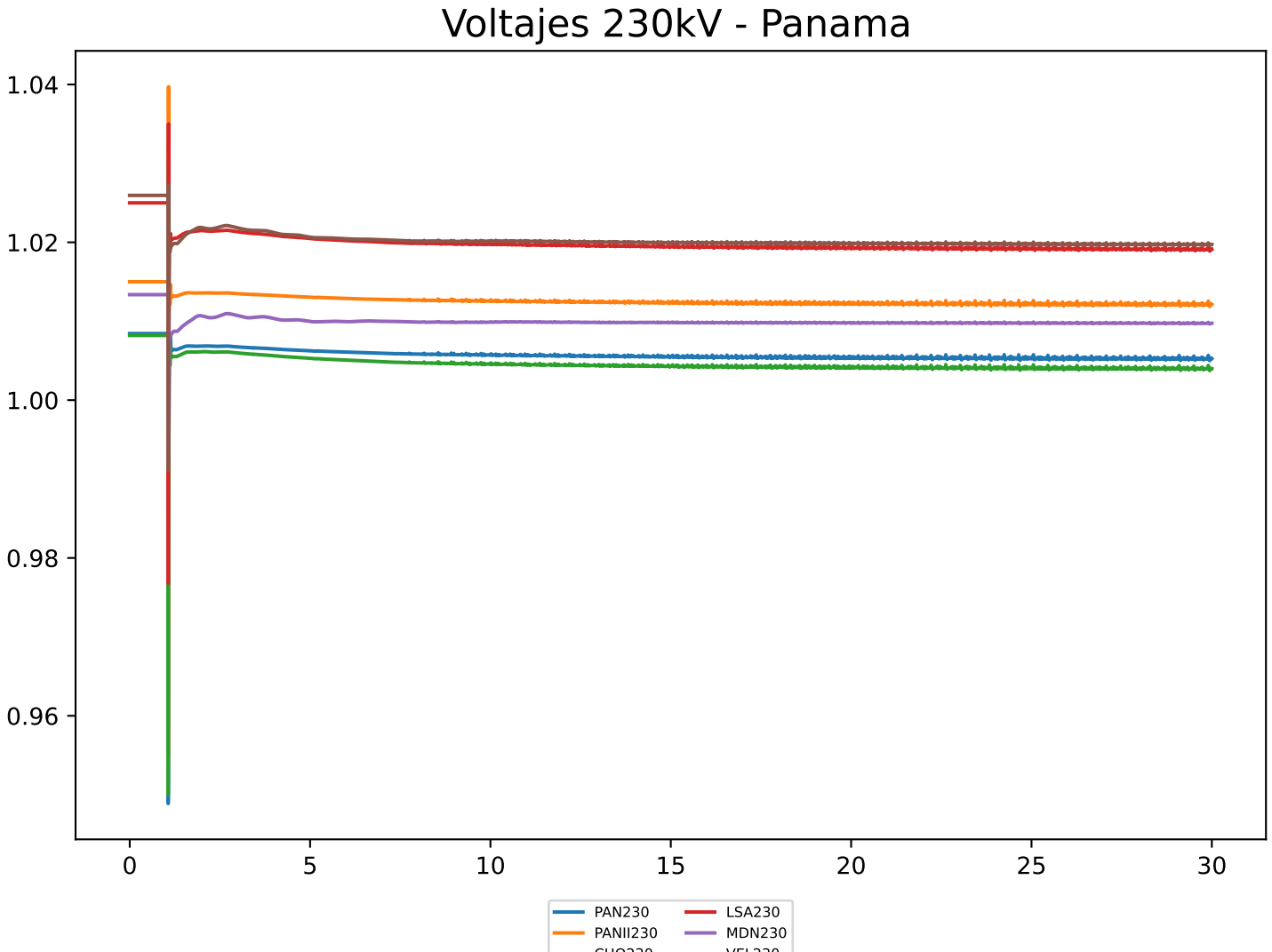

Frecuencia (Hz)
60.2
60.0
59.8
59.6
59.4
0
5
10
15
20
25
30
PAN115

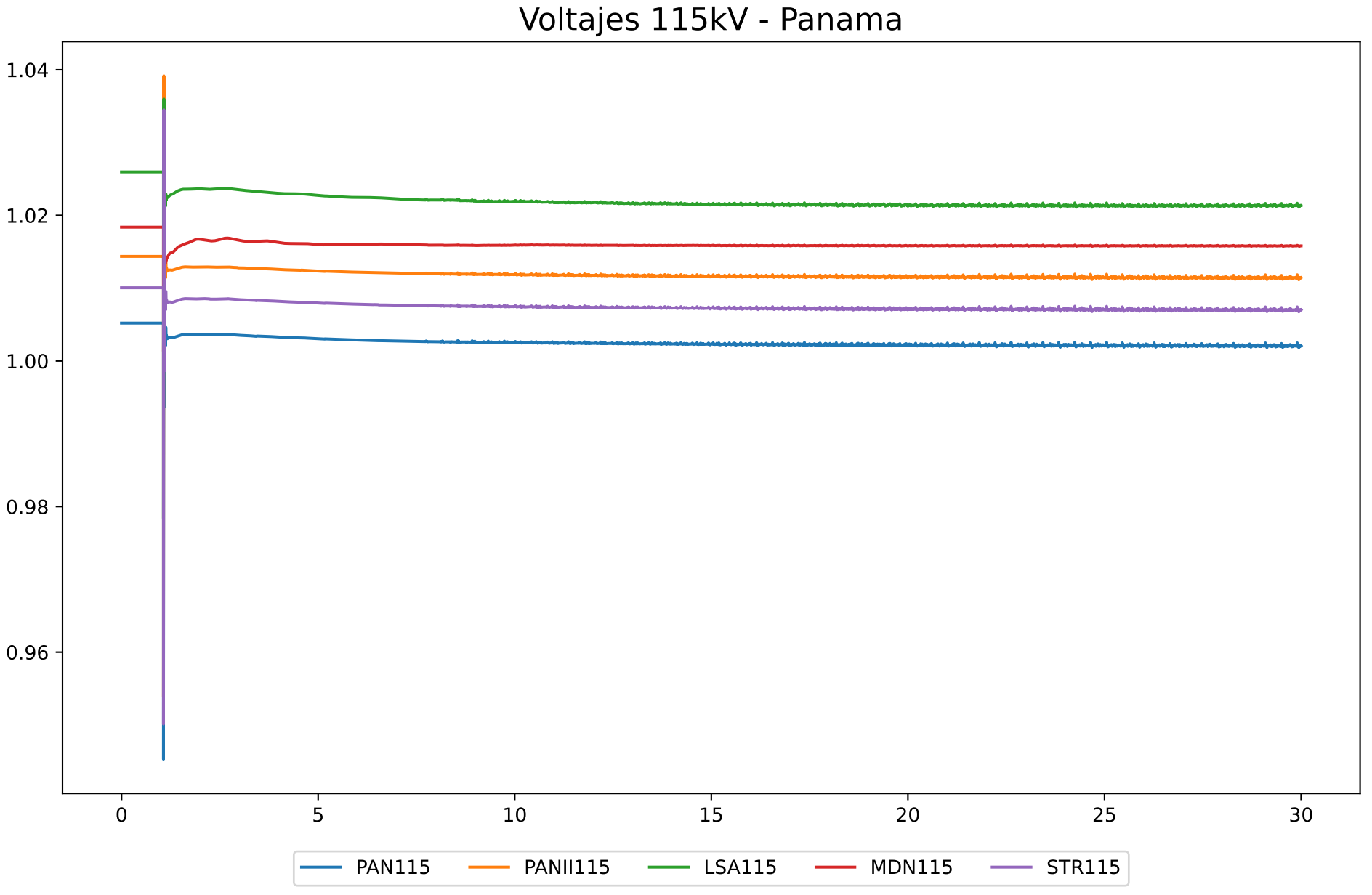

Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

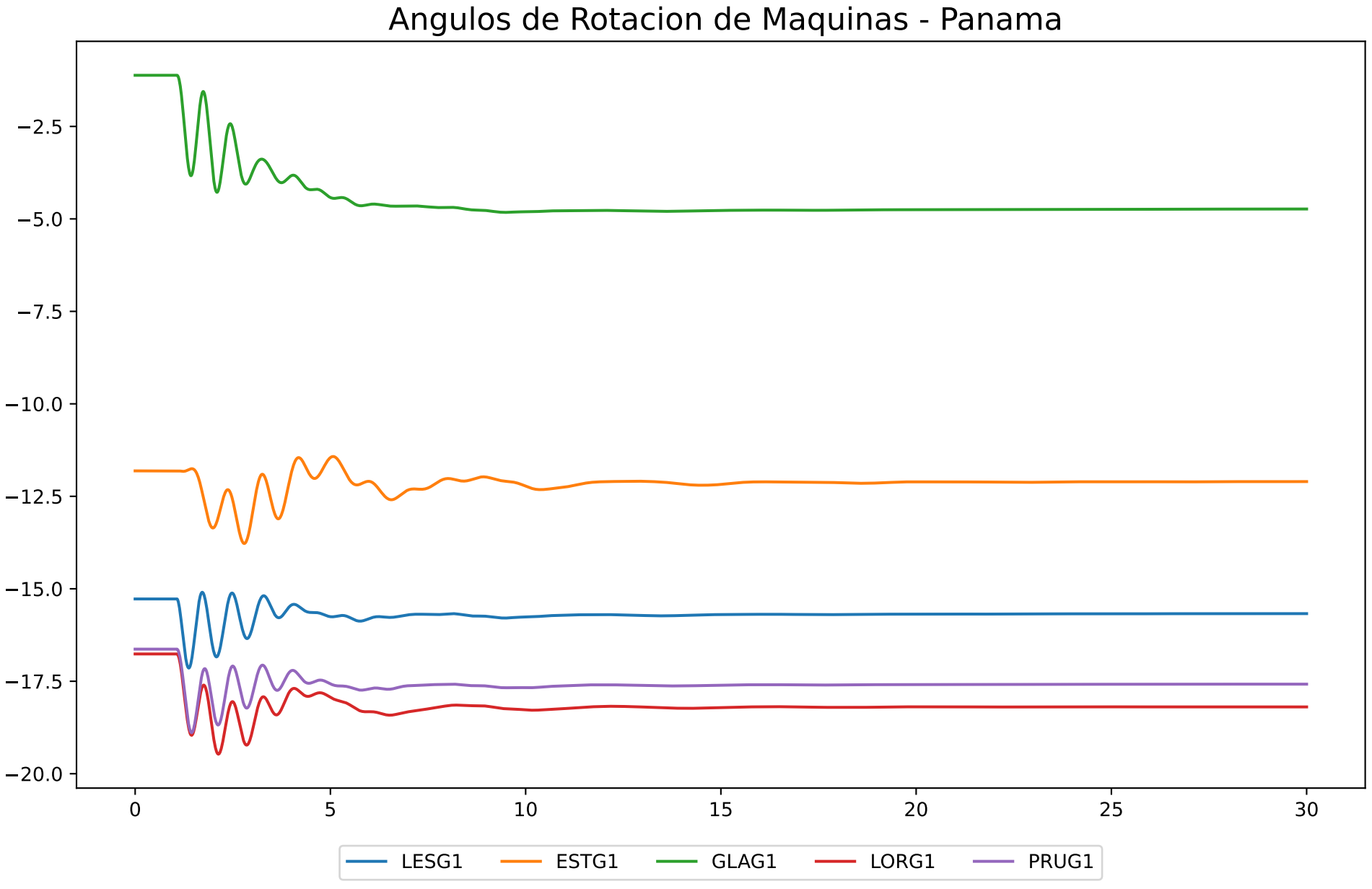

Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−2.5
−5.0
−7.5
−10.0
−12.5
−15.0
−17.5
−20.0
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

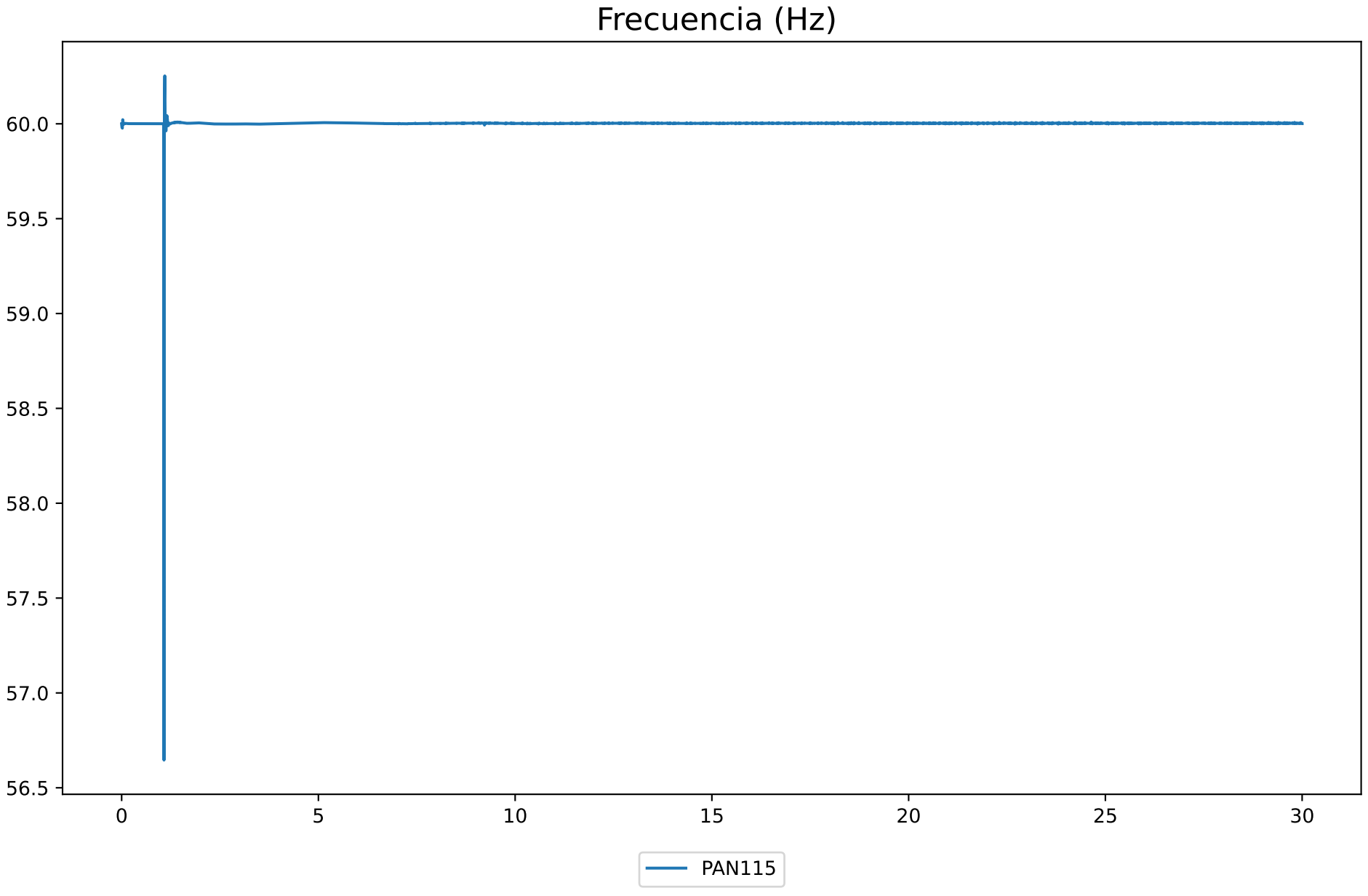

Frecuencia (Hz)
60.2
60.0
59.8
59.6
59.4
0
5
10
15
20
25
30
PAN115

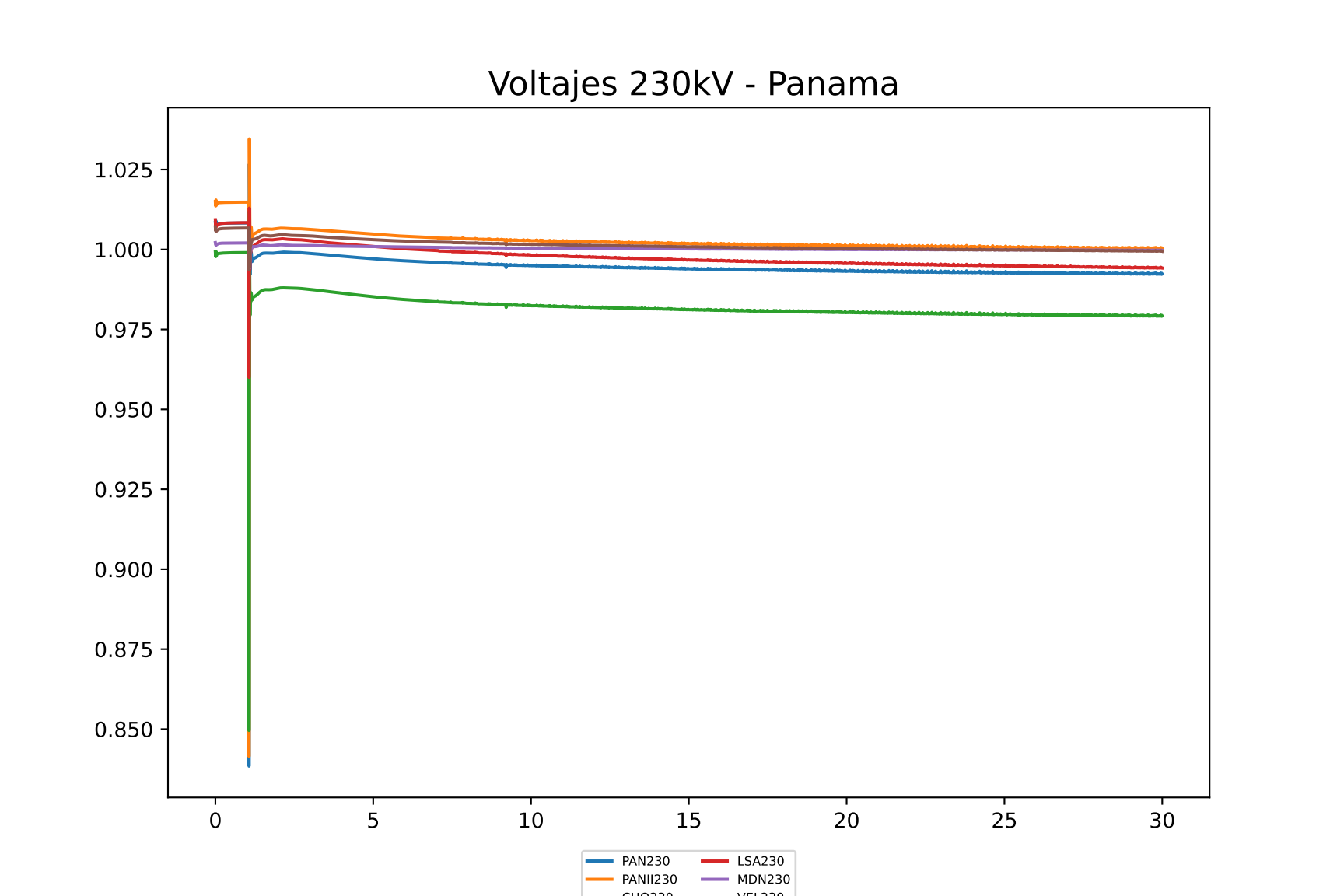

Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

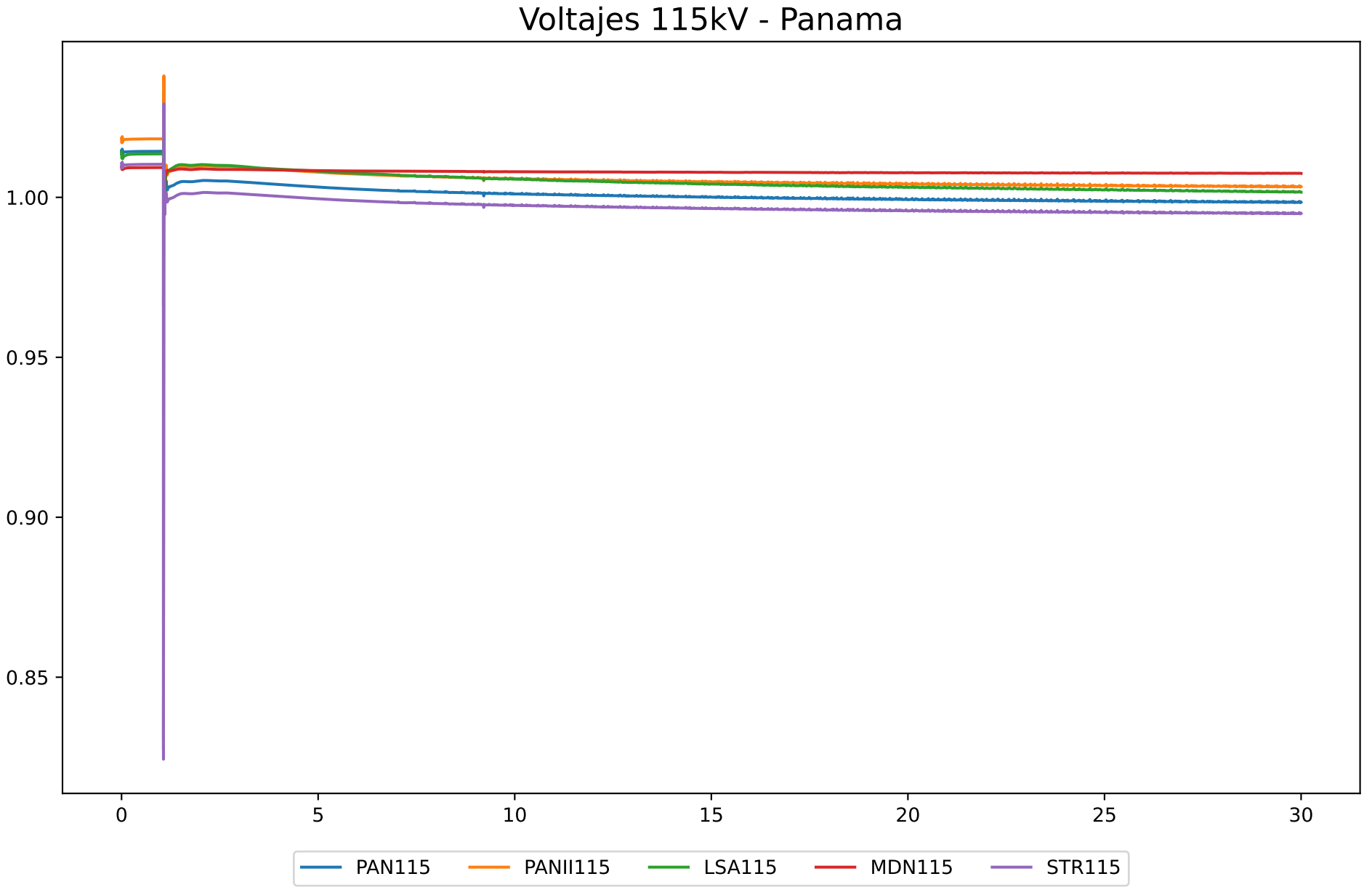

Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

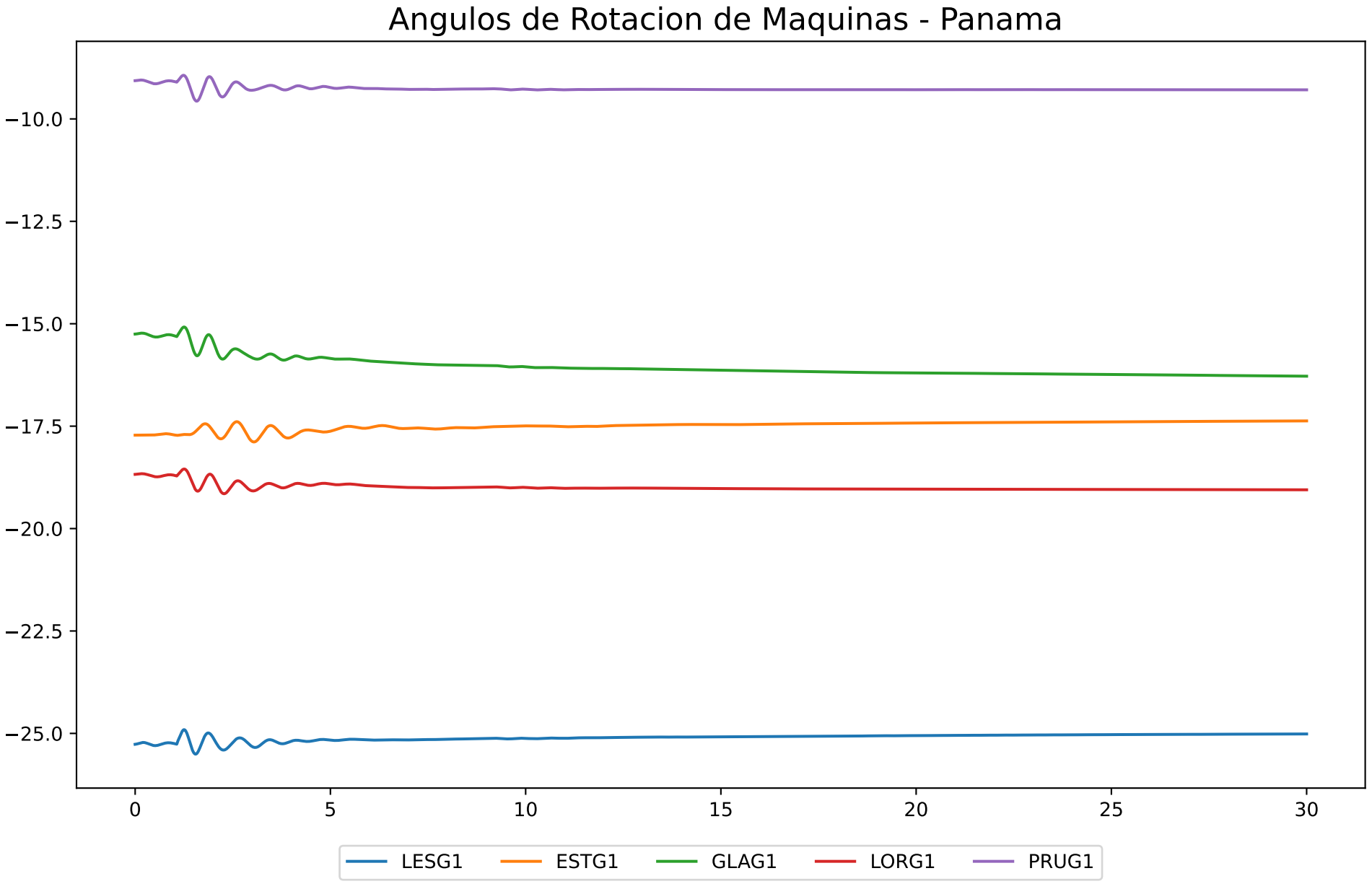

Angulos de Rotacion de Maquinas - Panama
−2.5
−5.0
−7.5
−10.0
−12.5
−15.0
−17.5
−20.0
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

2032


Frecuencia (Hz)
60.0
59.5
59.0
58.5
58.0
57.5
57.0
56.5
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.00
0.95
0.90
0.85
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
0
5
10
15
20
25
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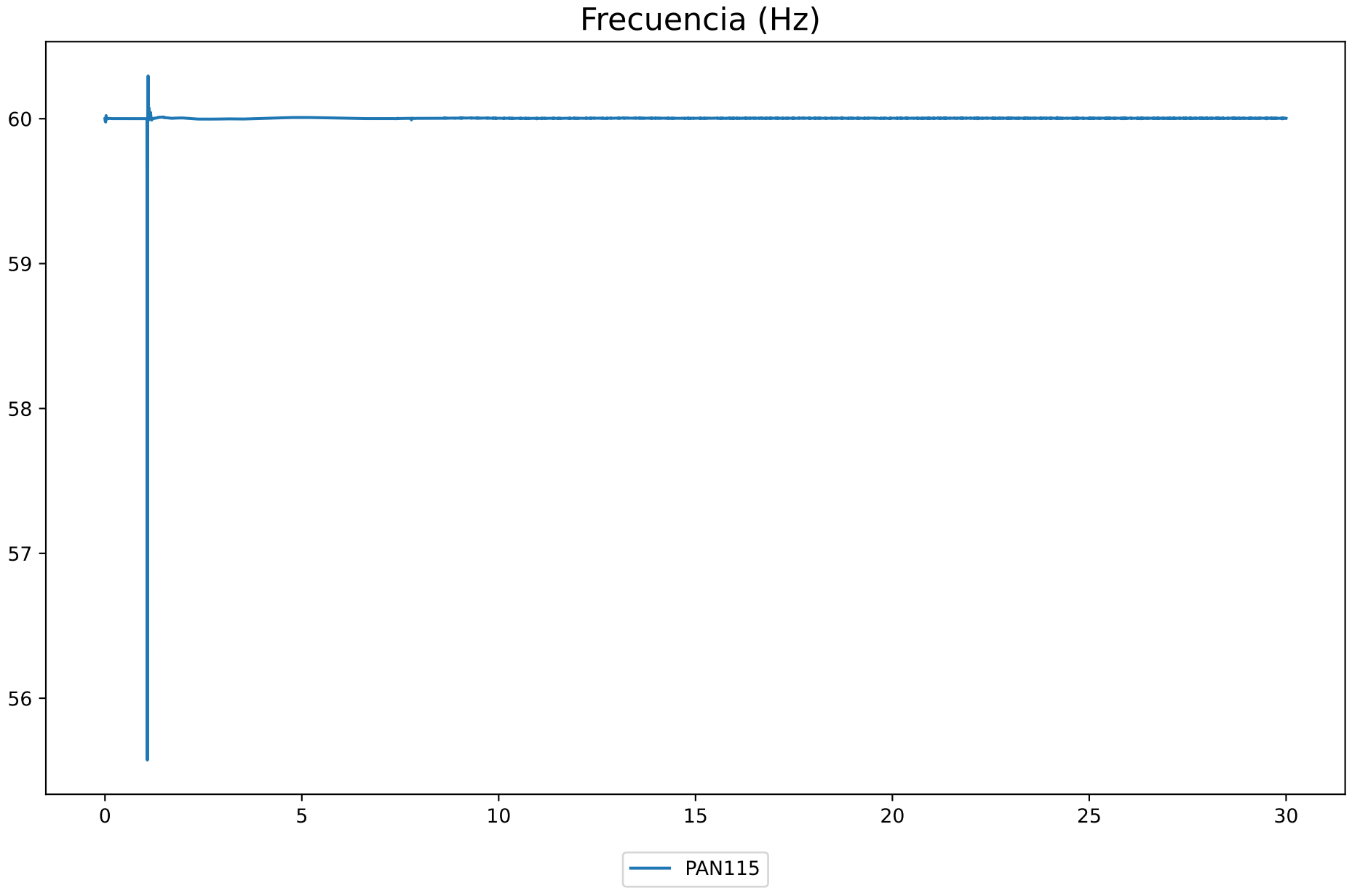
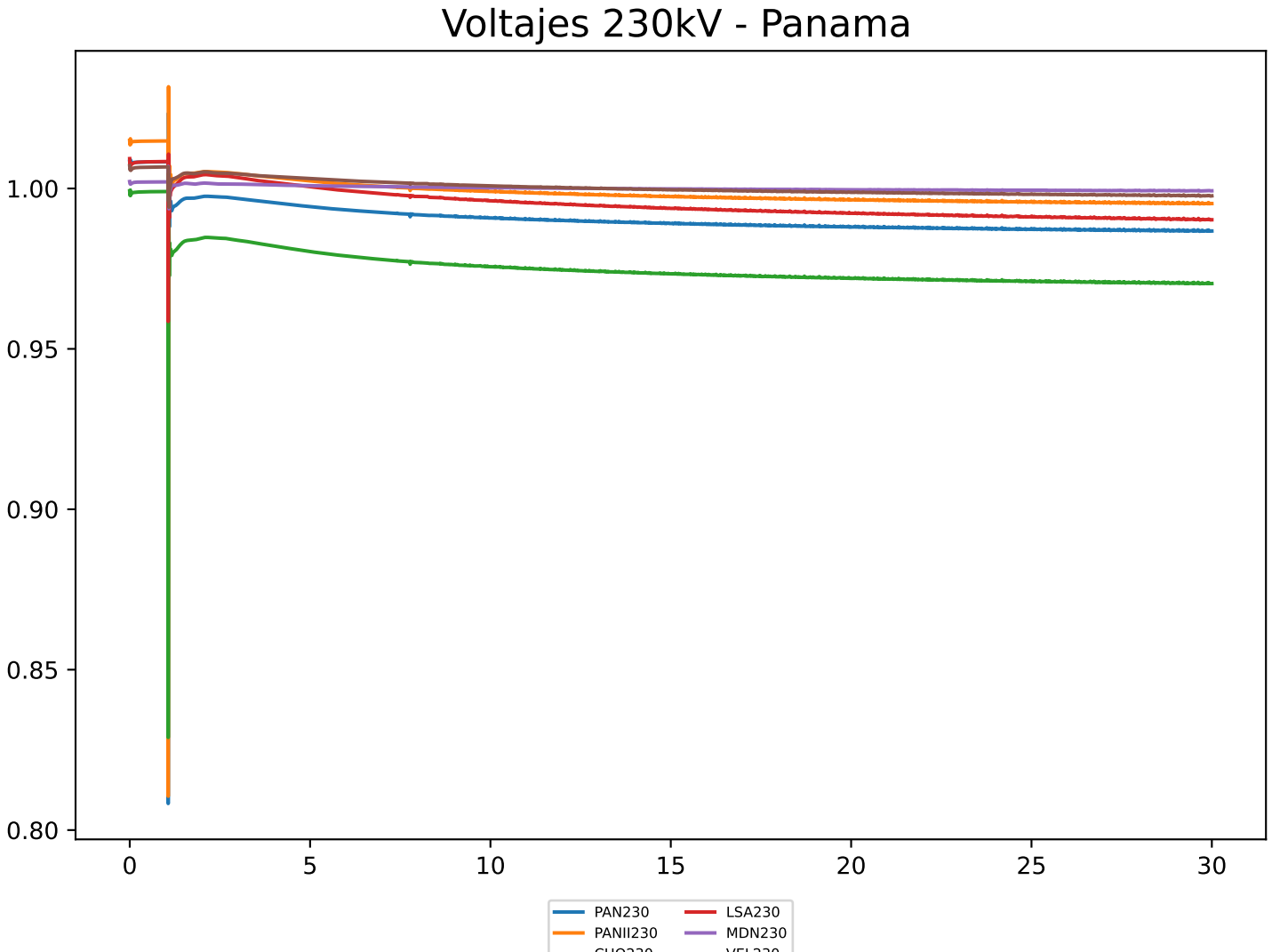
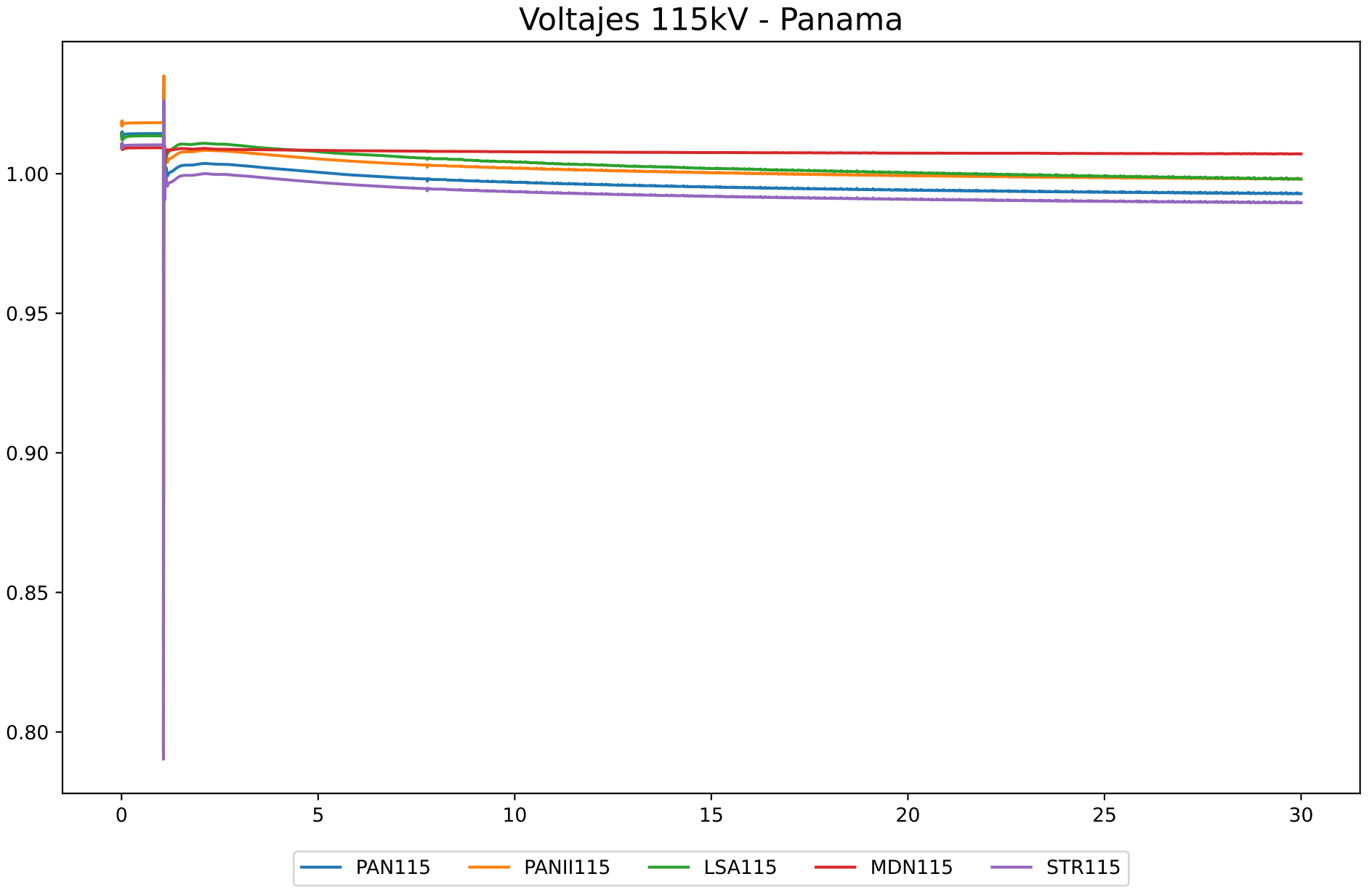
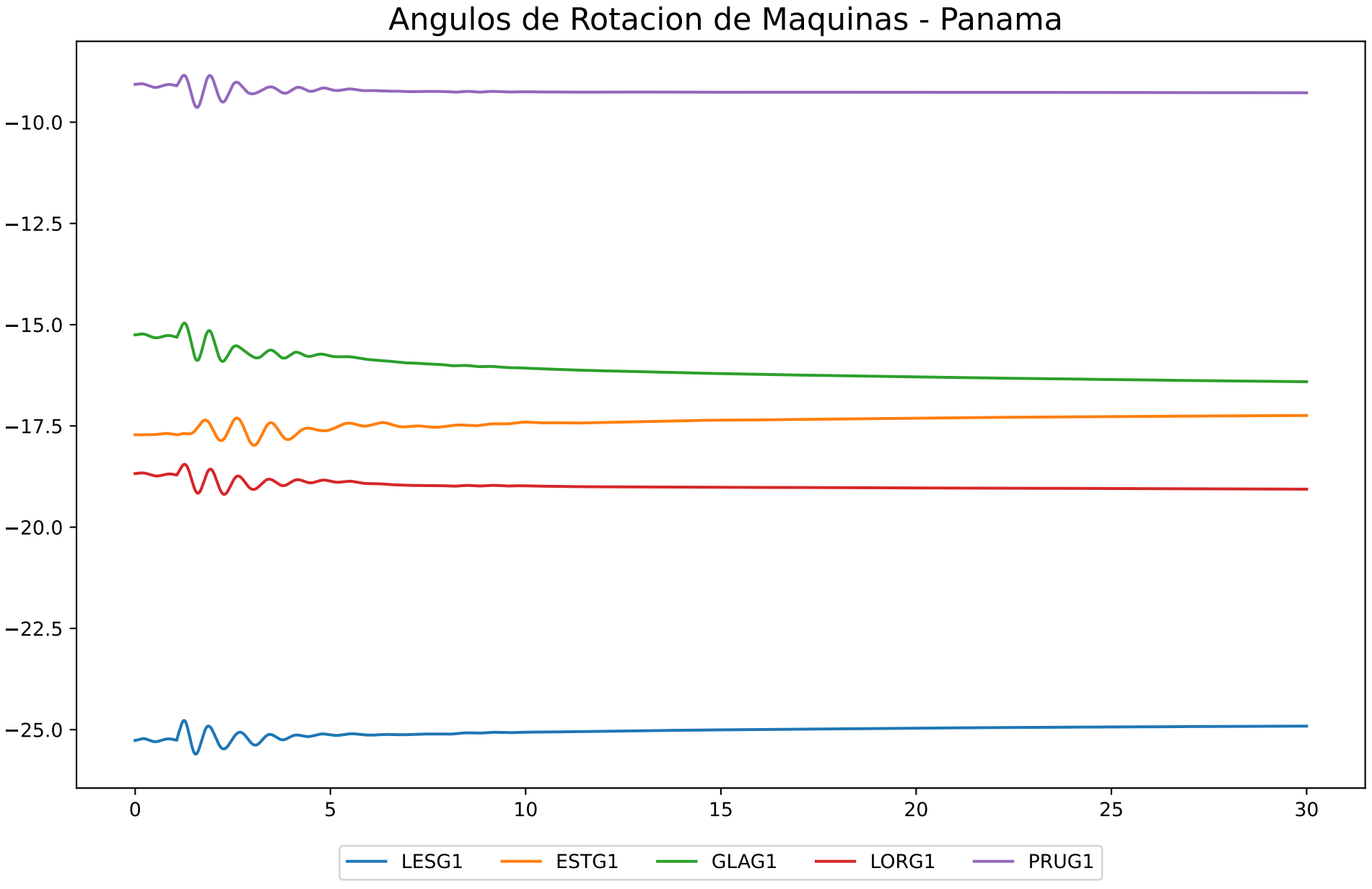
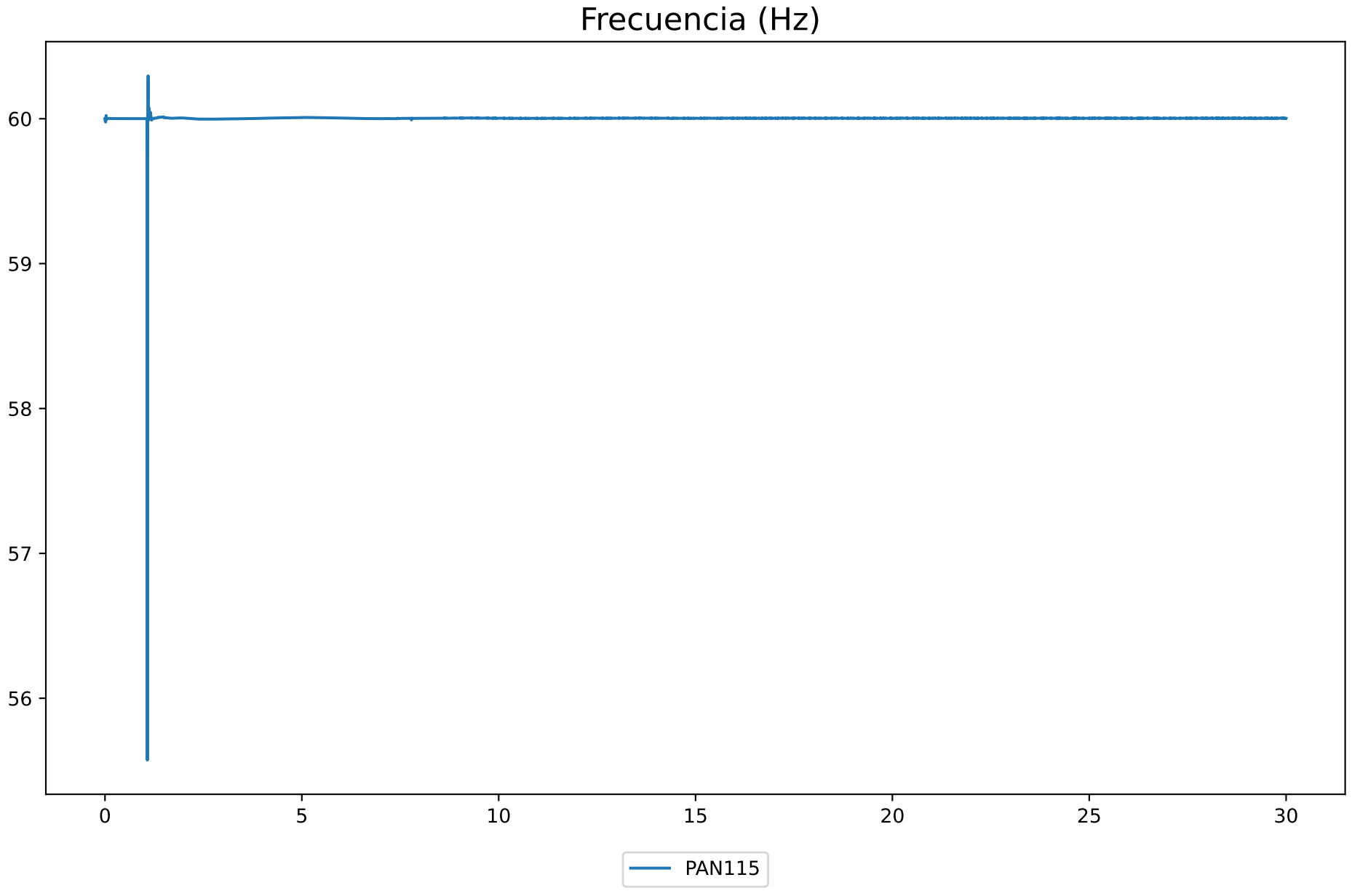
LESG1
ESTG1
GLAG1
LORG1
PRUG1

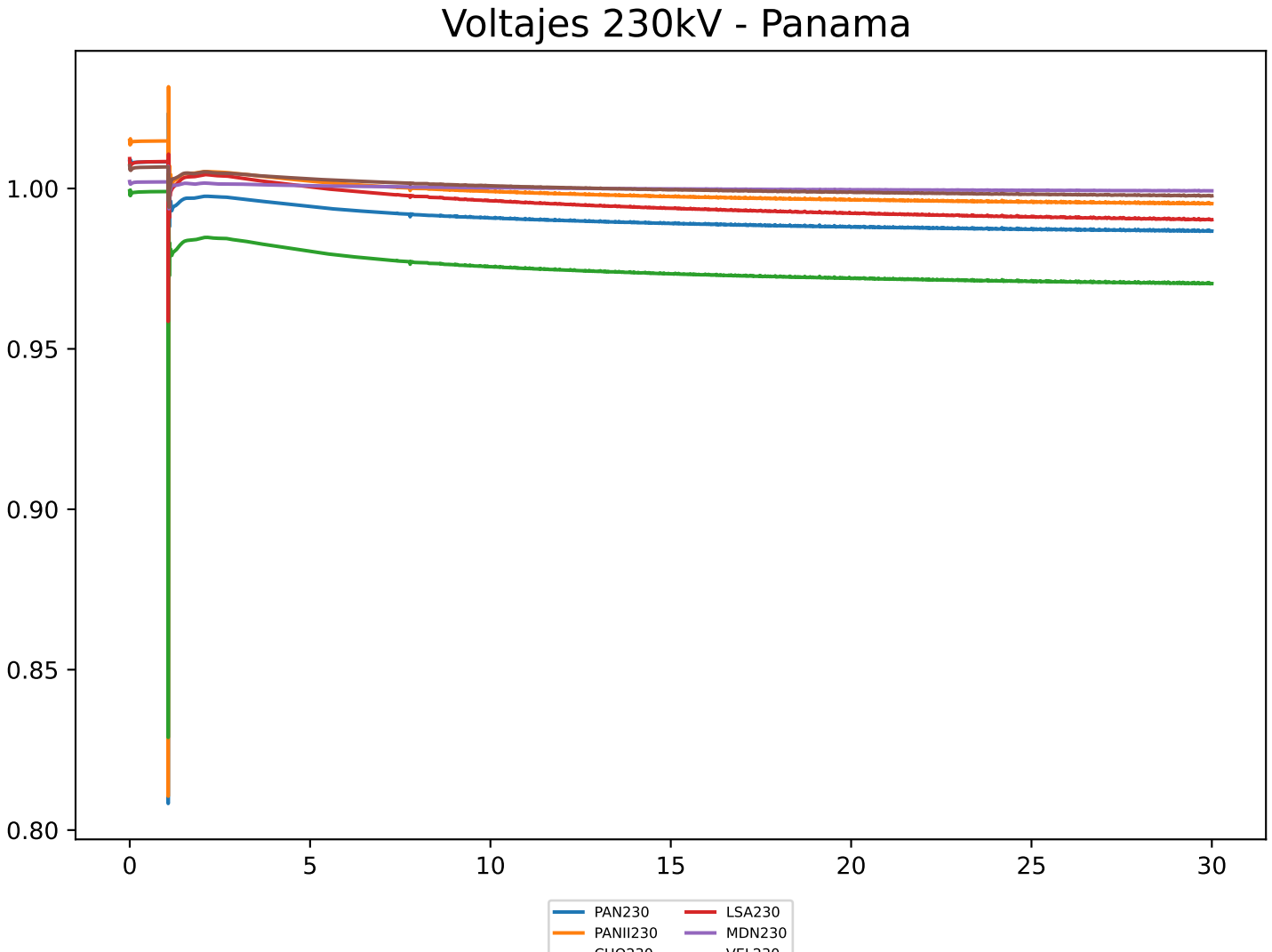

Frecuencia (Hz)
60
59
58
57
56
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.00
0.95
0.90
0.85
0.80
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.00
0.95
0.90
0.85
0.80
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60
59
58
57
56
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.00
0.95
0.90
0.85
0.80
0
5
10
15
20
25
30
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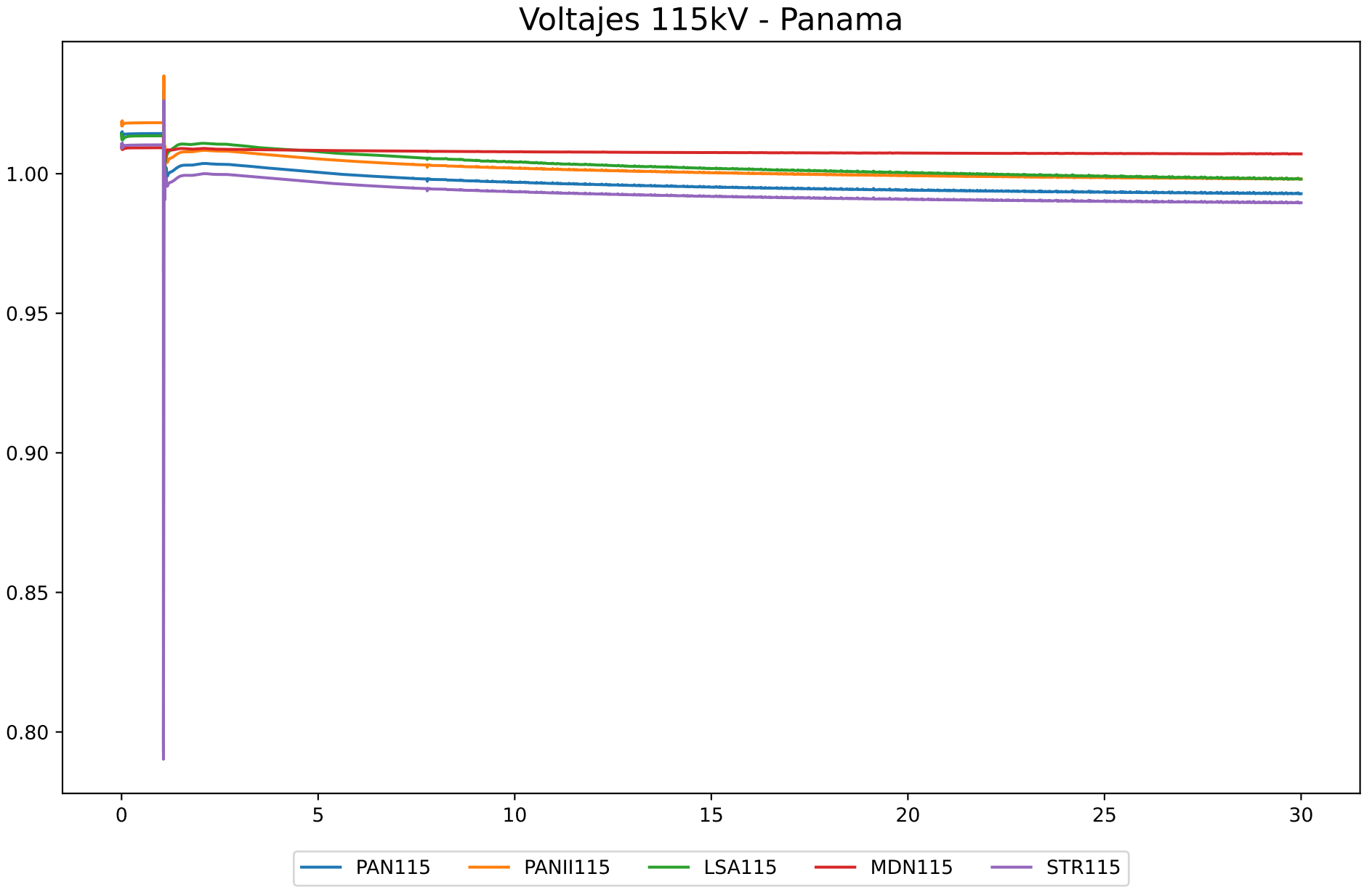
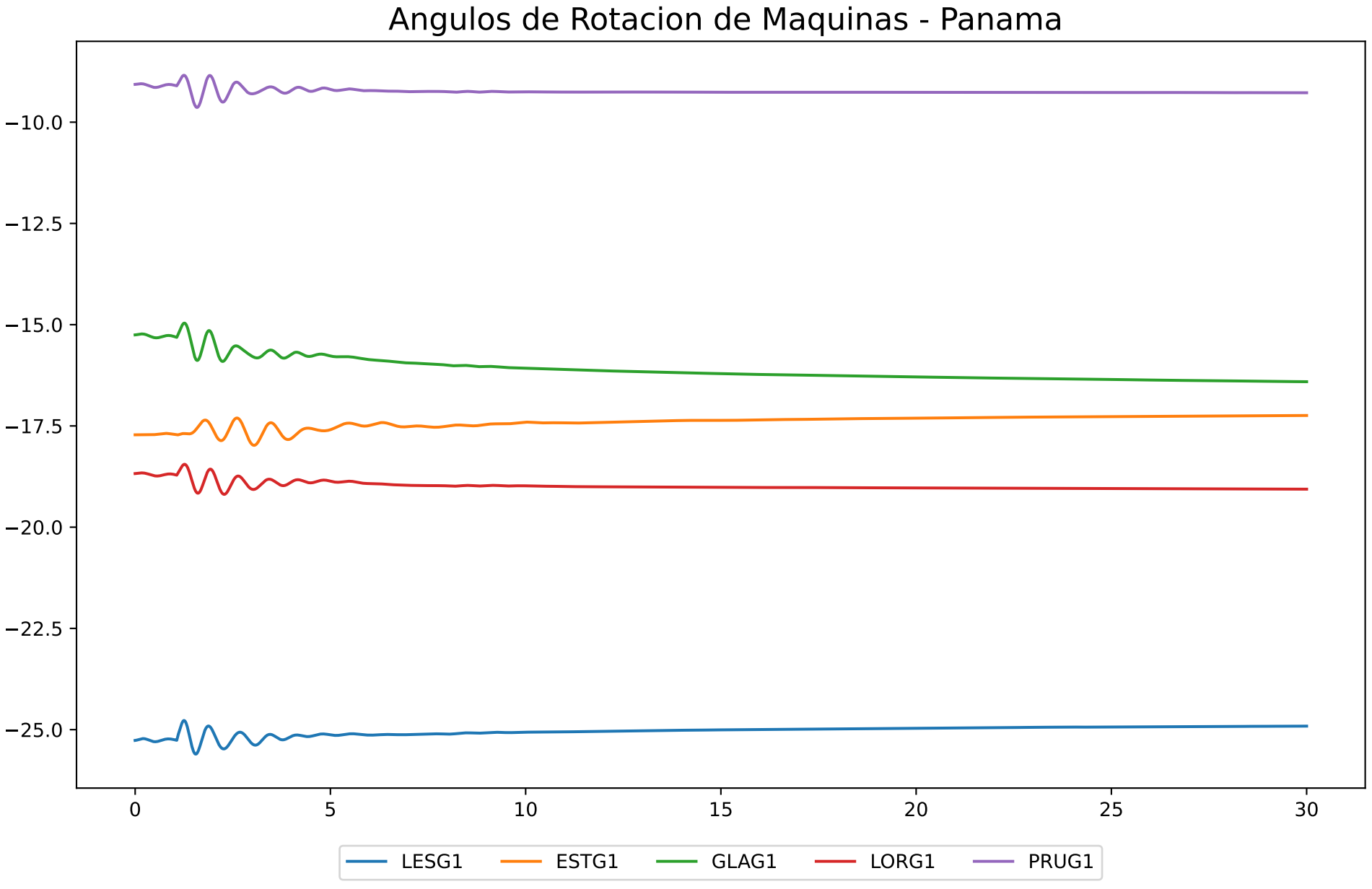
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.00
0.95
0.90
0.85
0.80
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
0
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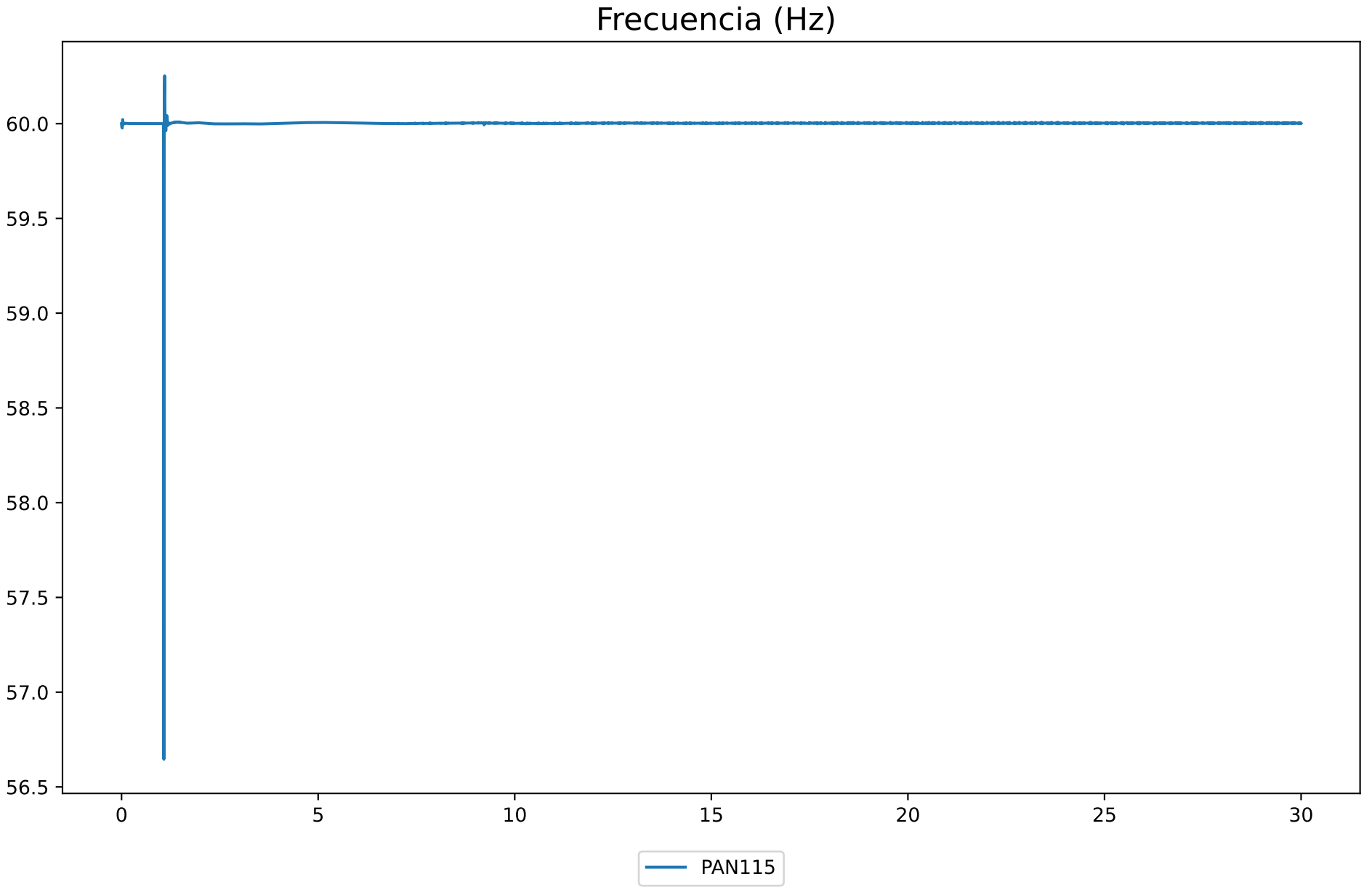
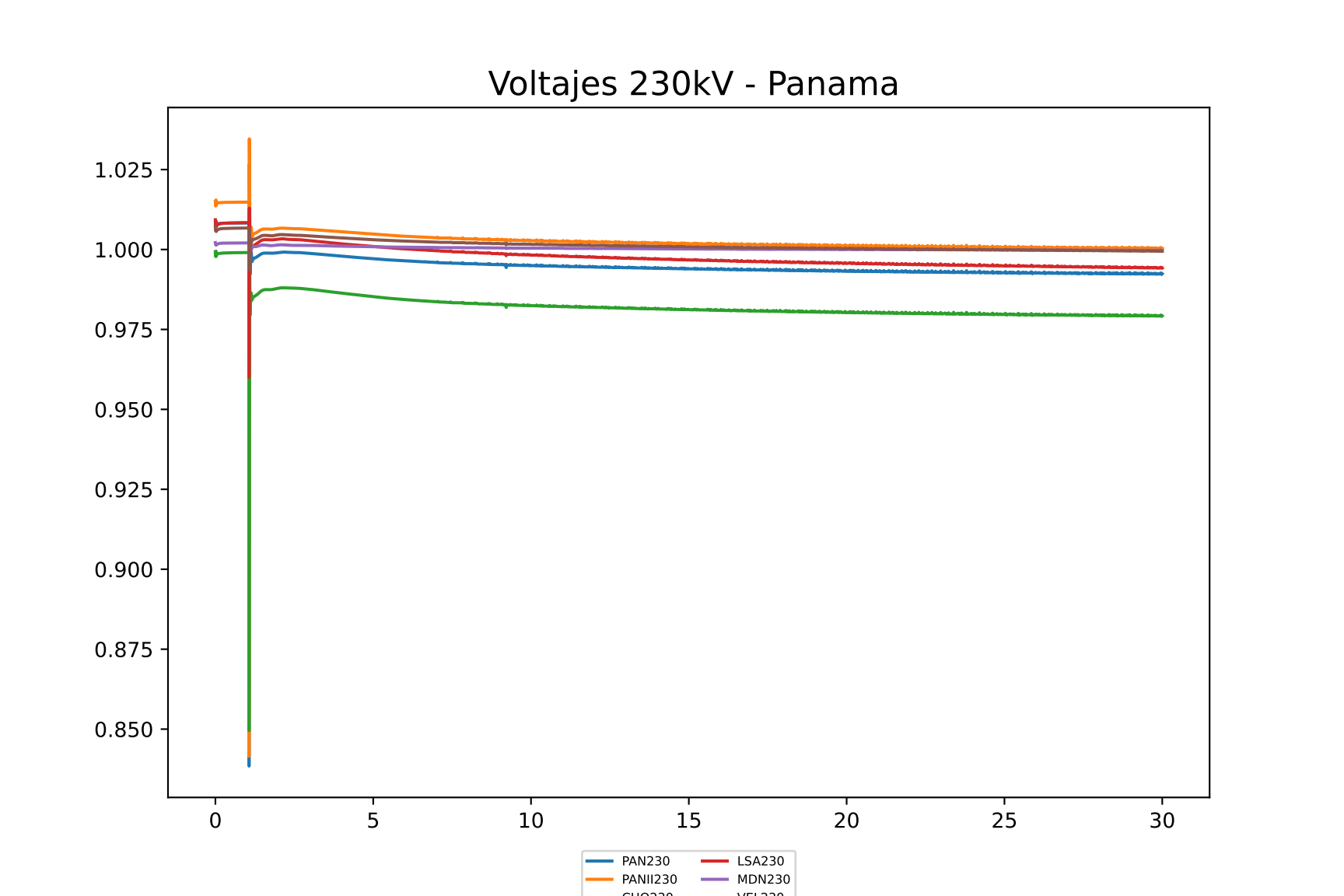
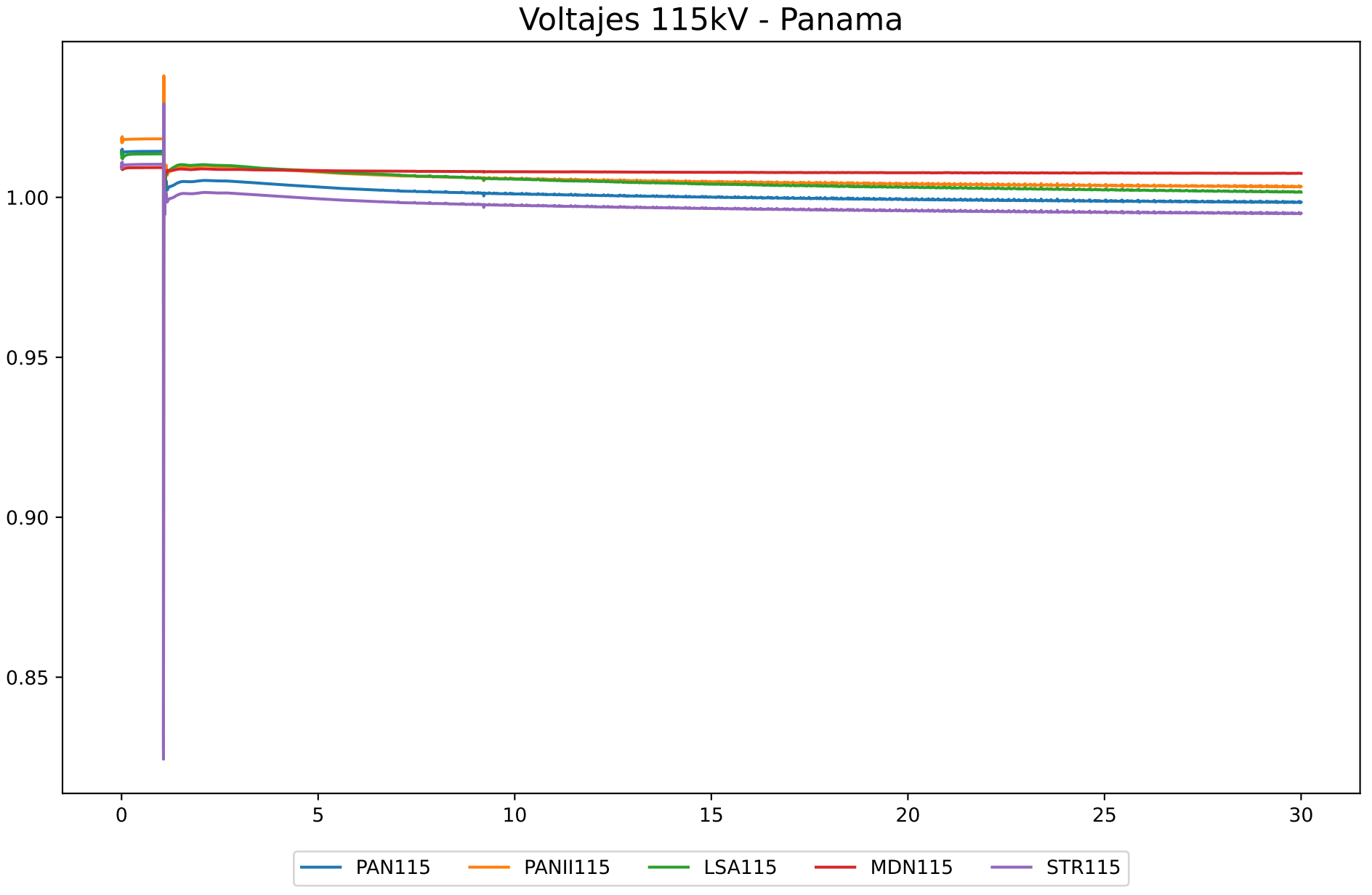
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.0
59.5
59.0
58.5
58.0
57.5
57.0
56.5
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.00
0.95
0.90
0.85
0
5
10
15
20
25
30
PAN115
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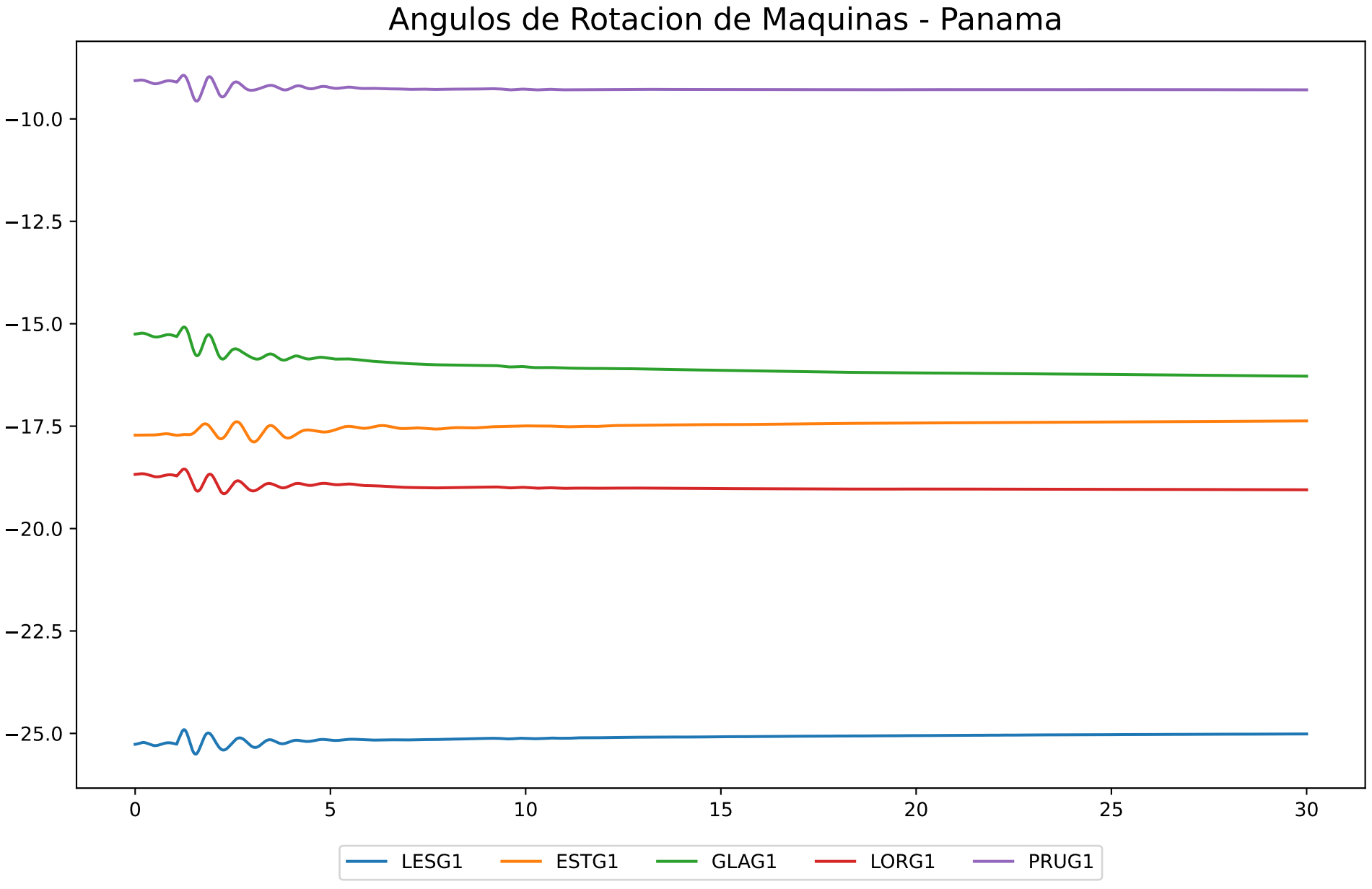
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
0
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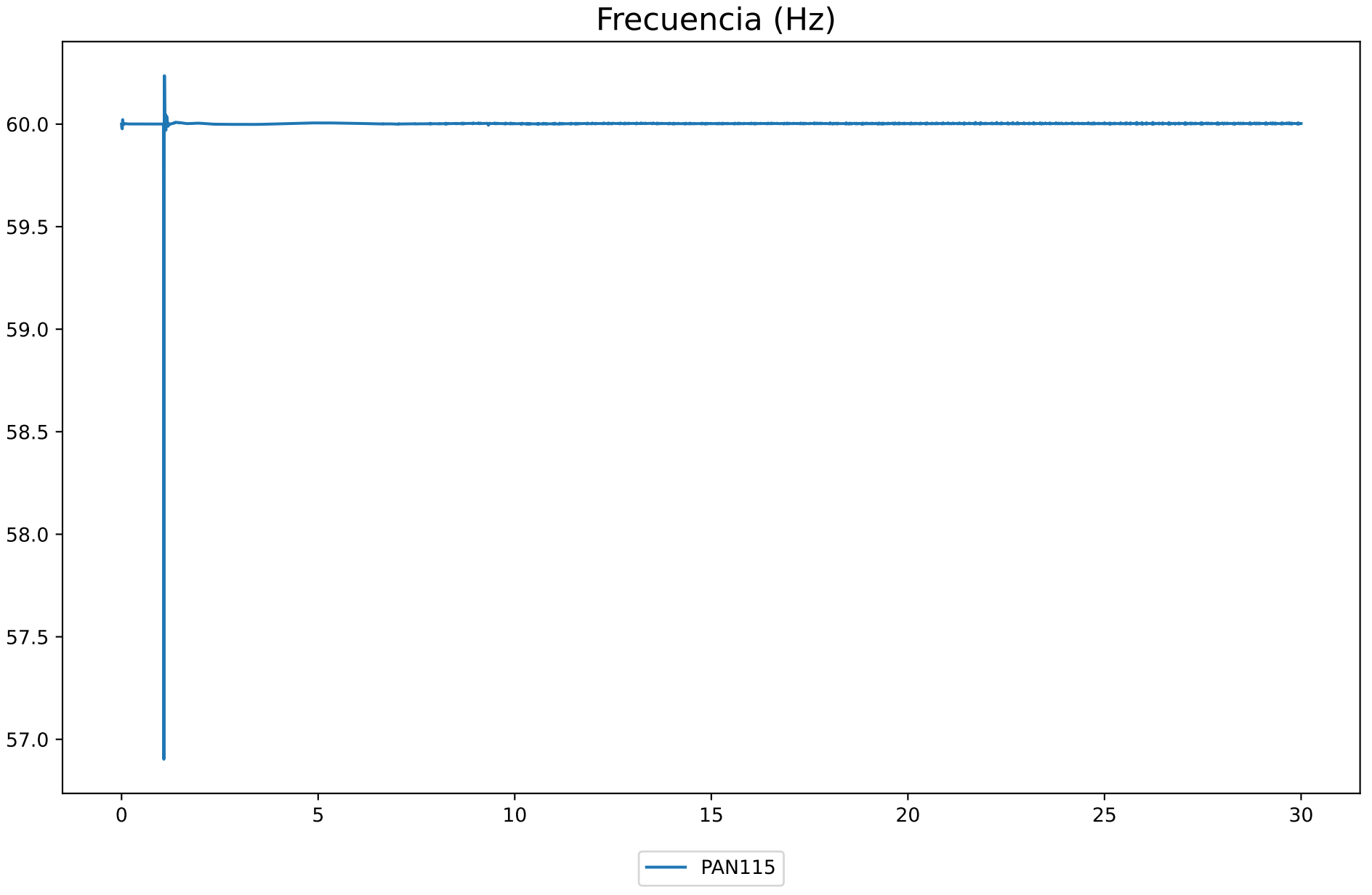
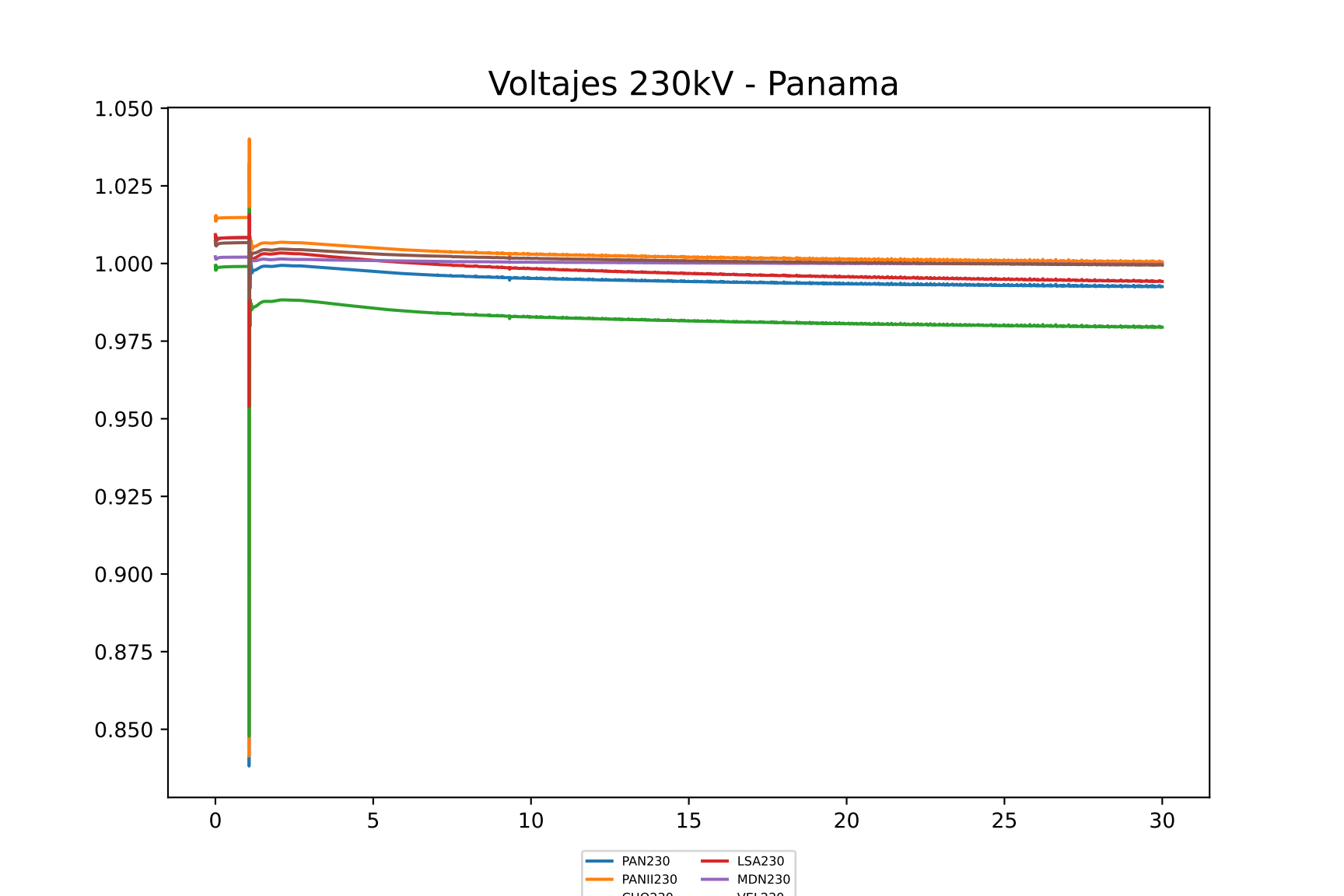
LESG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.0
59.5
59.0
58.5
58.0
57.5
57.0
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0
5
10
15
20
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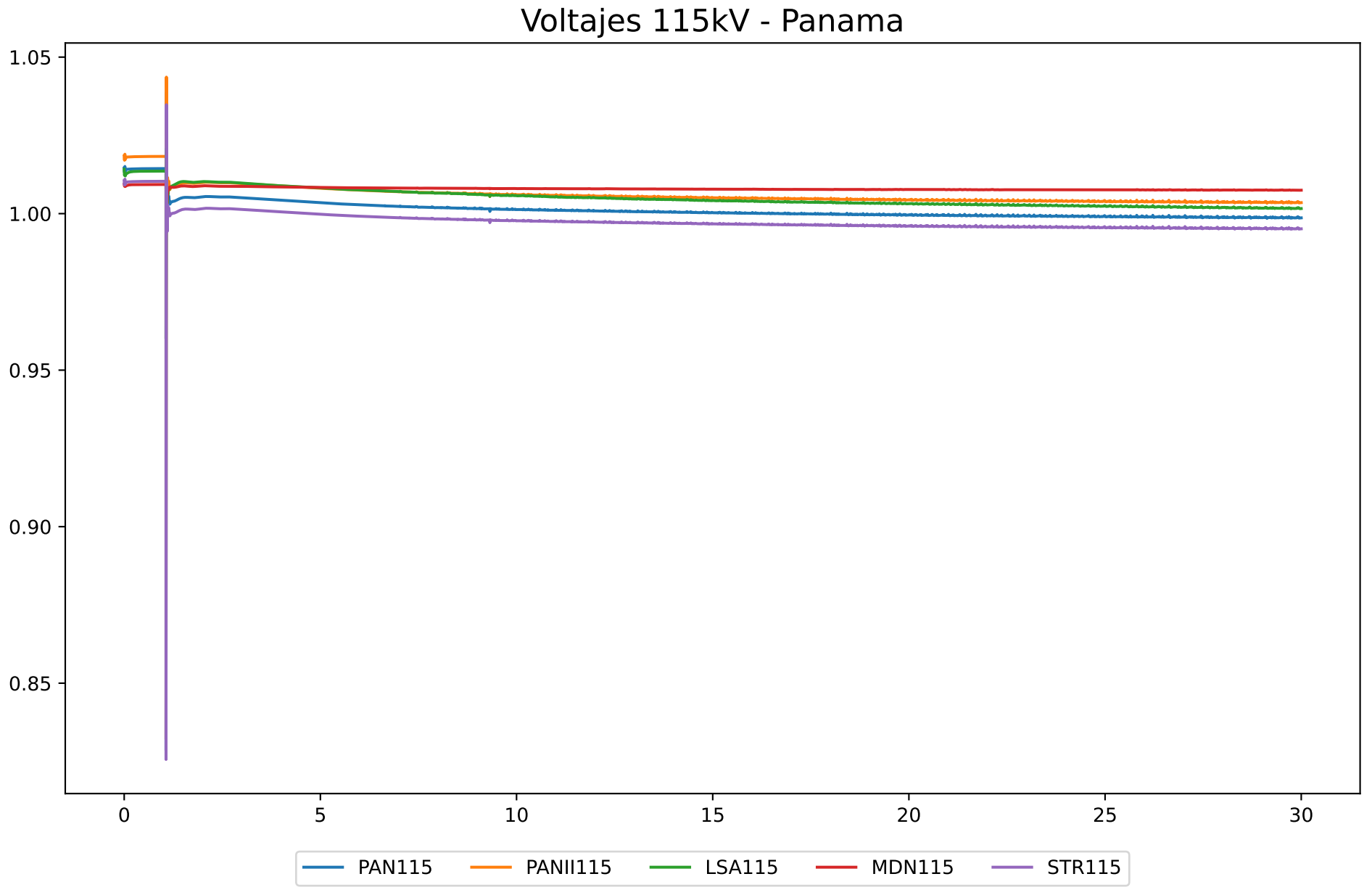
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.05
1.00
0.95
0.90
0.85
0
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10
15
20
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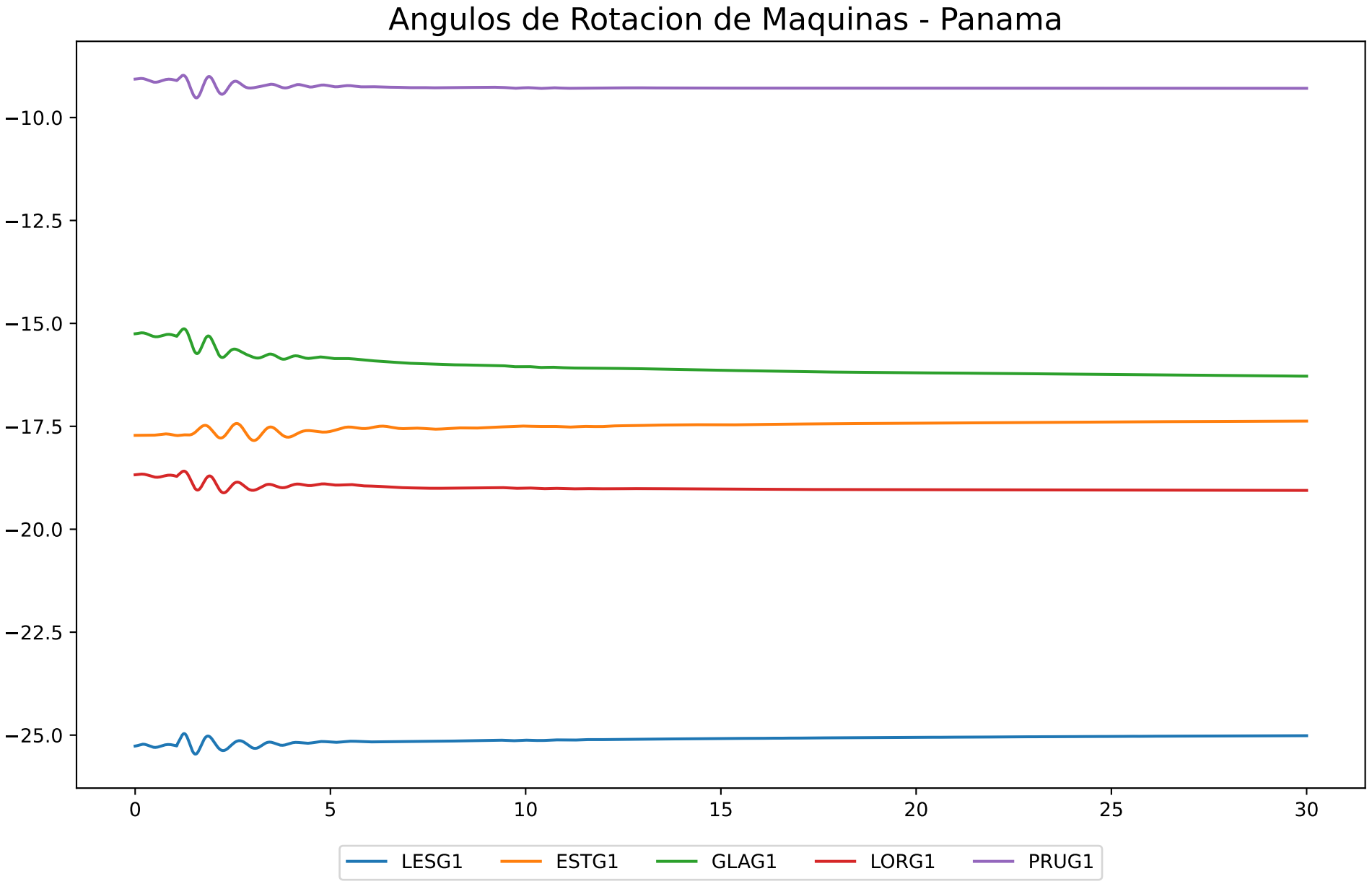
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
0
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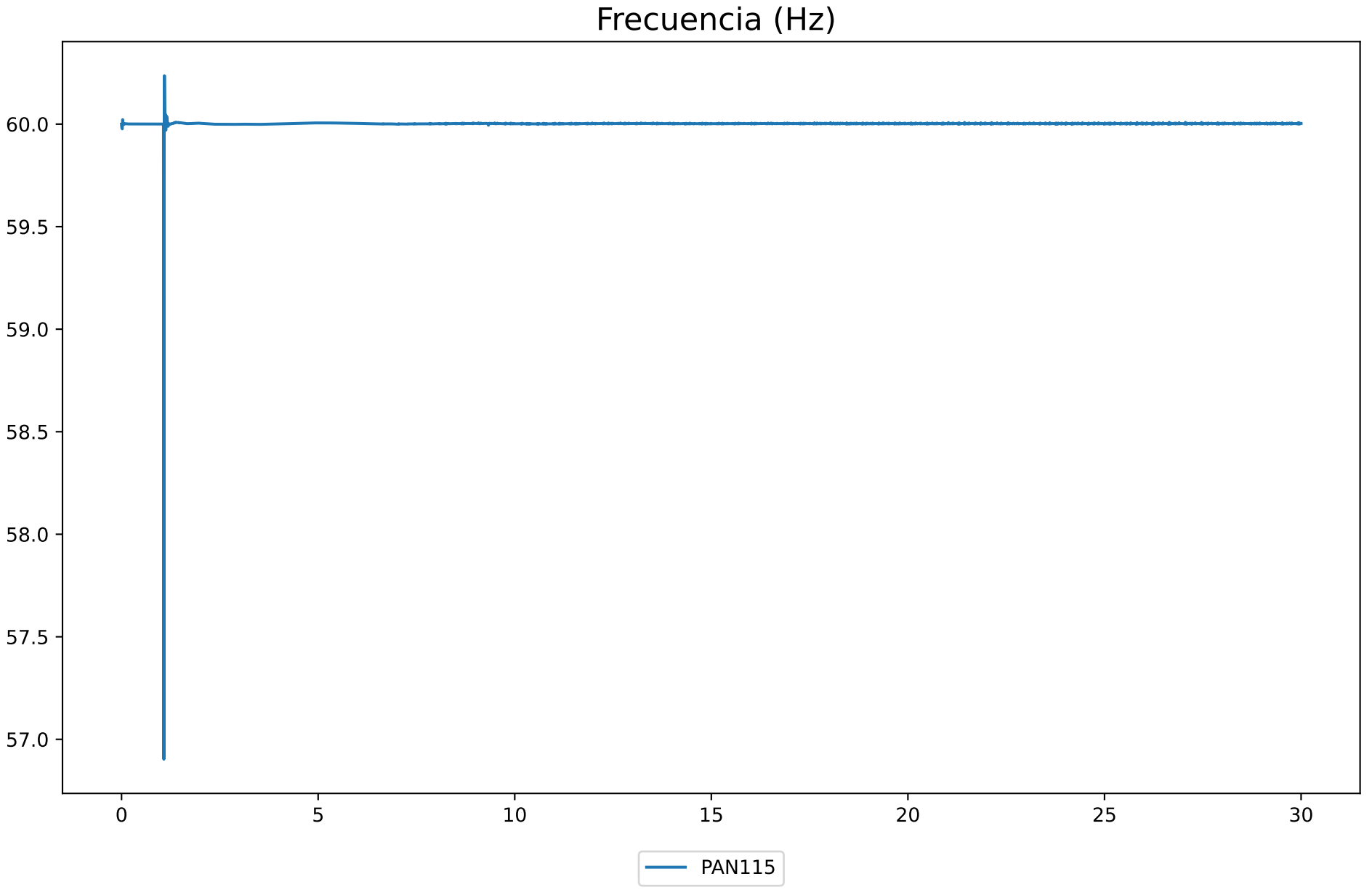
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.0
59.5
59.0
58.5
58.0
57.5
57.0
0
5
10
15
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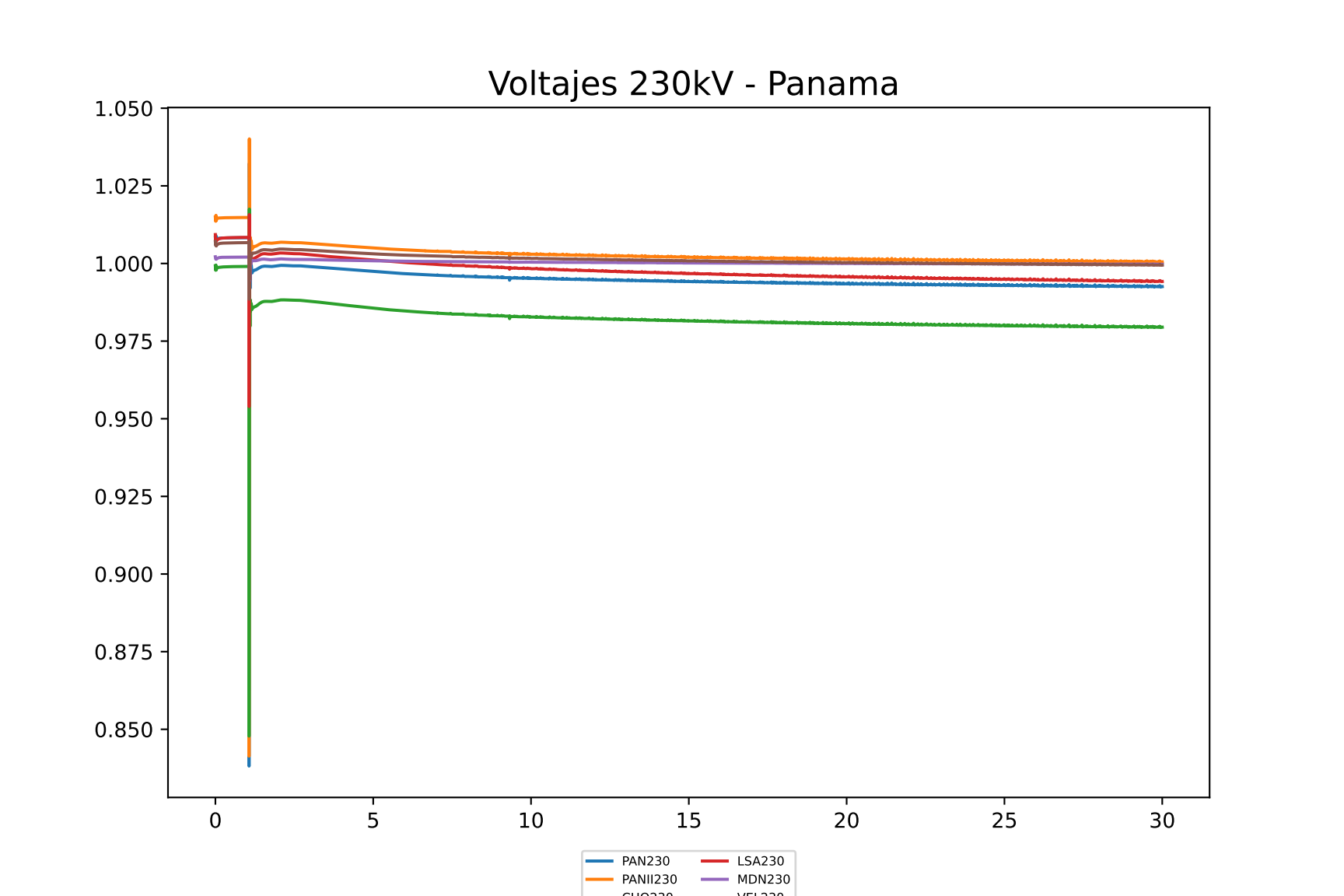
25
30
PAN115


Voltajes 230kV - Panama
1.050
1.025
1.000
0.975
0.950
0.925
0.900
0.875
0.850
0
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10
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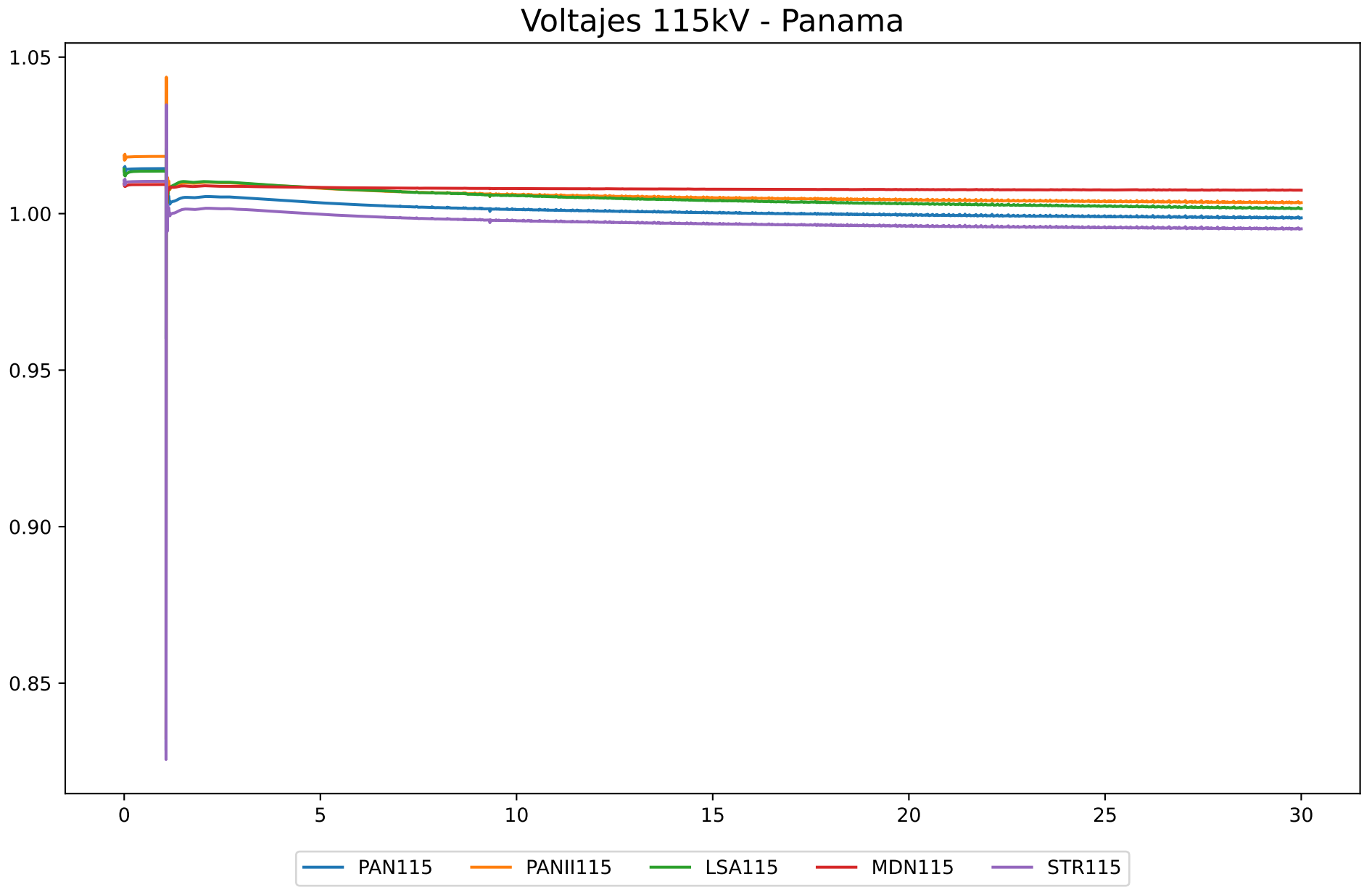
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.05
1.00
0.95
0.90
0.85
0
5
10
15
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25
30
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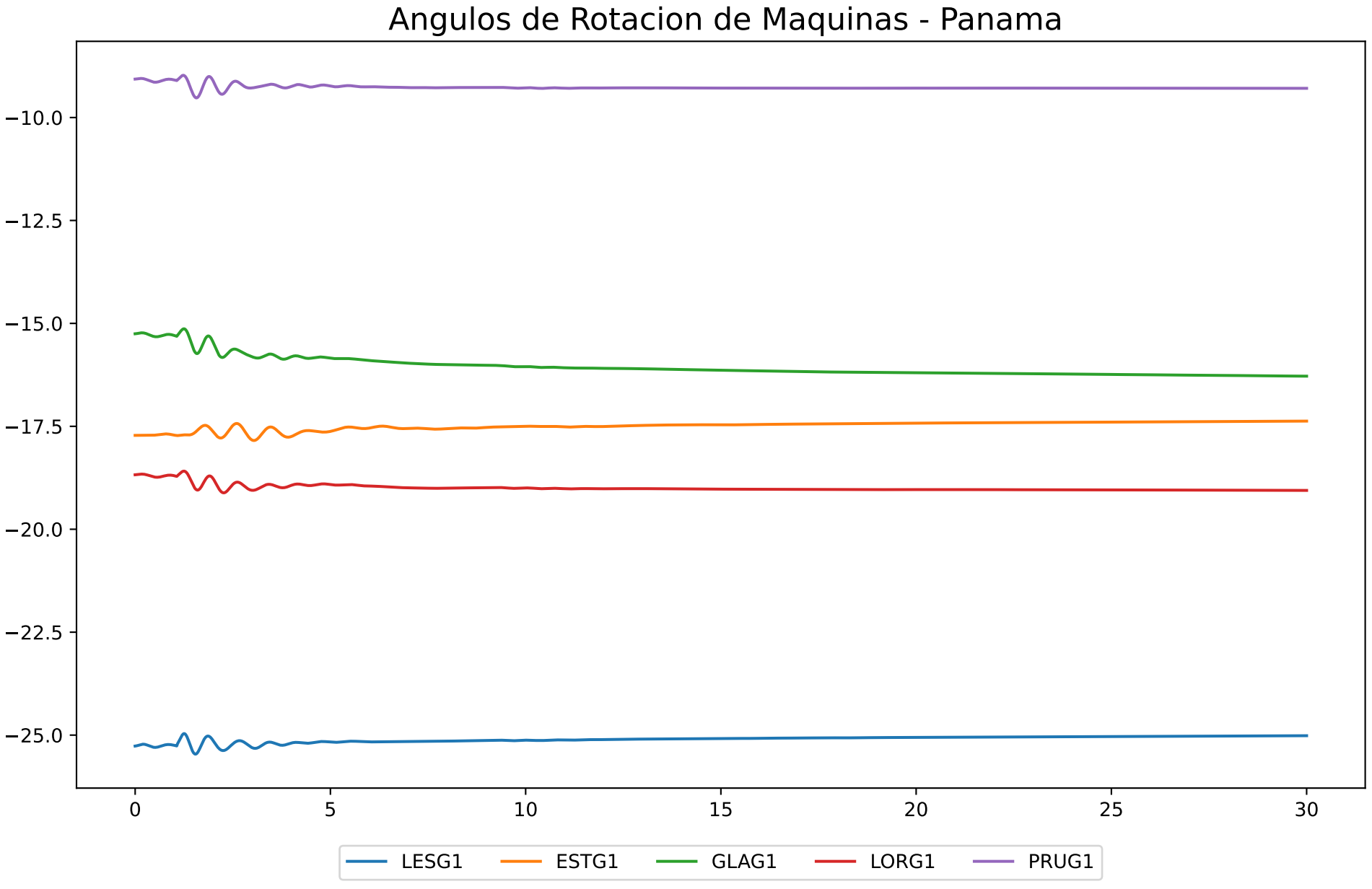
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
0
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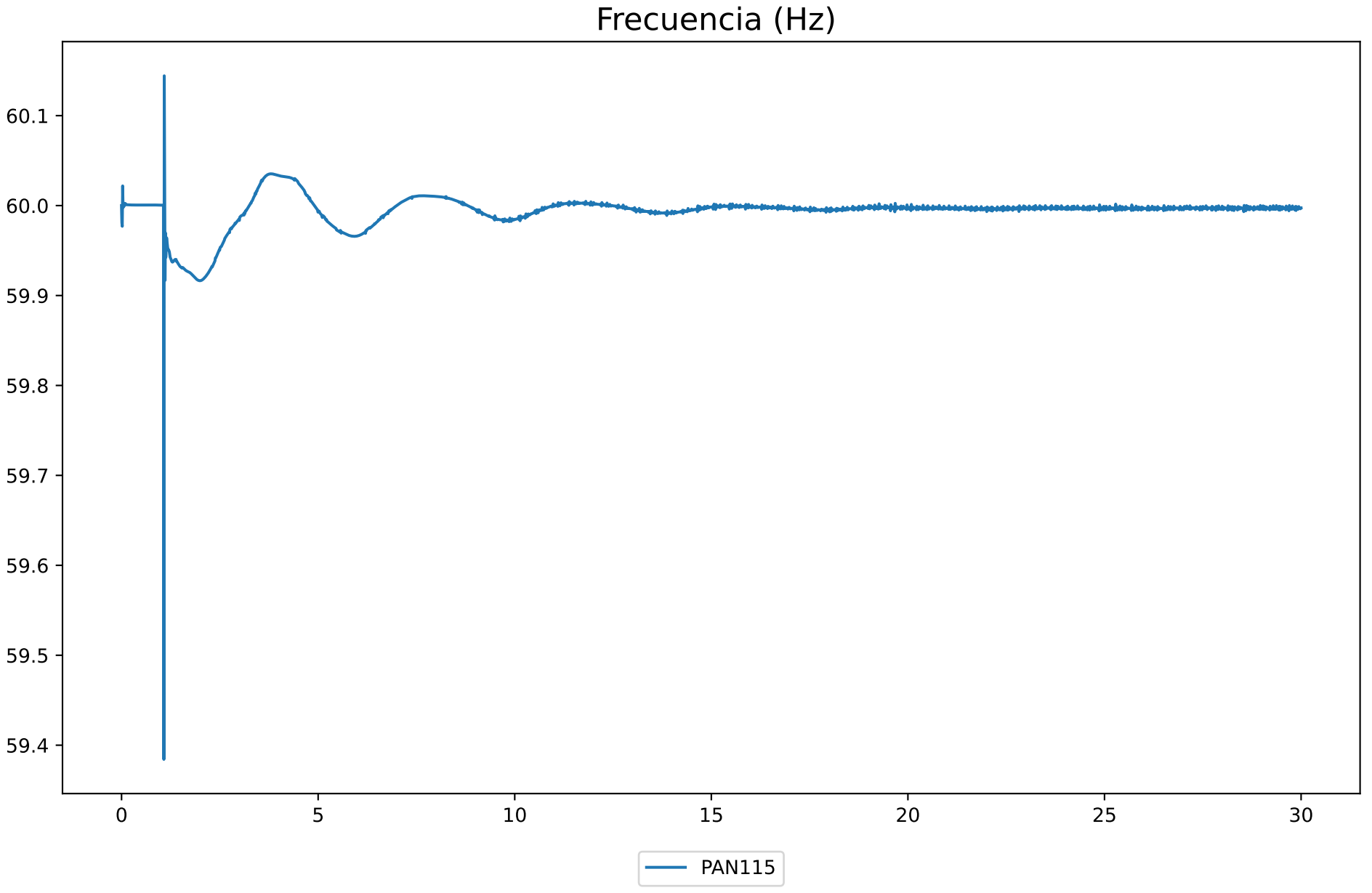
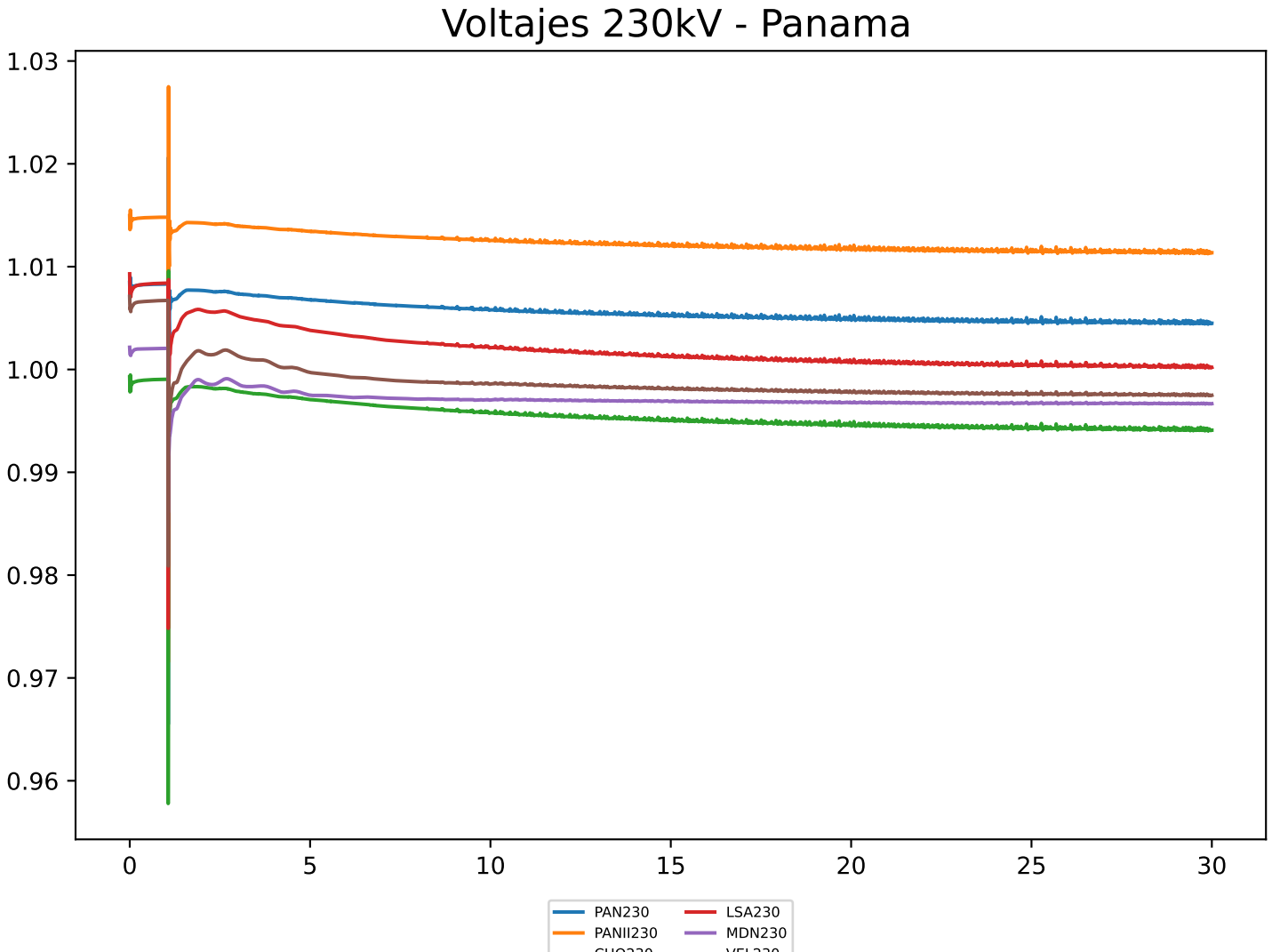
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.1
60.0
59.9
59.8
59.7
59.6
59.5
59.4
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0
5
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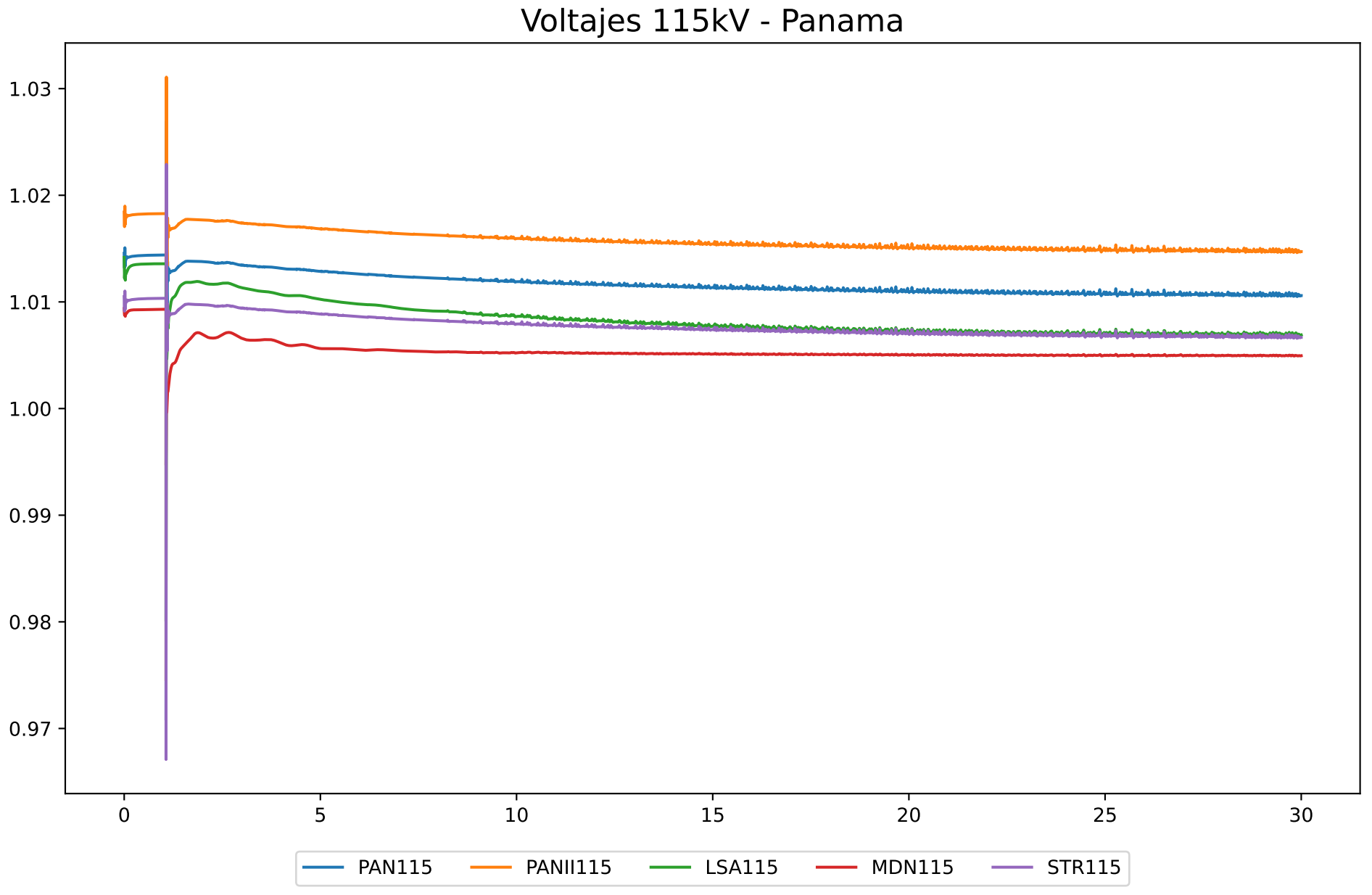
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0
5
10
15
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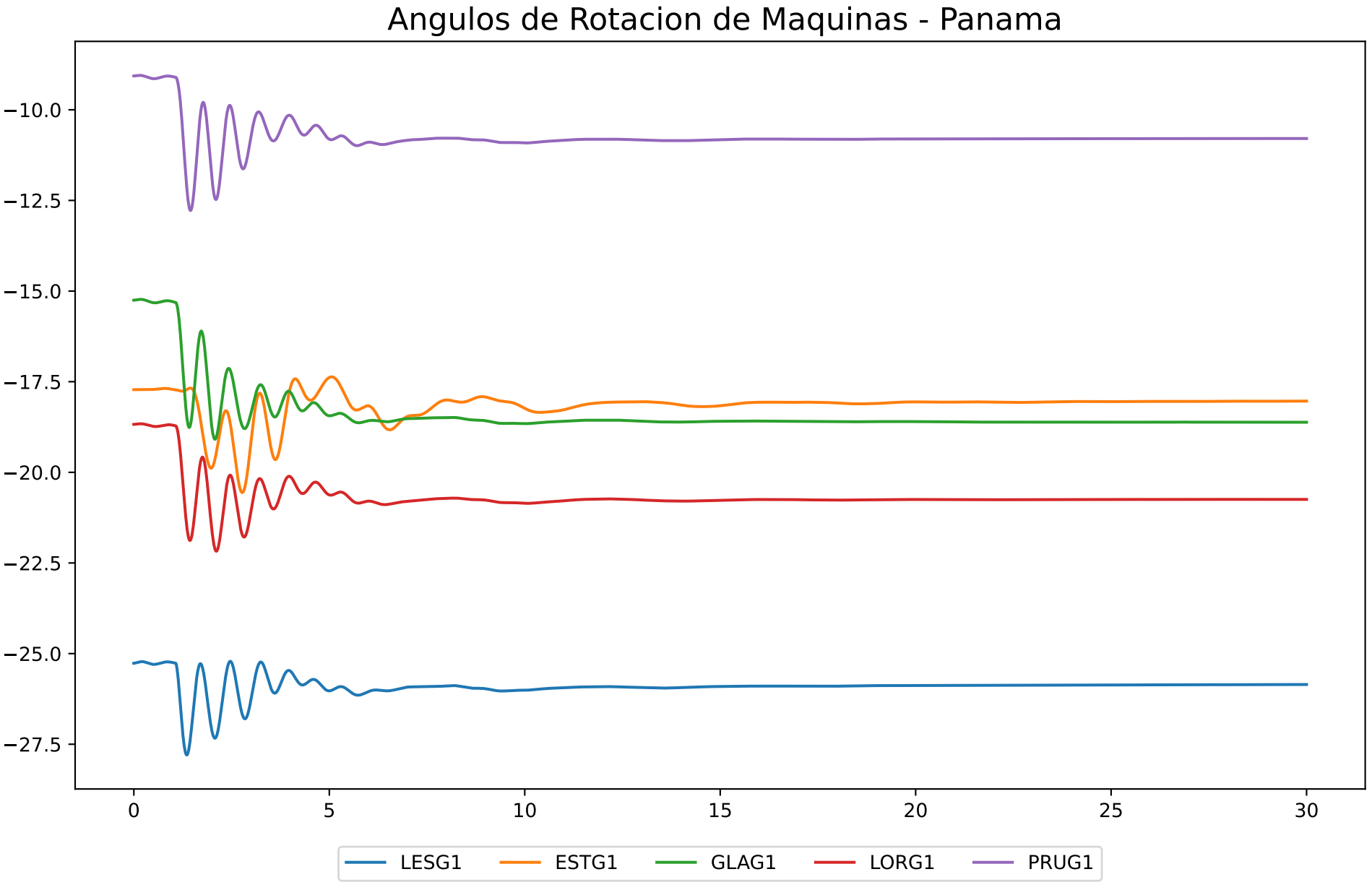
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
−27.5
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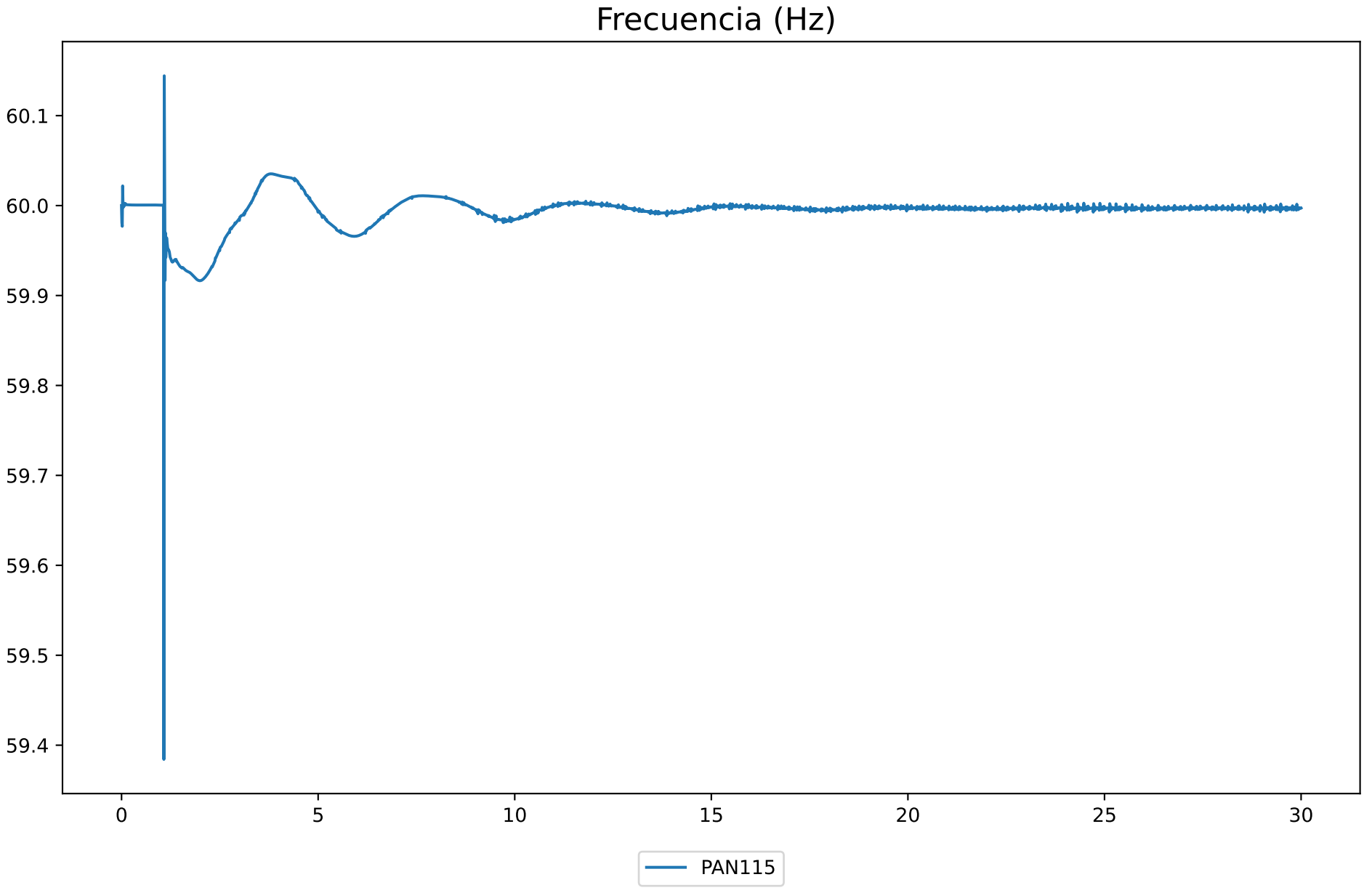
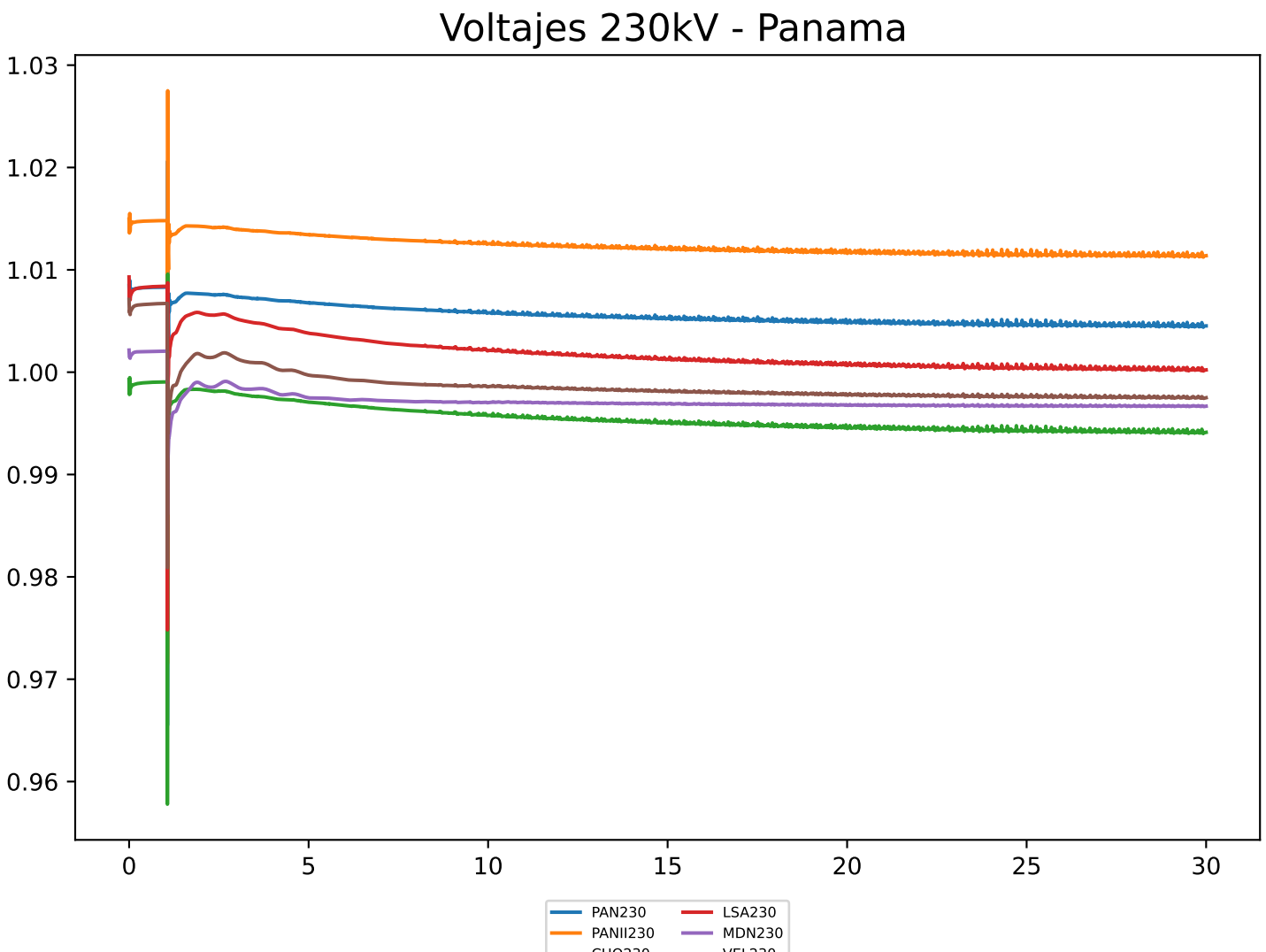
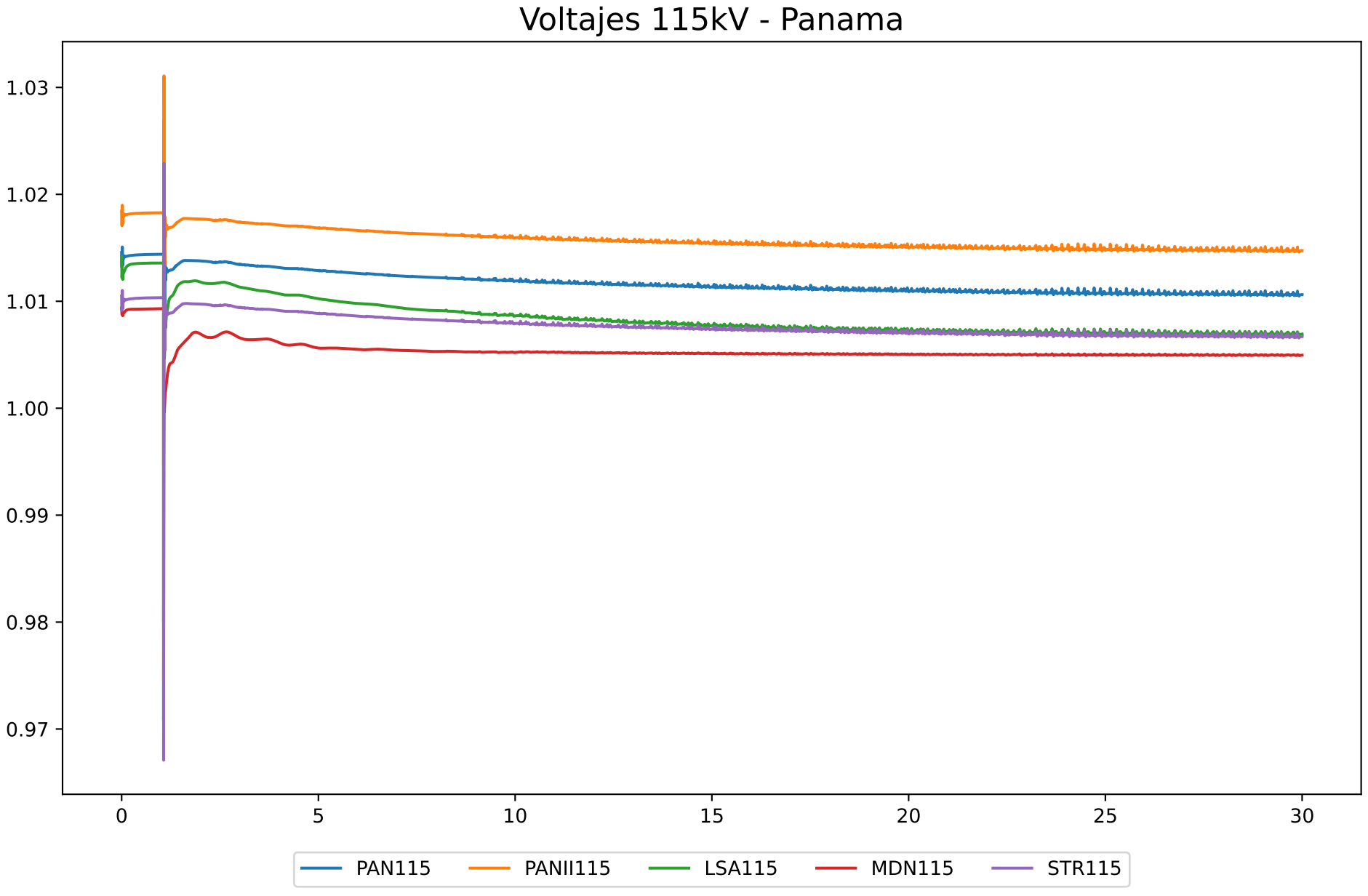
LESG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.1
60.0
59.9
59.8
59.7
59.6
59.5
59.4
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0
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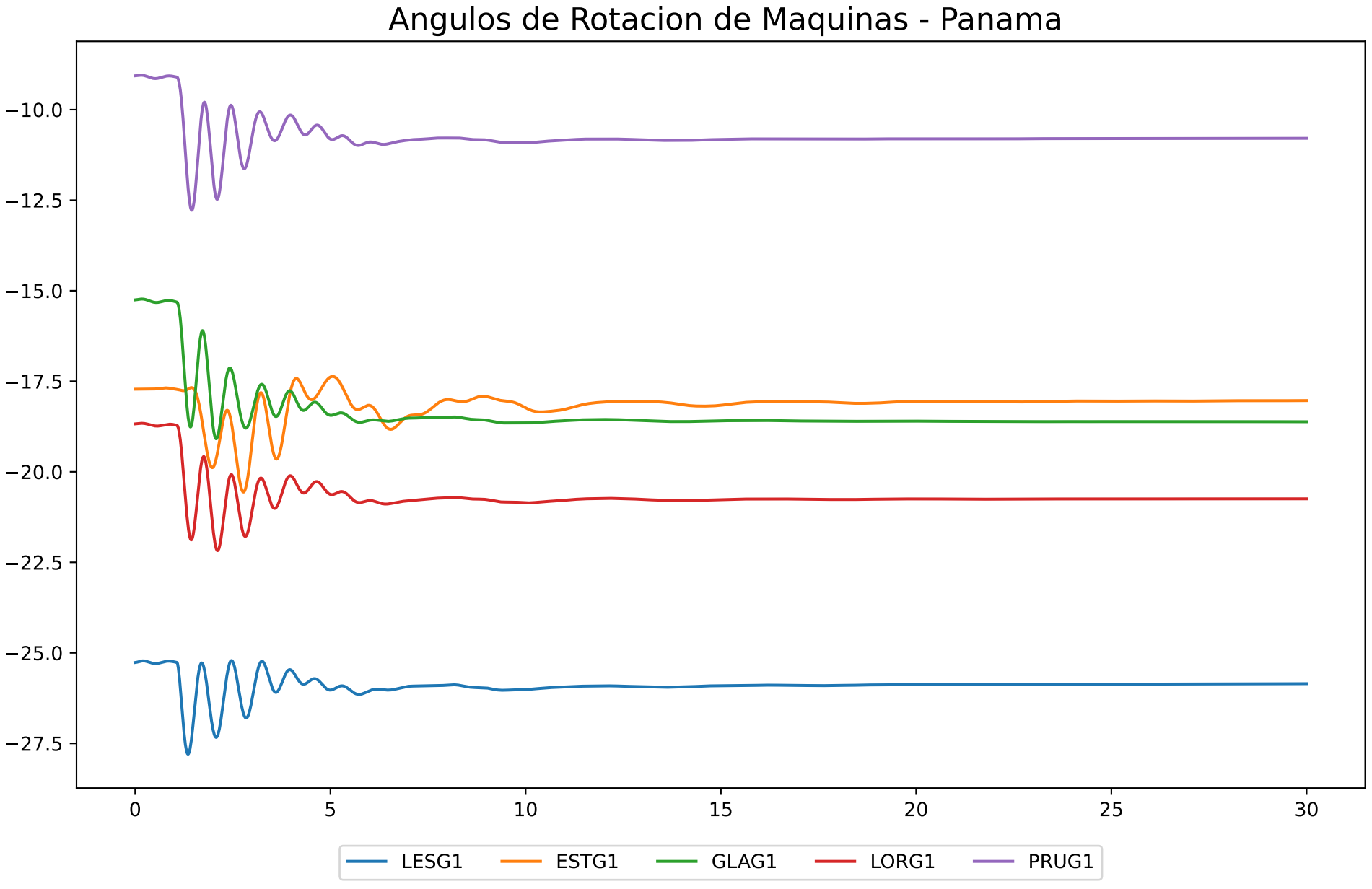
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
−27.5
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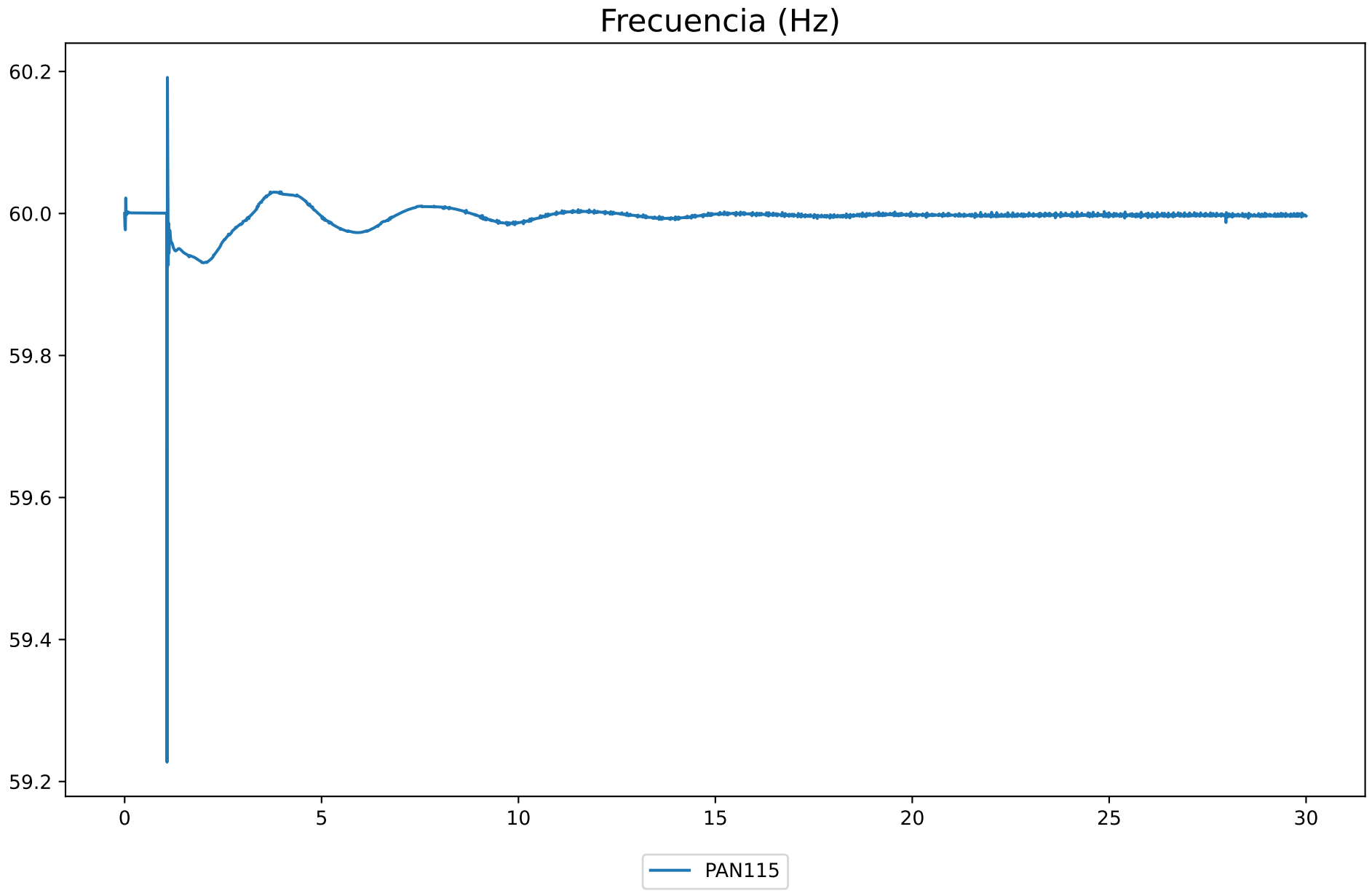
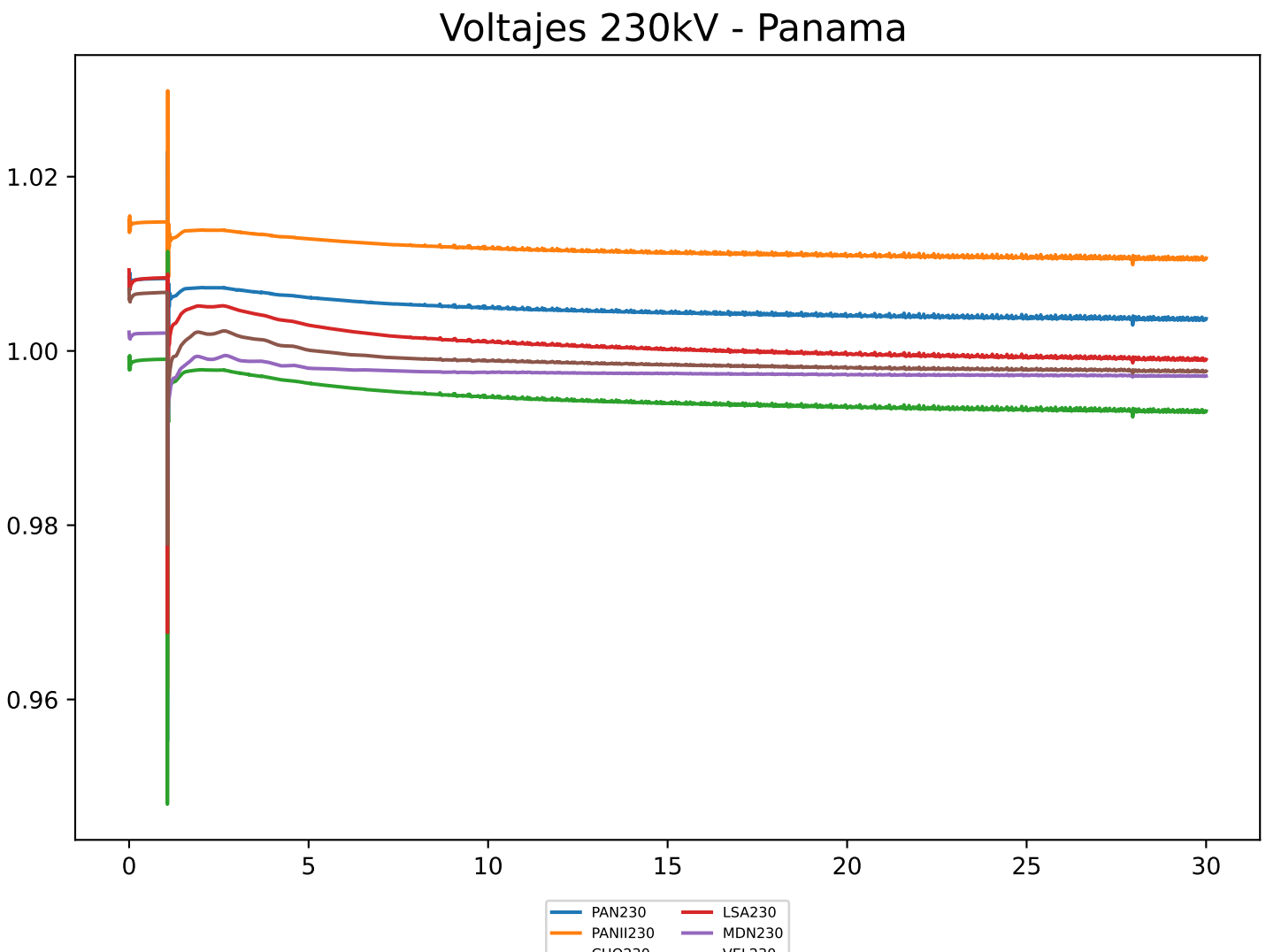
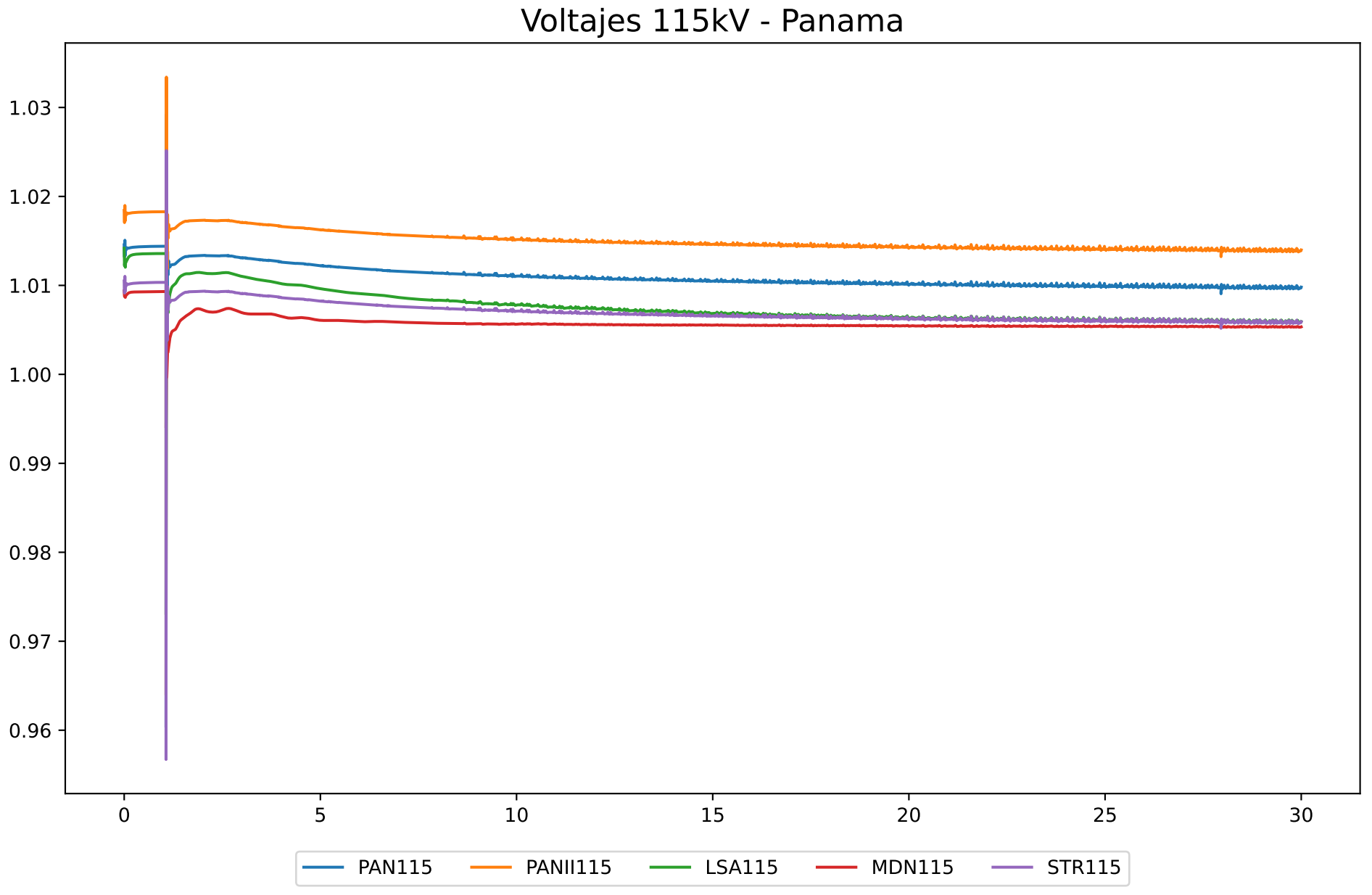
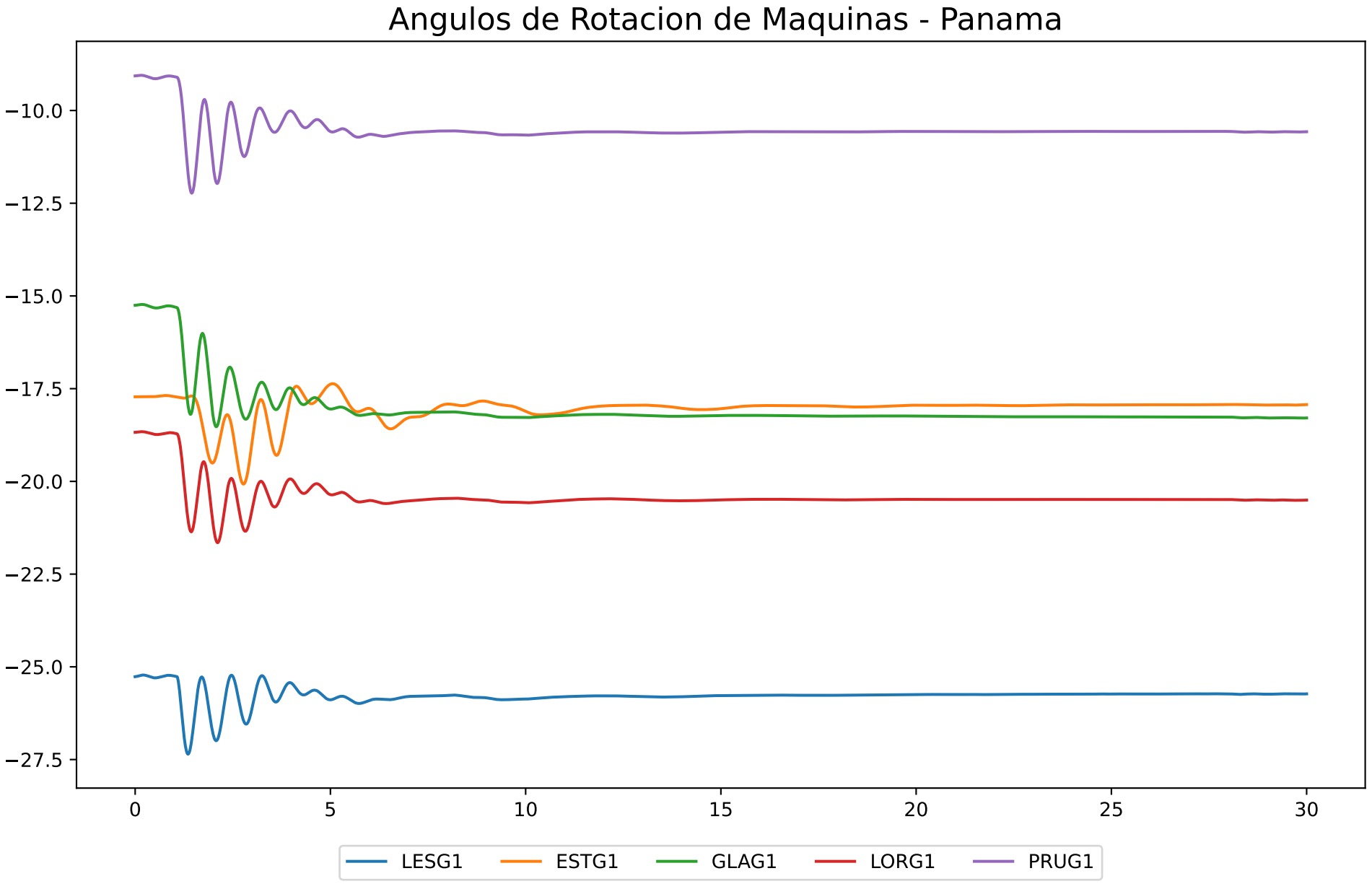
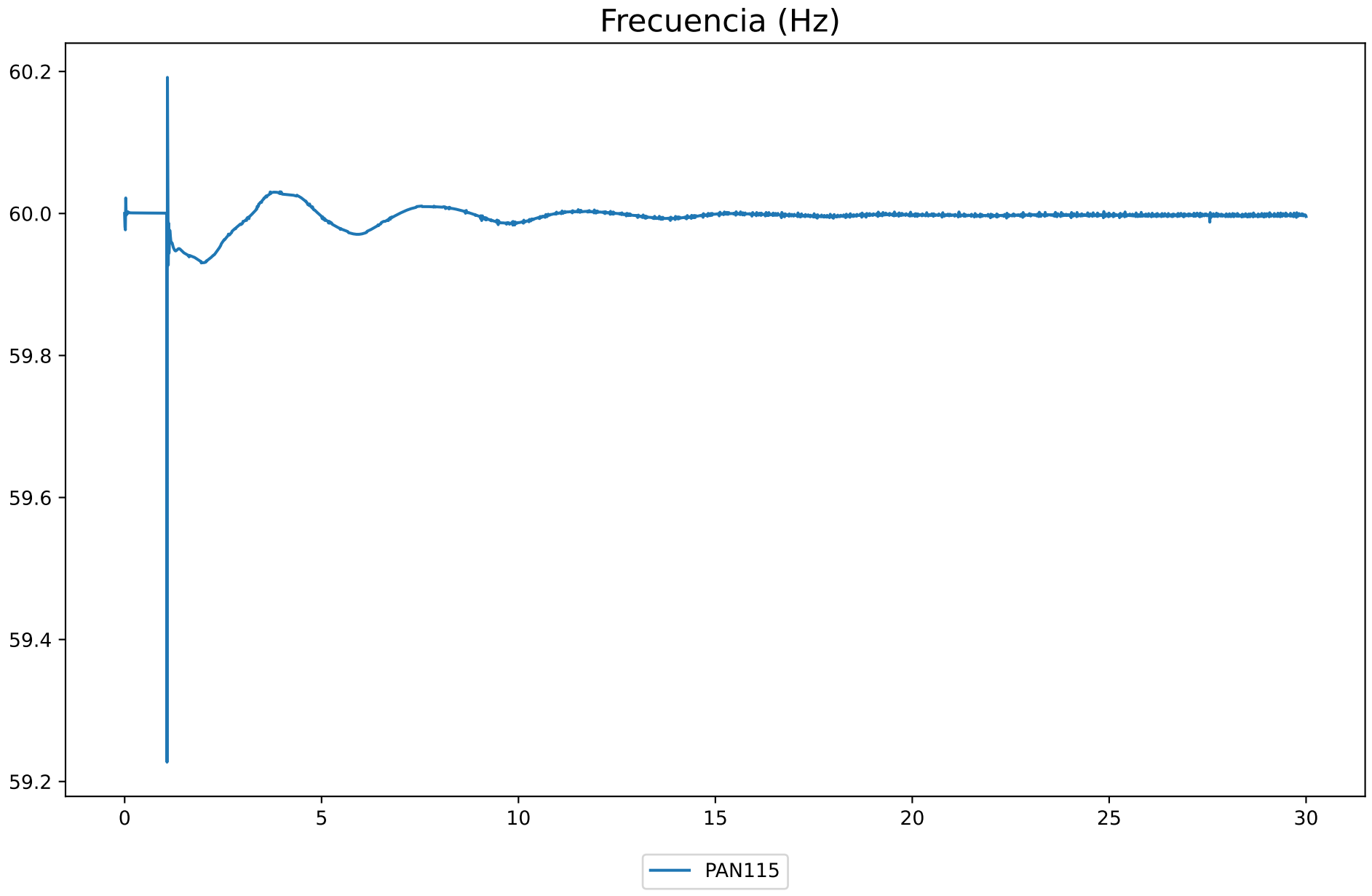
LESG1
ESTG1
GLAG1
LORG1
PRUG1

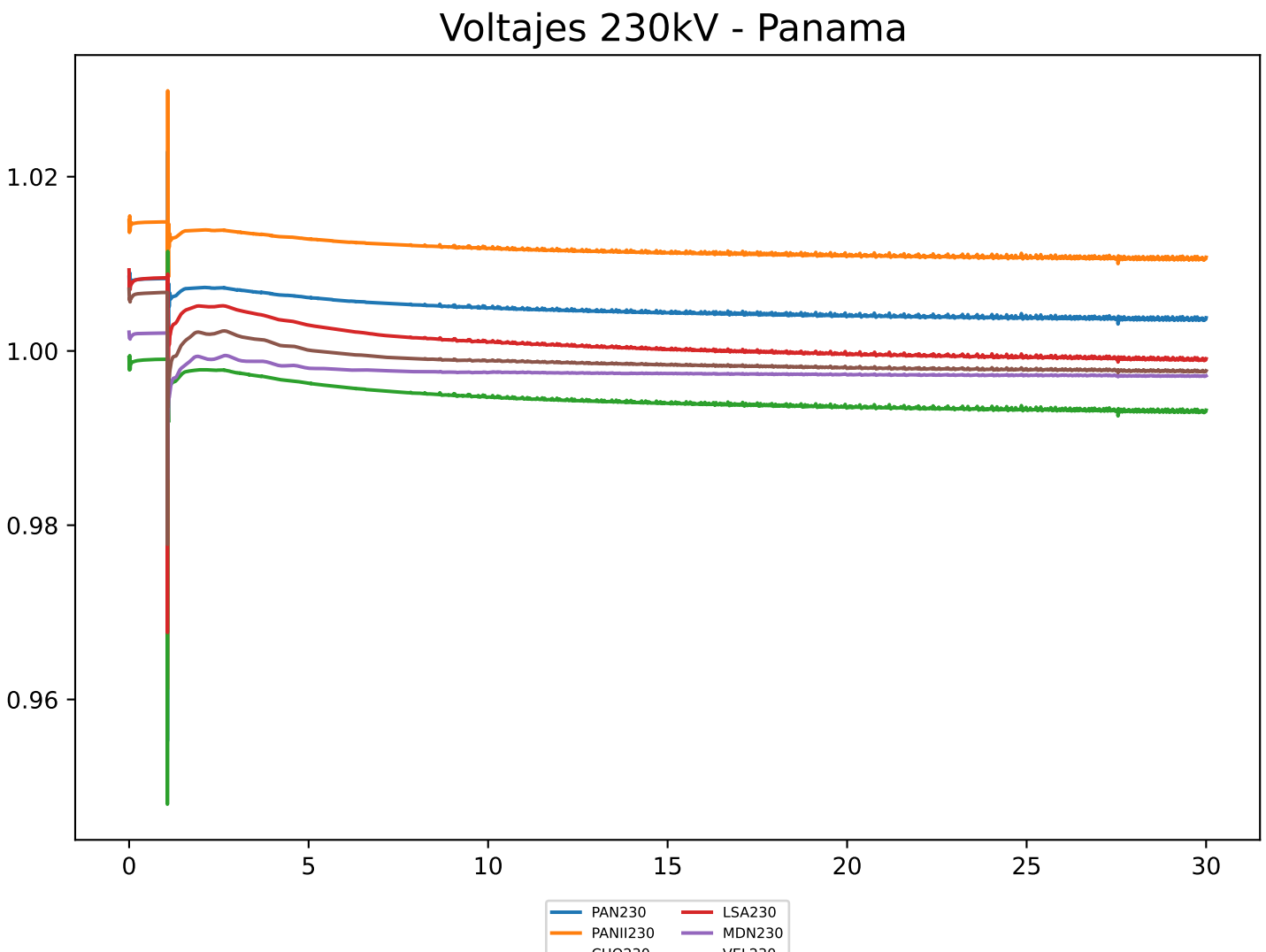

Frecuencia (Hz)
60.2
60.0
59.8
59.6
59.4
59.2
0
5
10
15
20
25
30
PAN115

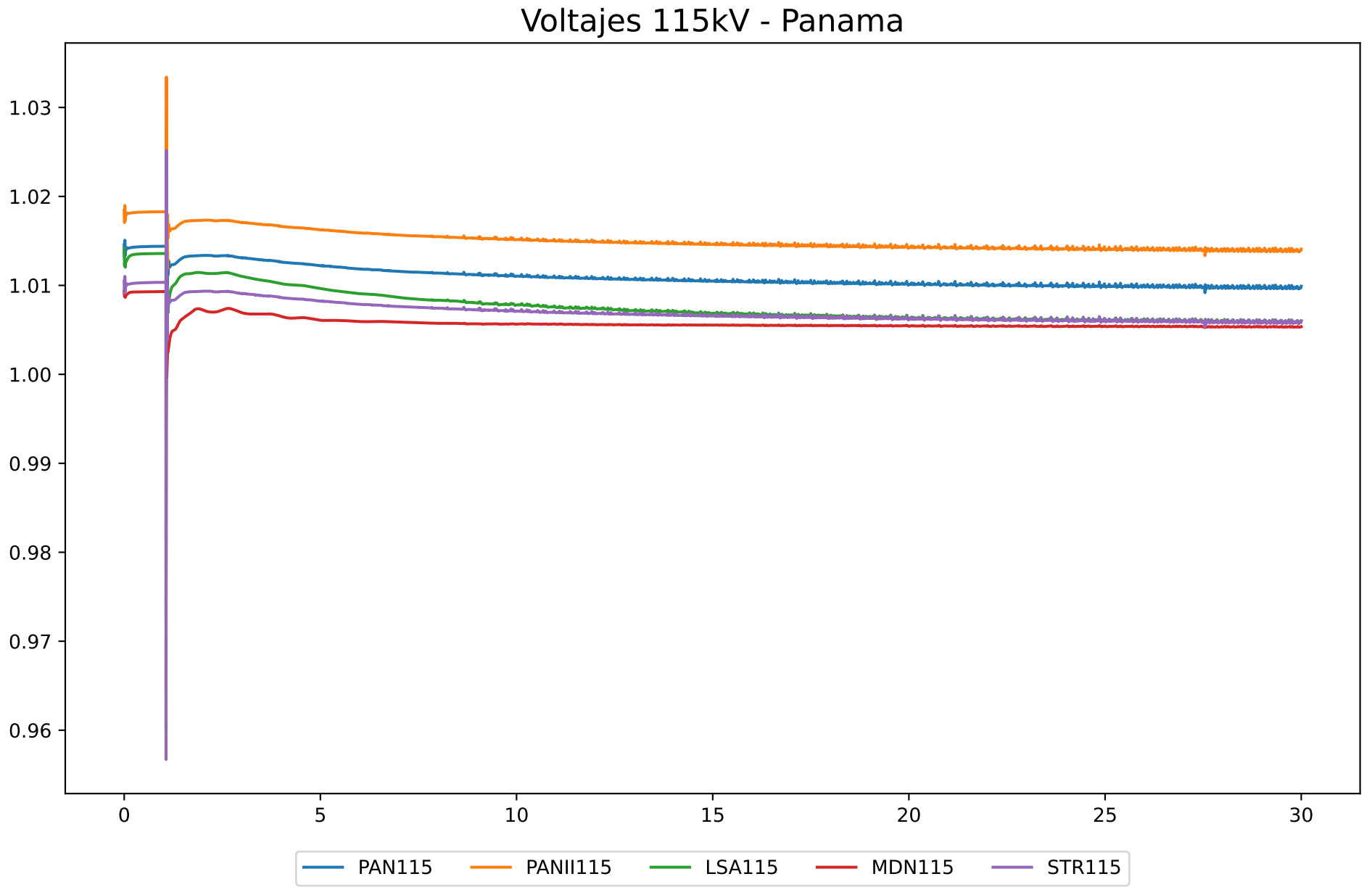

Voltajes 230kV - Panama
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
−27.5
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.2
60.0
59.8
59.6
59.4
59.2
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0
5
10
15
20
25
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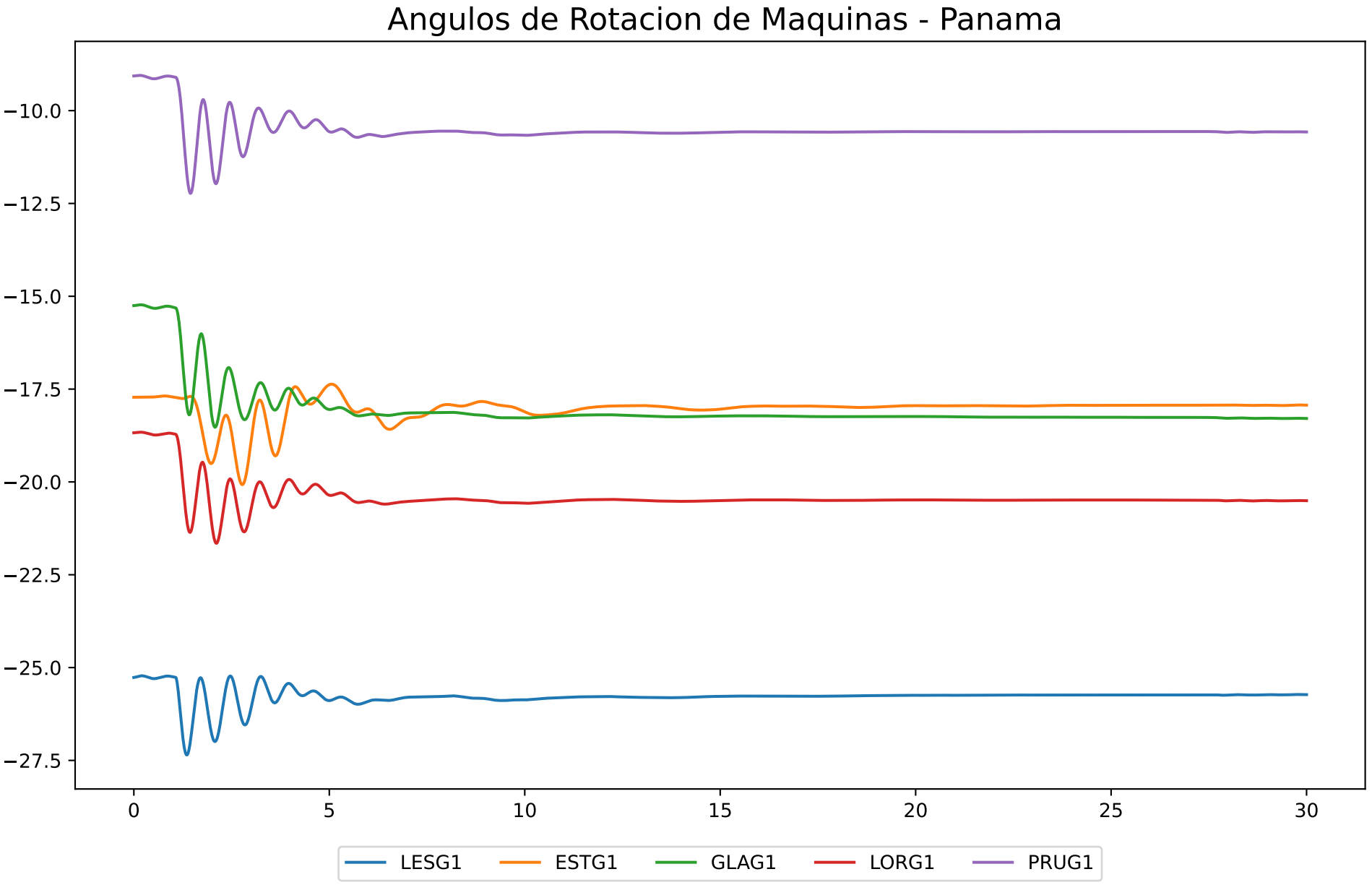
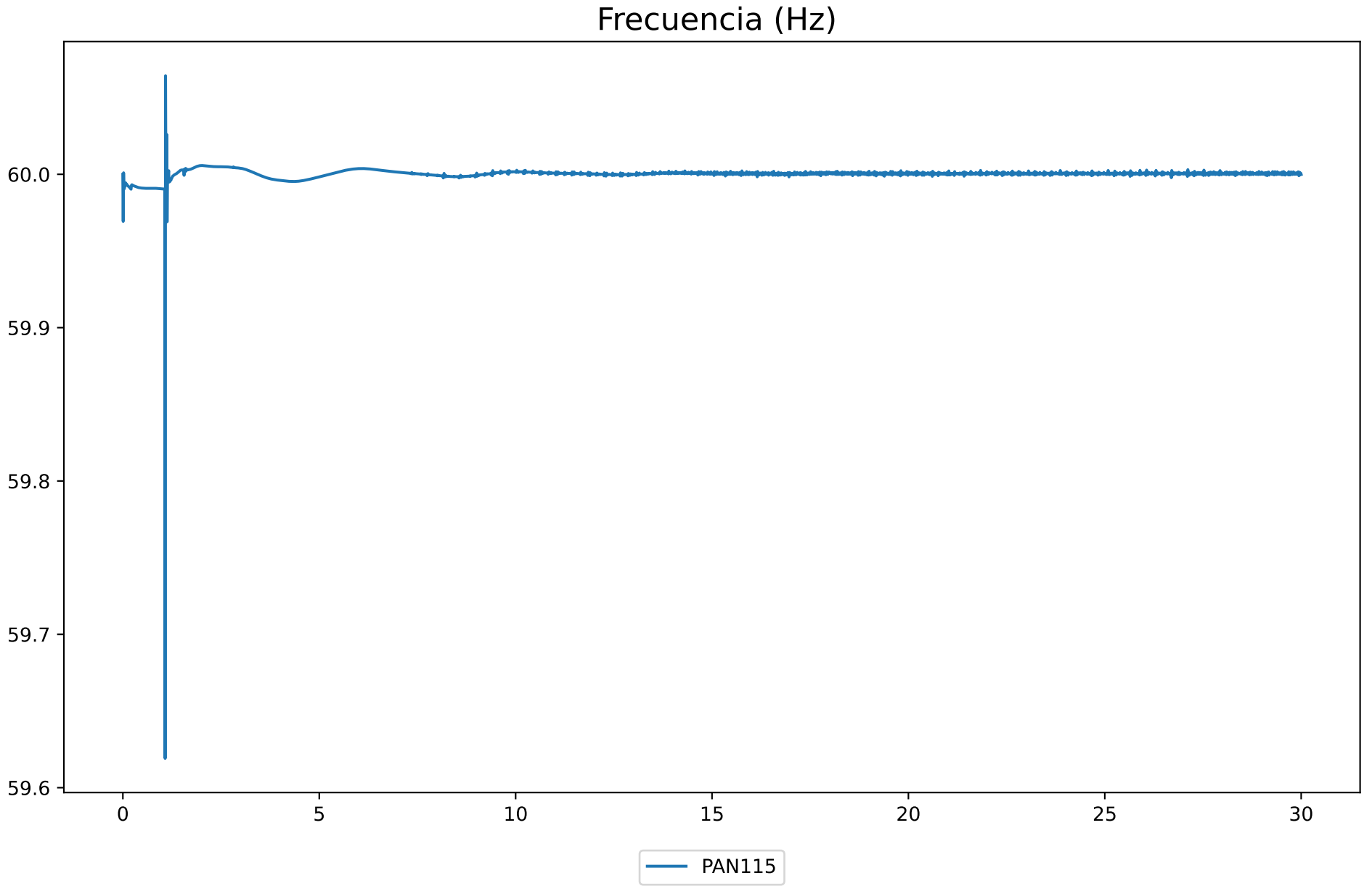
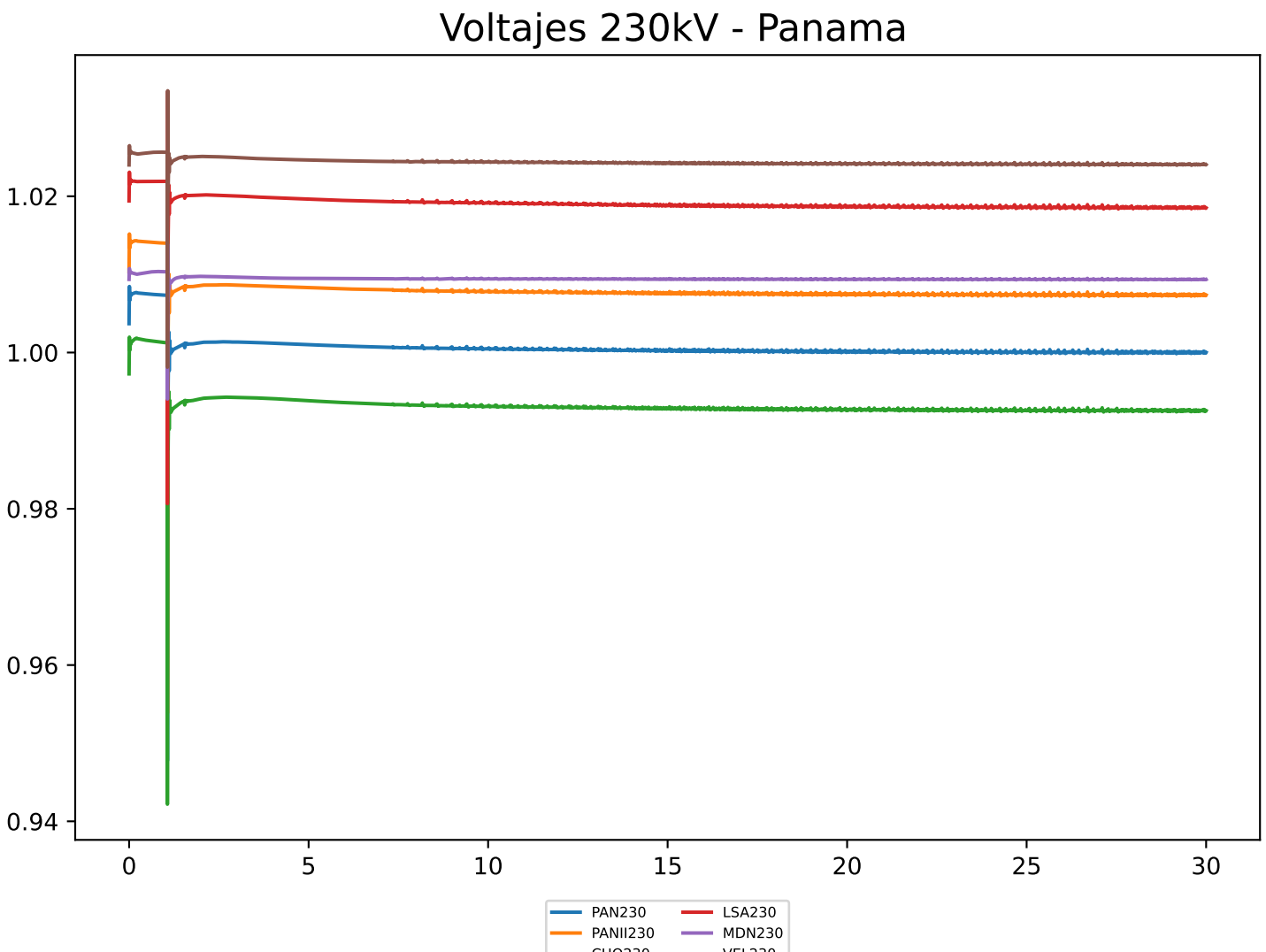
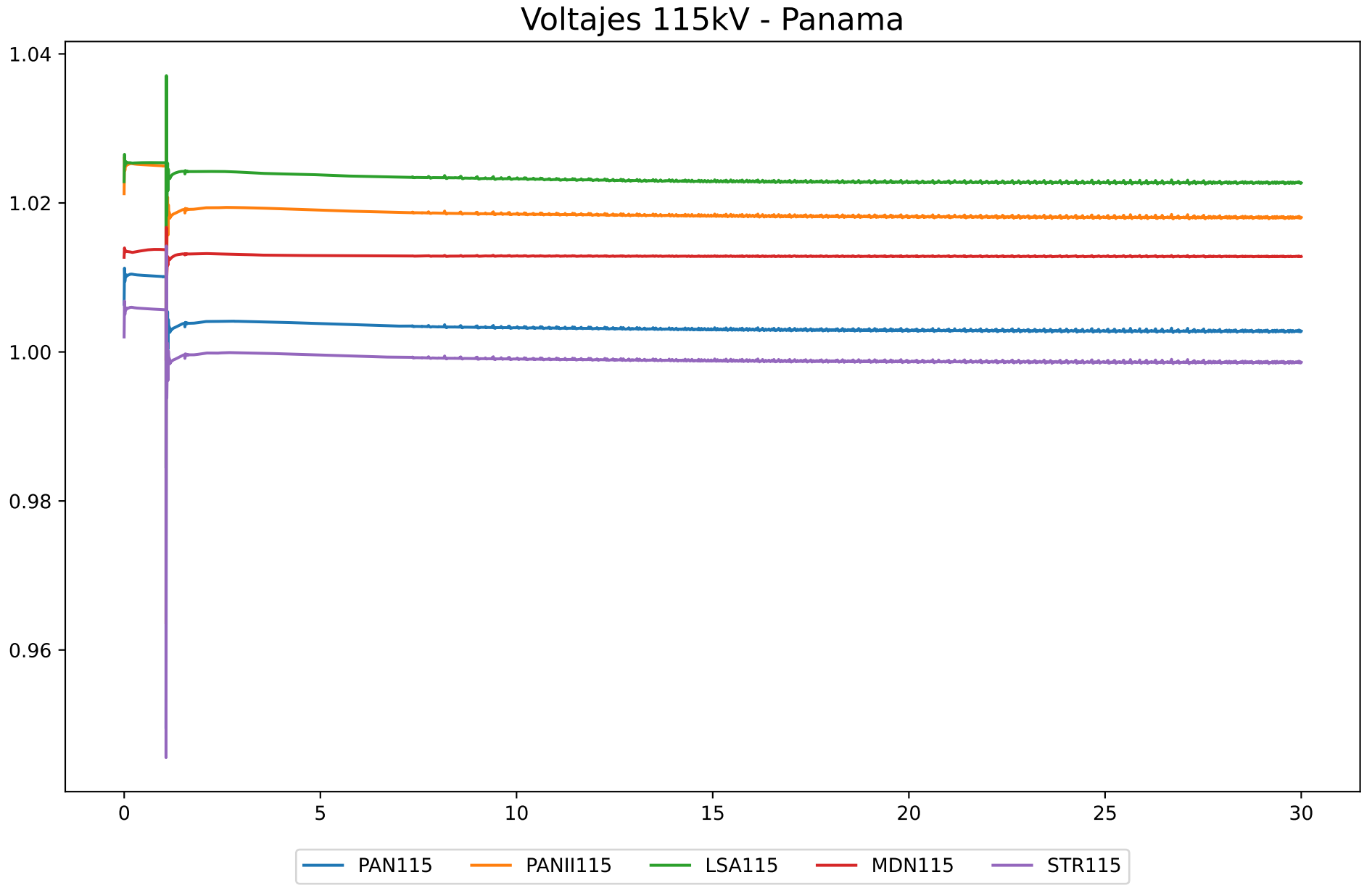
PAN115
PANII115
LSA115
MDN115
STR115

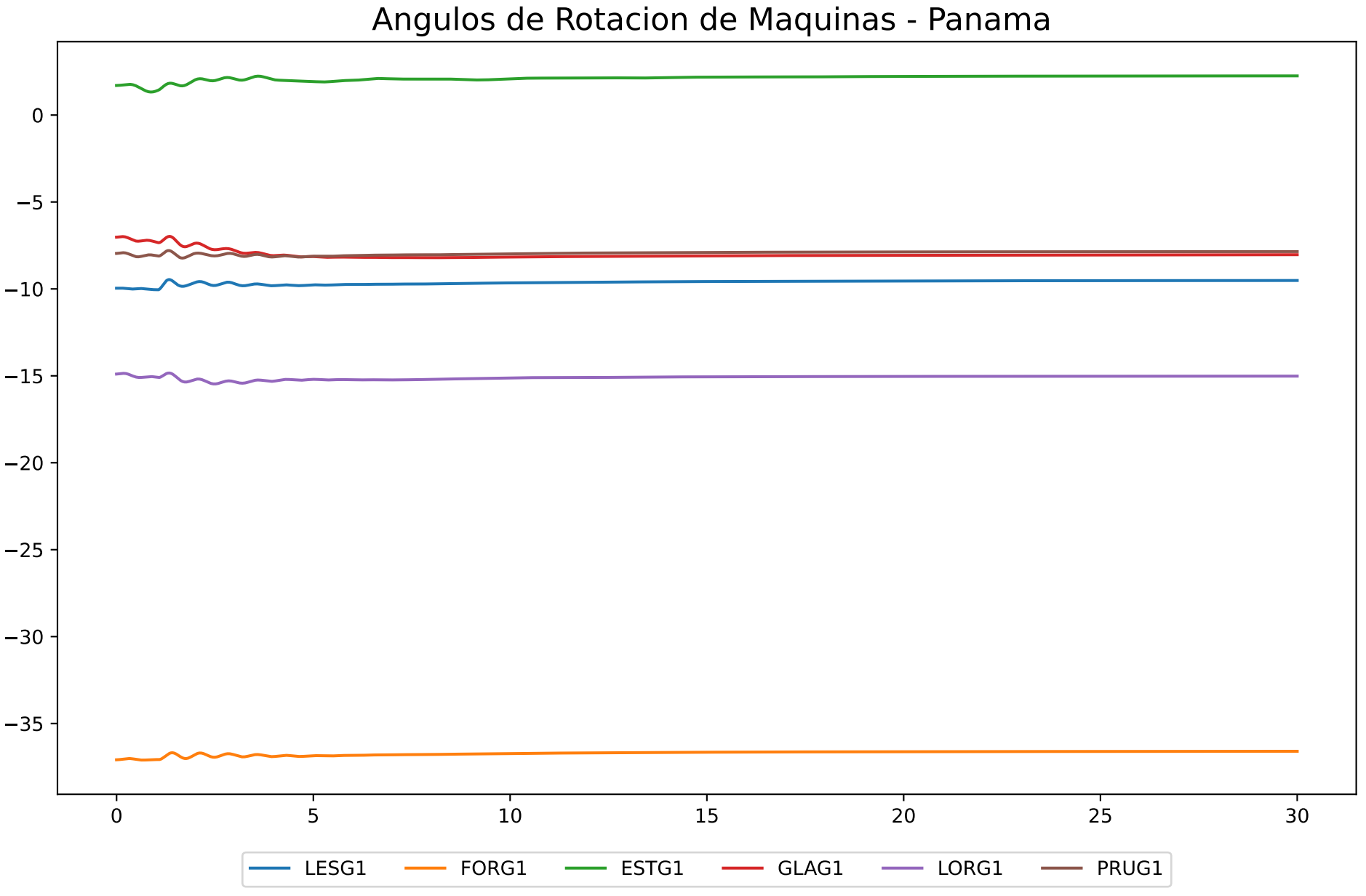

Angulos de Rotacion de Maquinas - Panama
−10.0
−12.5
−15.0
−17.5
−20.0
−22.5
−25.0
−27.5
0
5
10
15
20
25
30
LESG1
ESTG1
GLAG1
LORG1
PRUG1

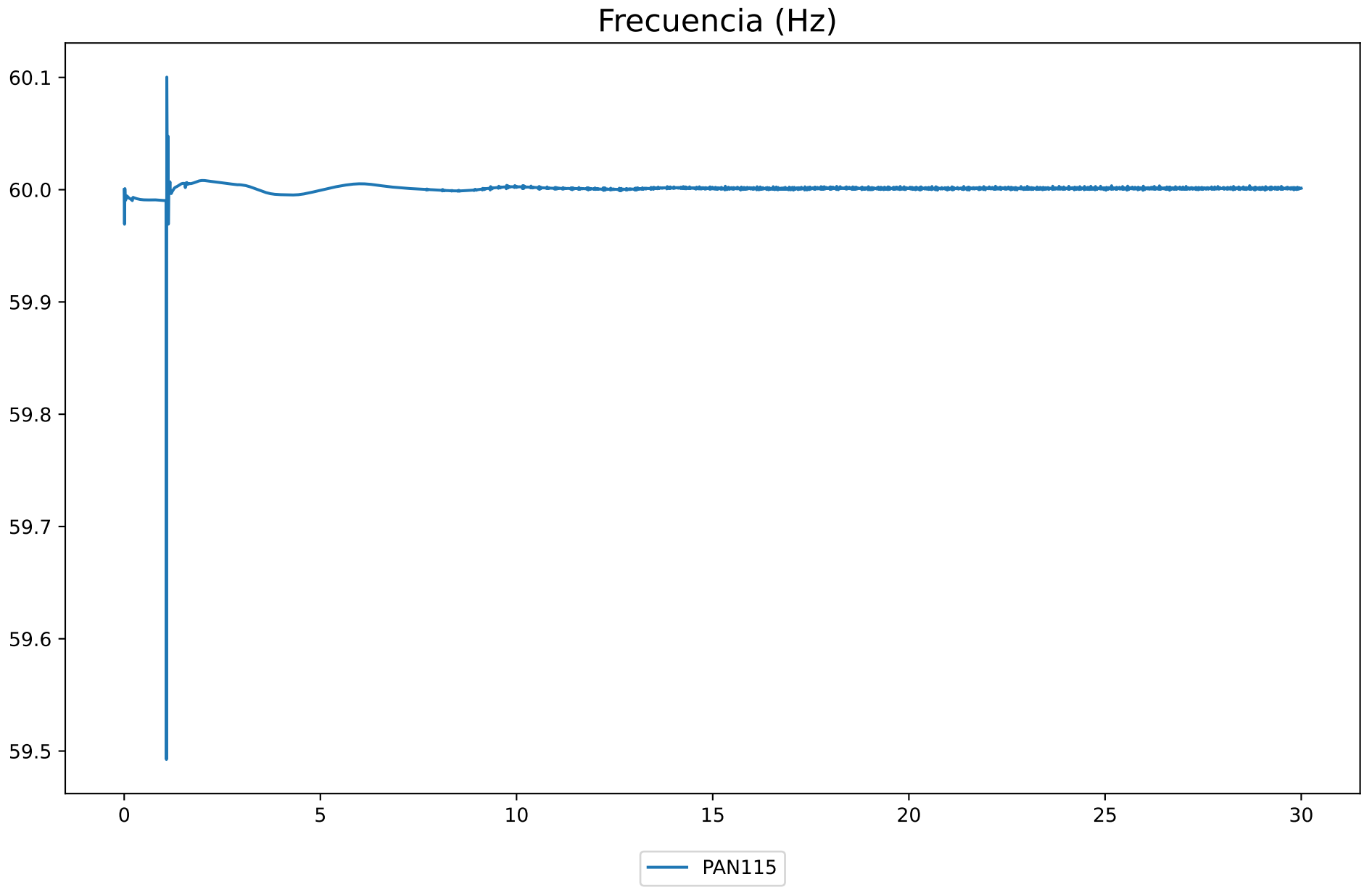
2034

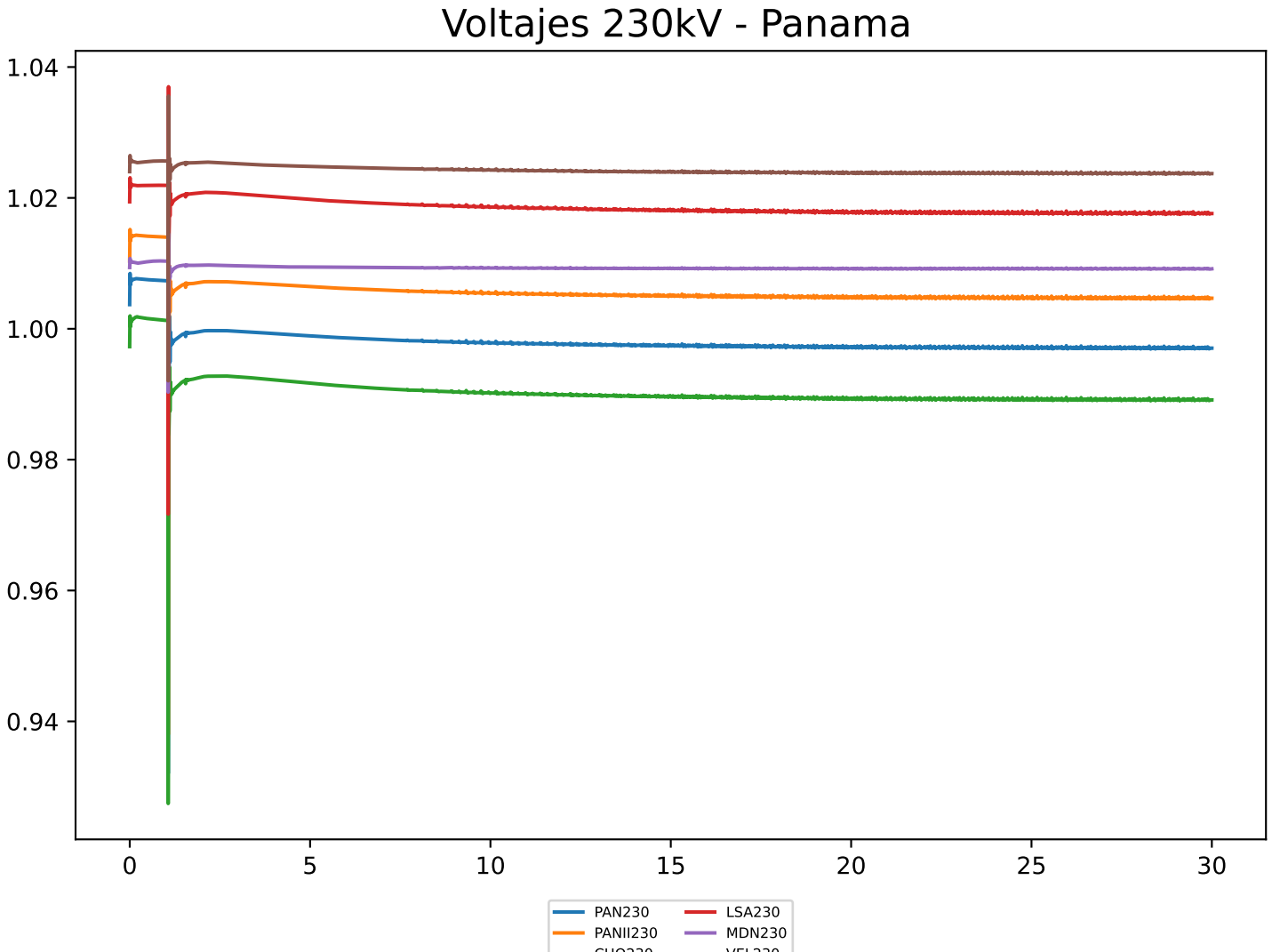

Frecuencia (Hz)
60.0
59.9
59.8
59.7
59.6
0
5
10
15
20
25
30
PAN115

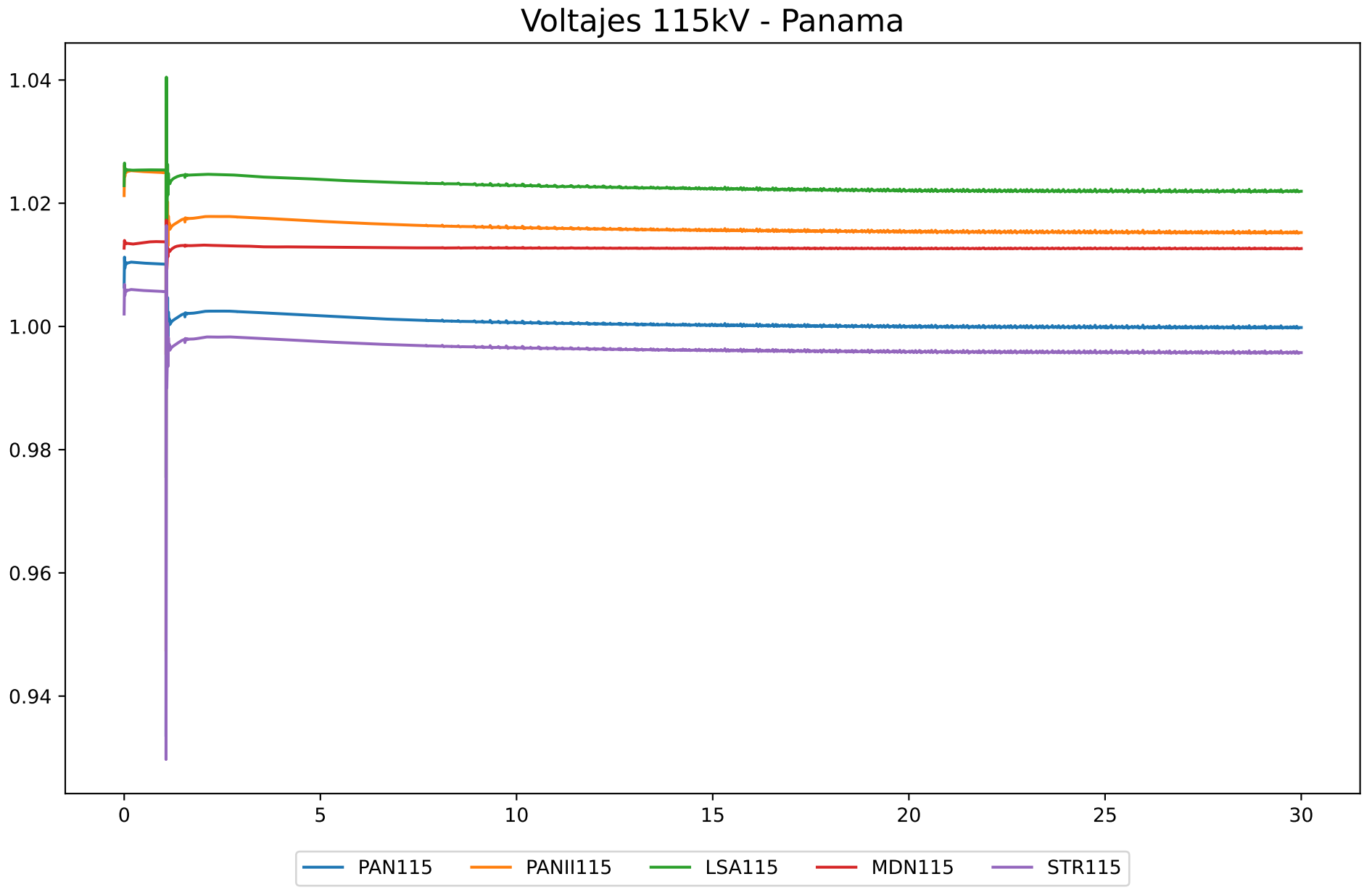

Voltajes 230kV - Panama
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

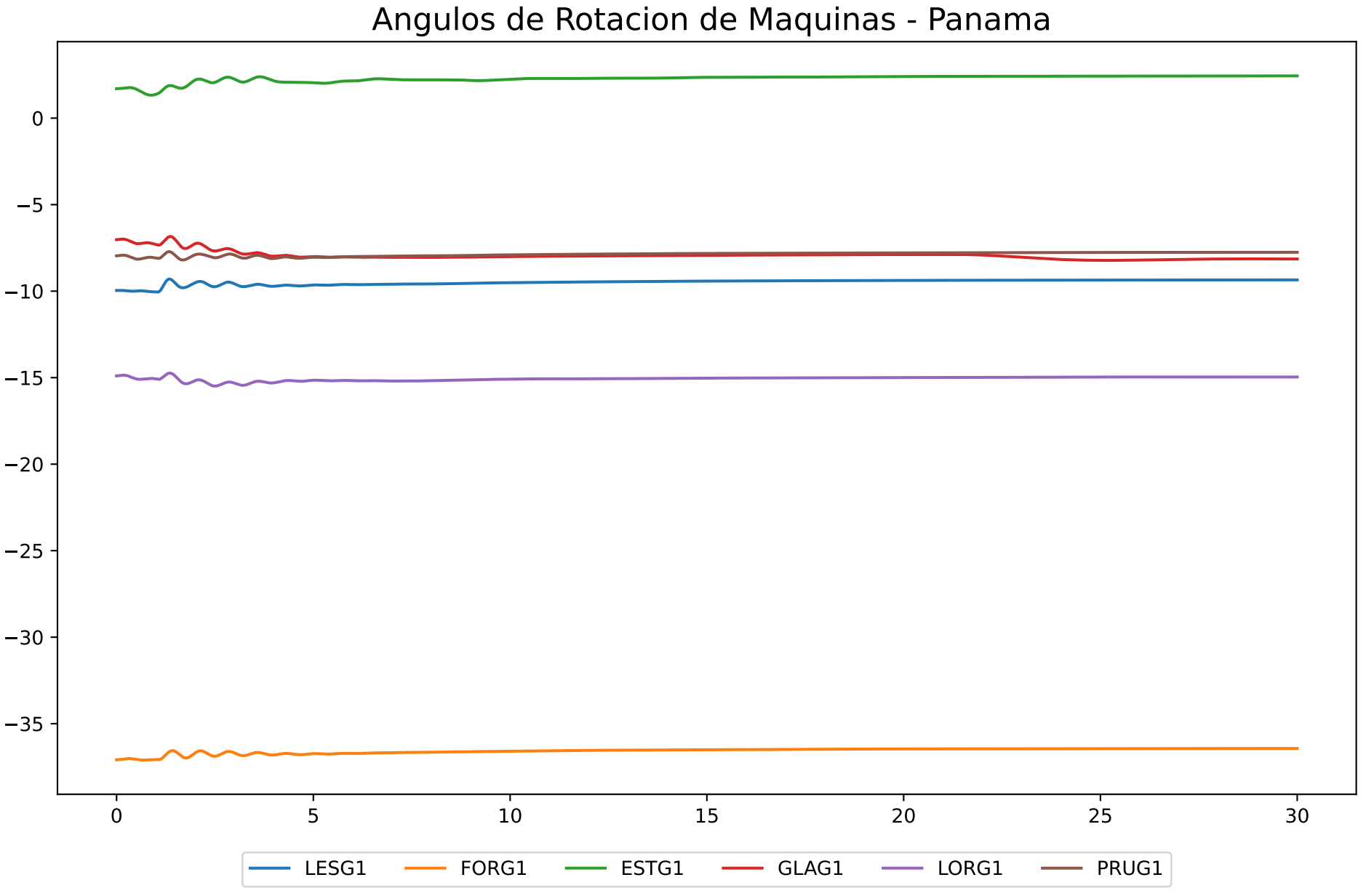

Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

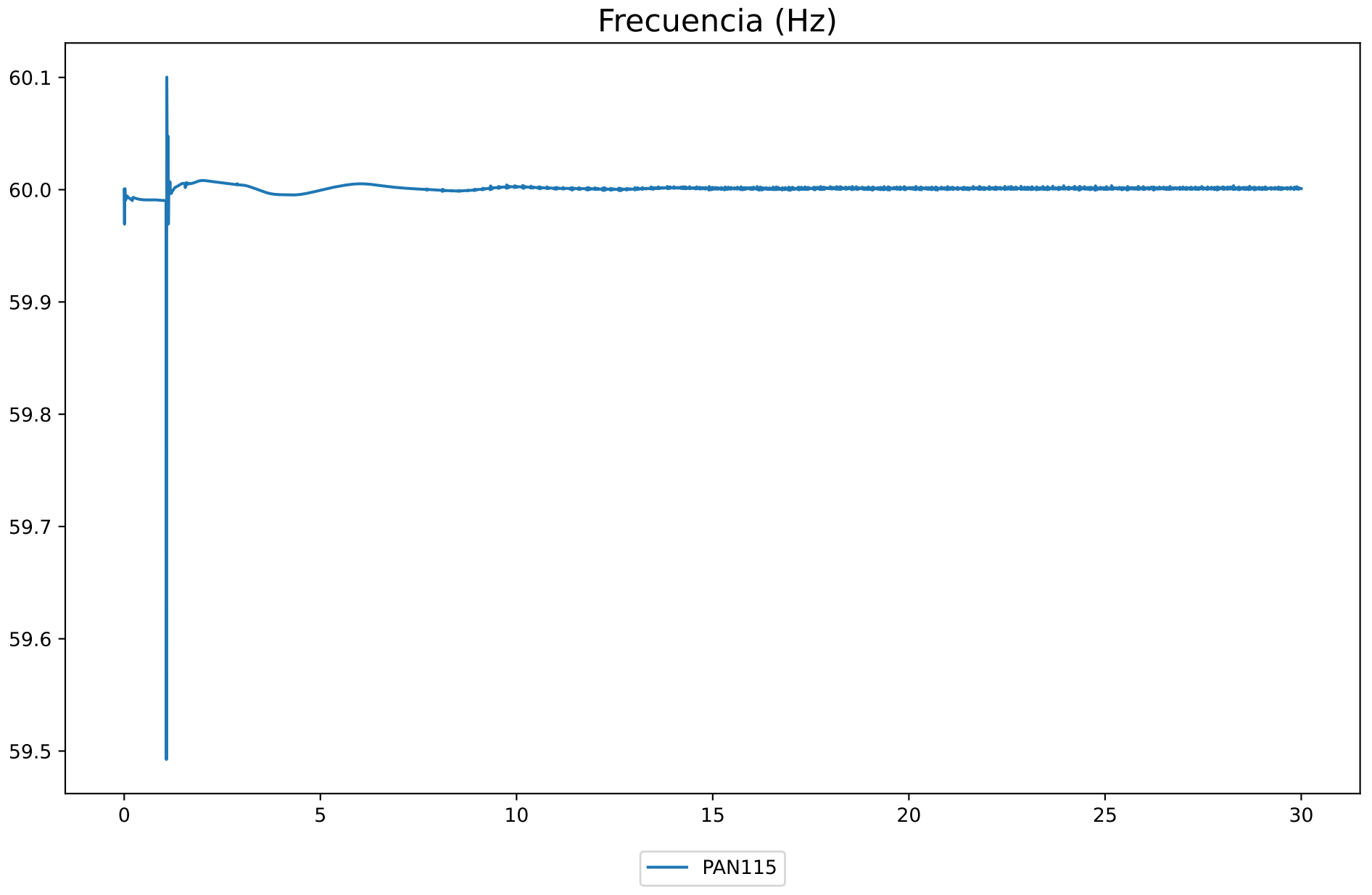

Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.1
60.0
59.9
59.8
59.7
59.6
59.5
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
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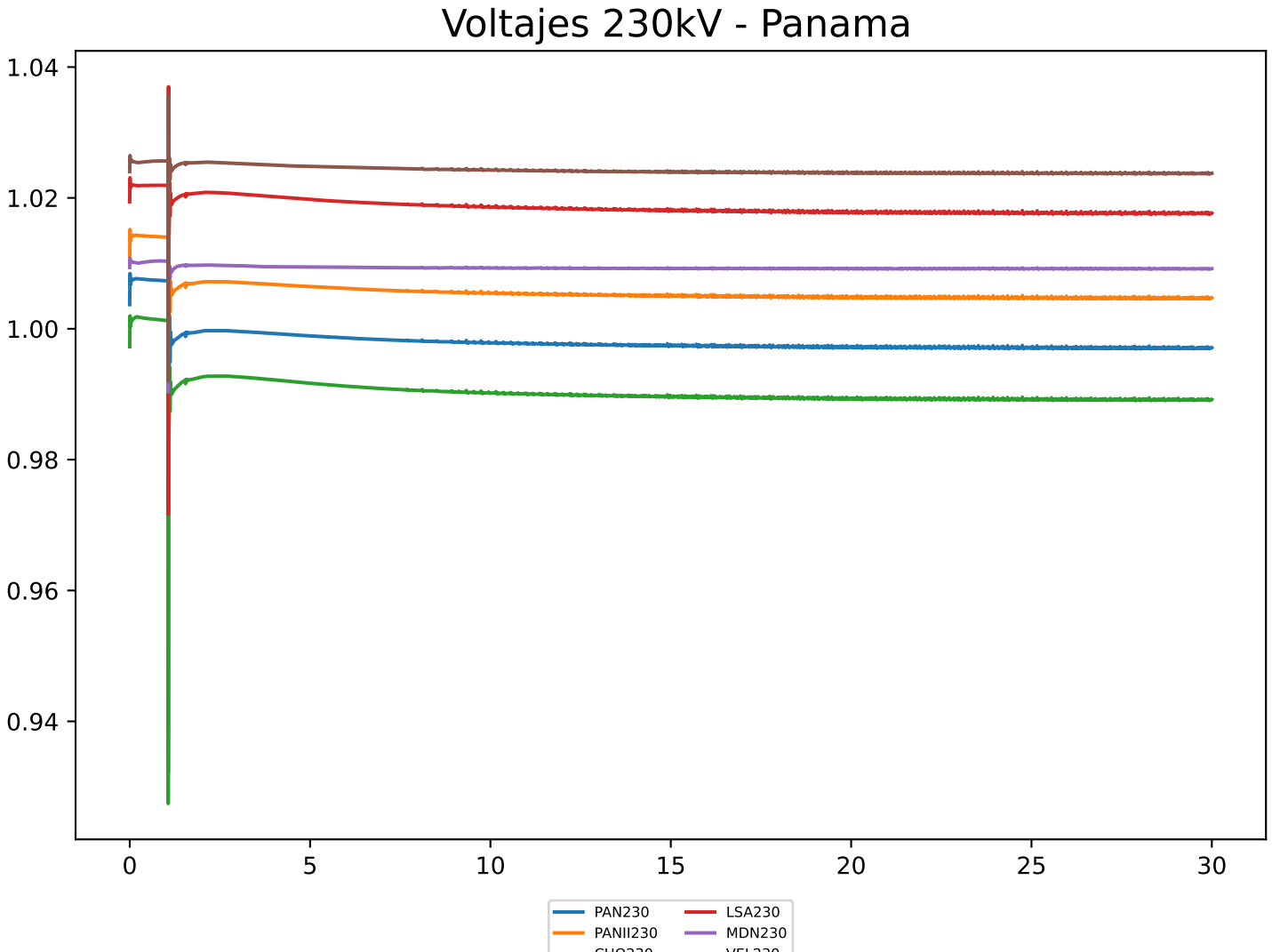
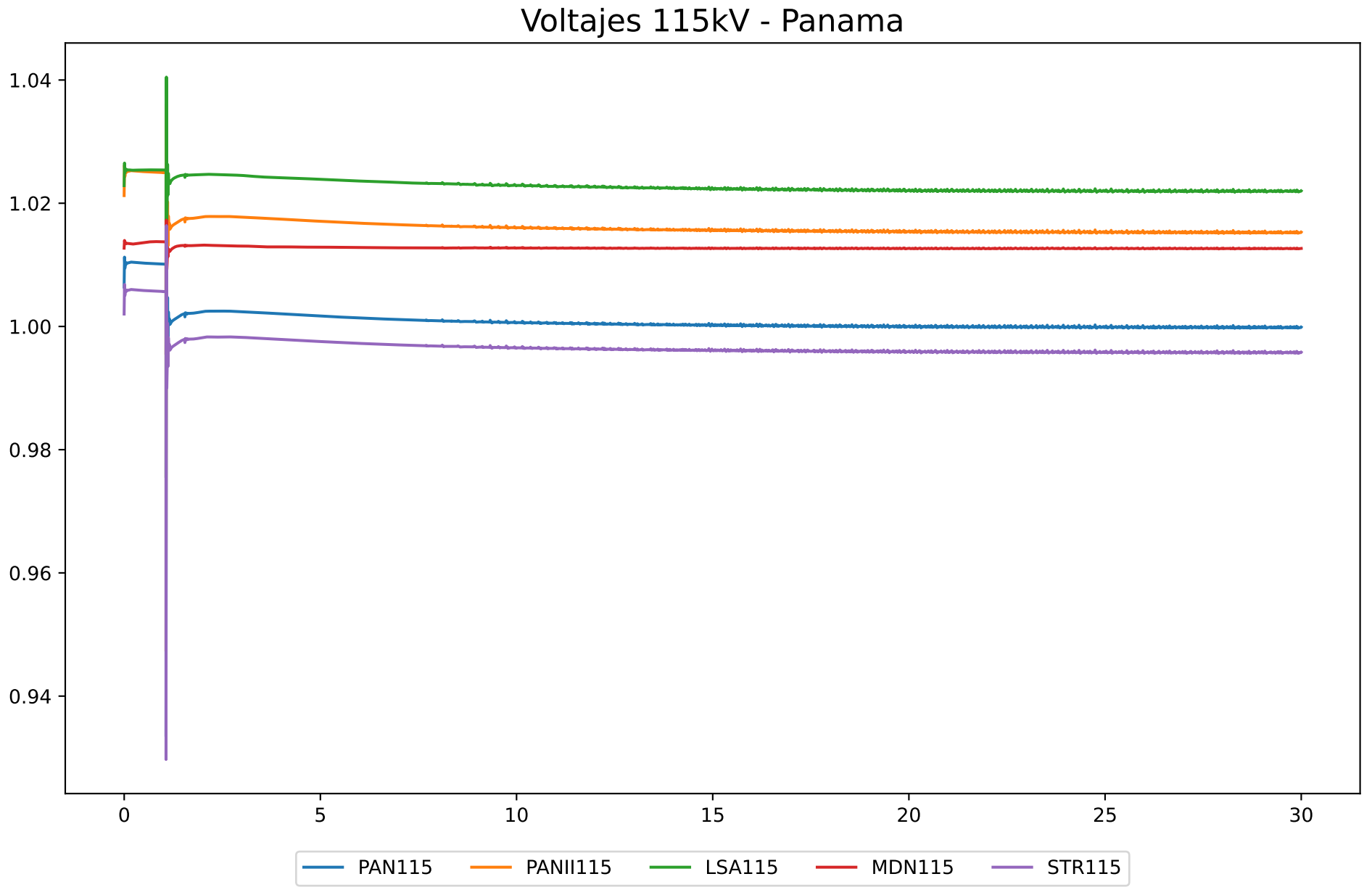
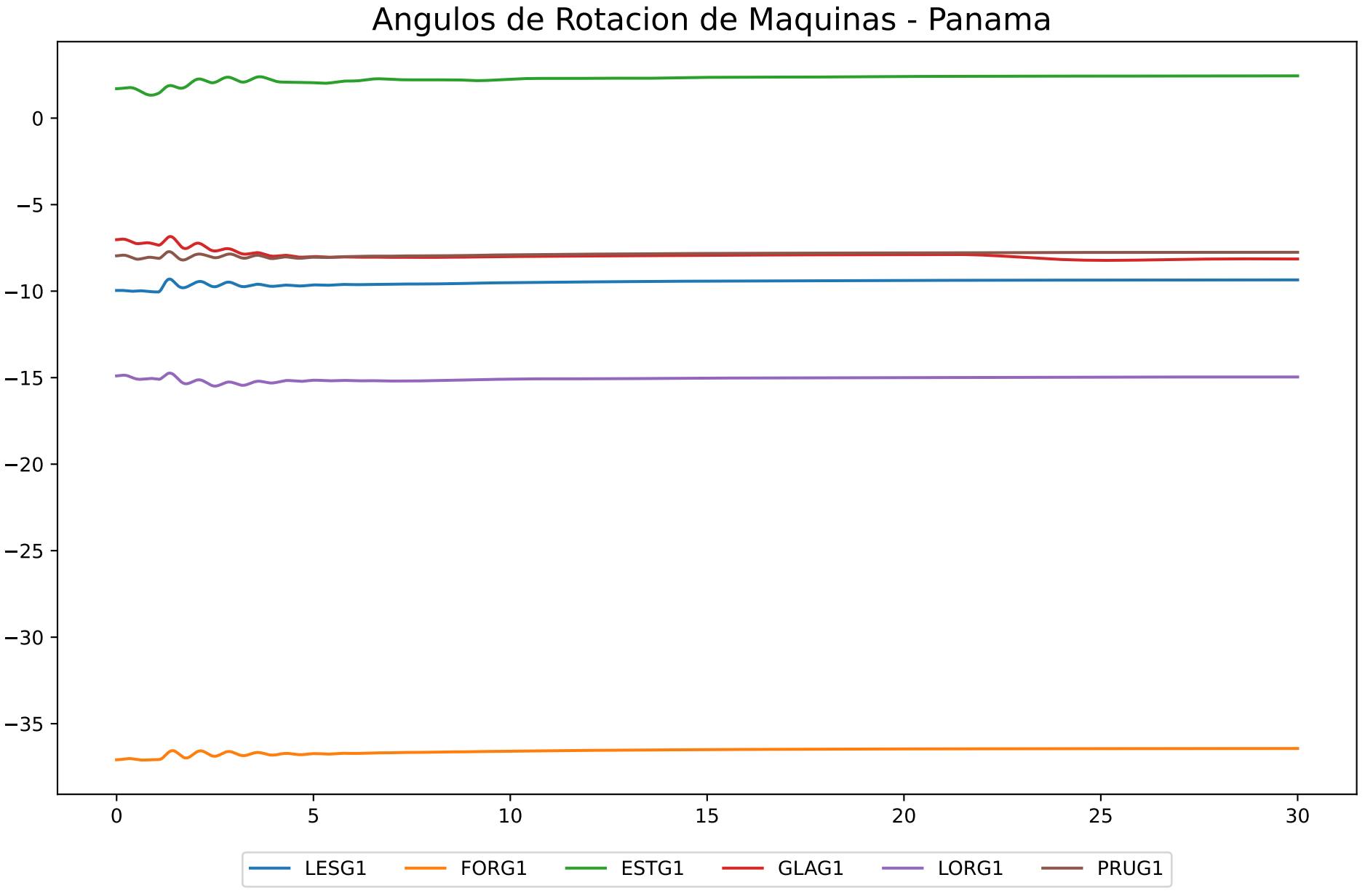
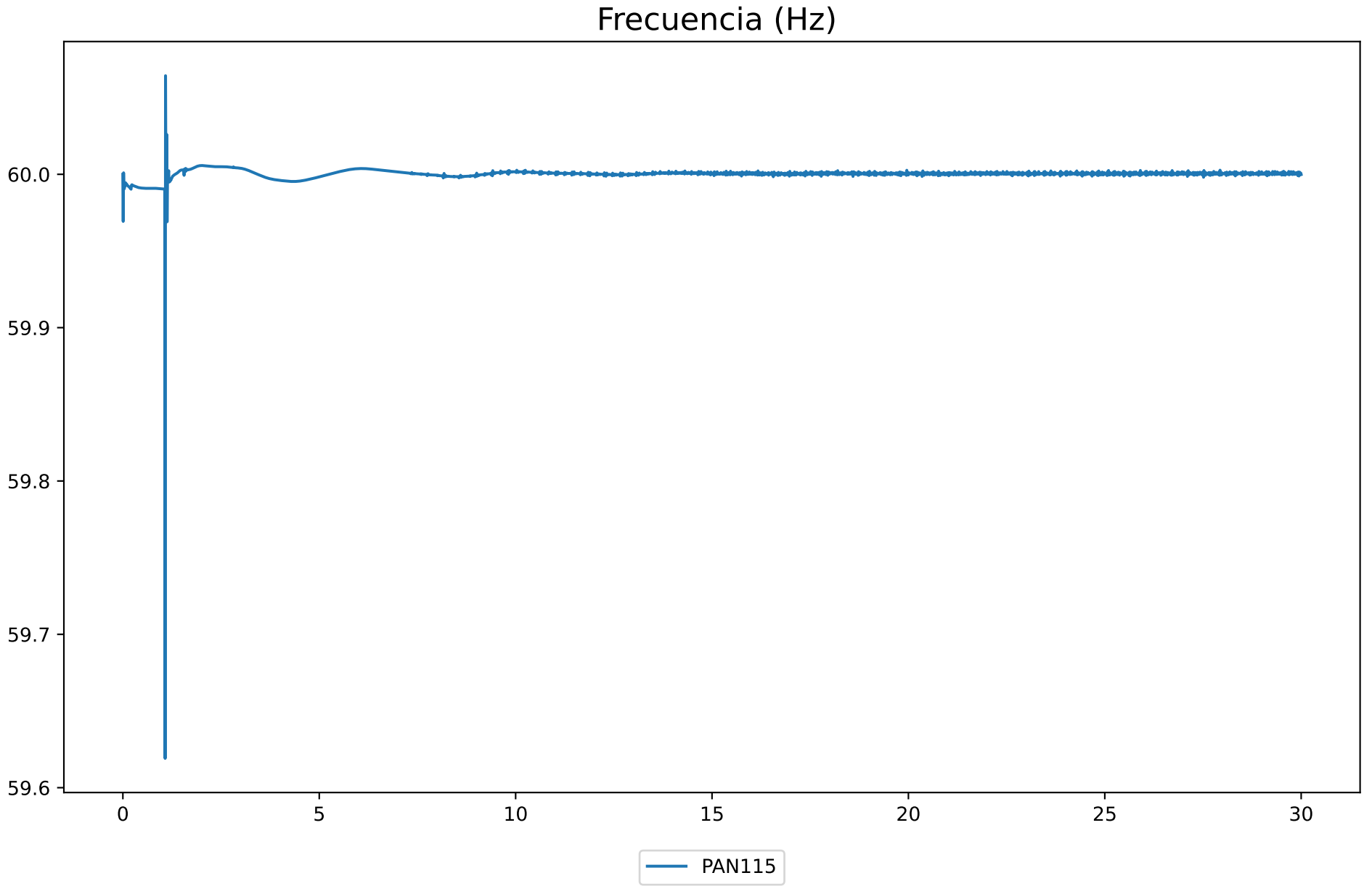
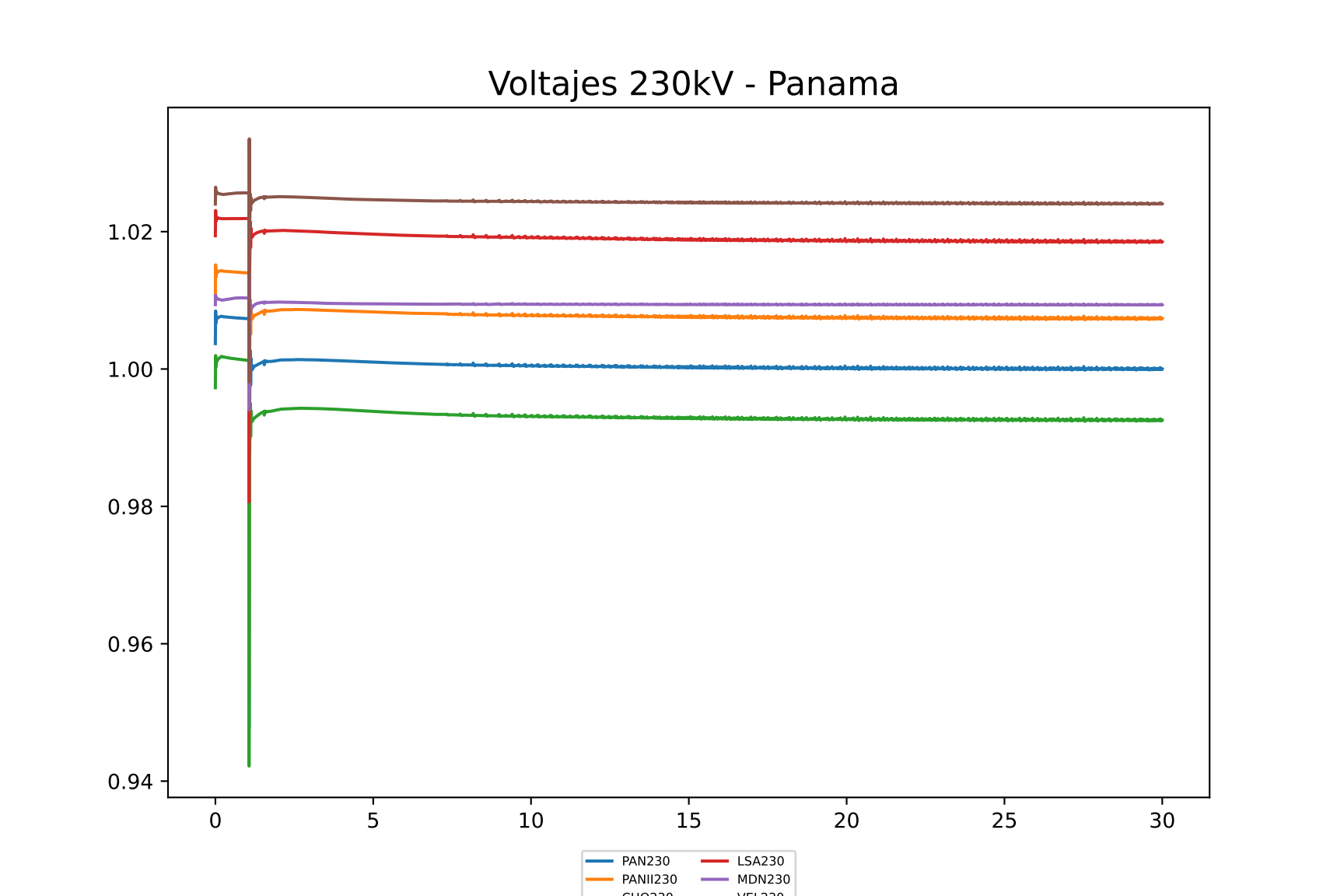
60.0
59.9
59.8
59.7
59.6
59.5
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.0
59.9
59.8
59.7
59.6
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
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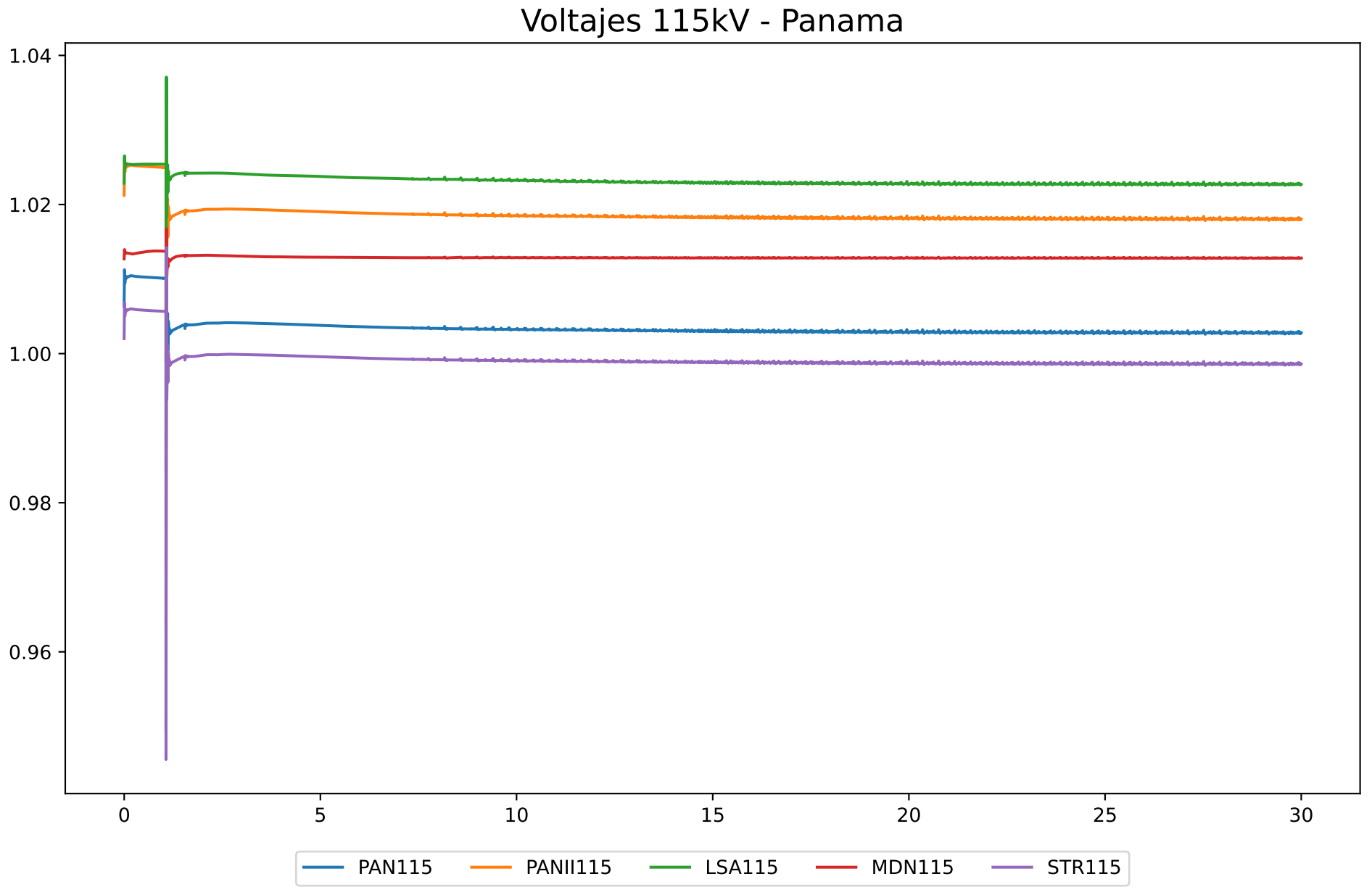
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
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10
15
20
25
30
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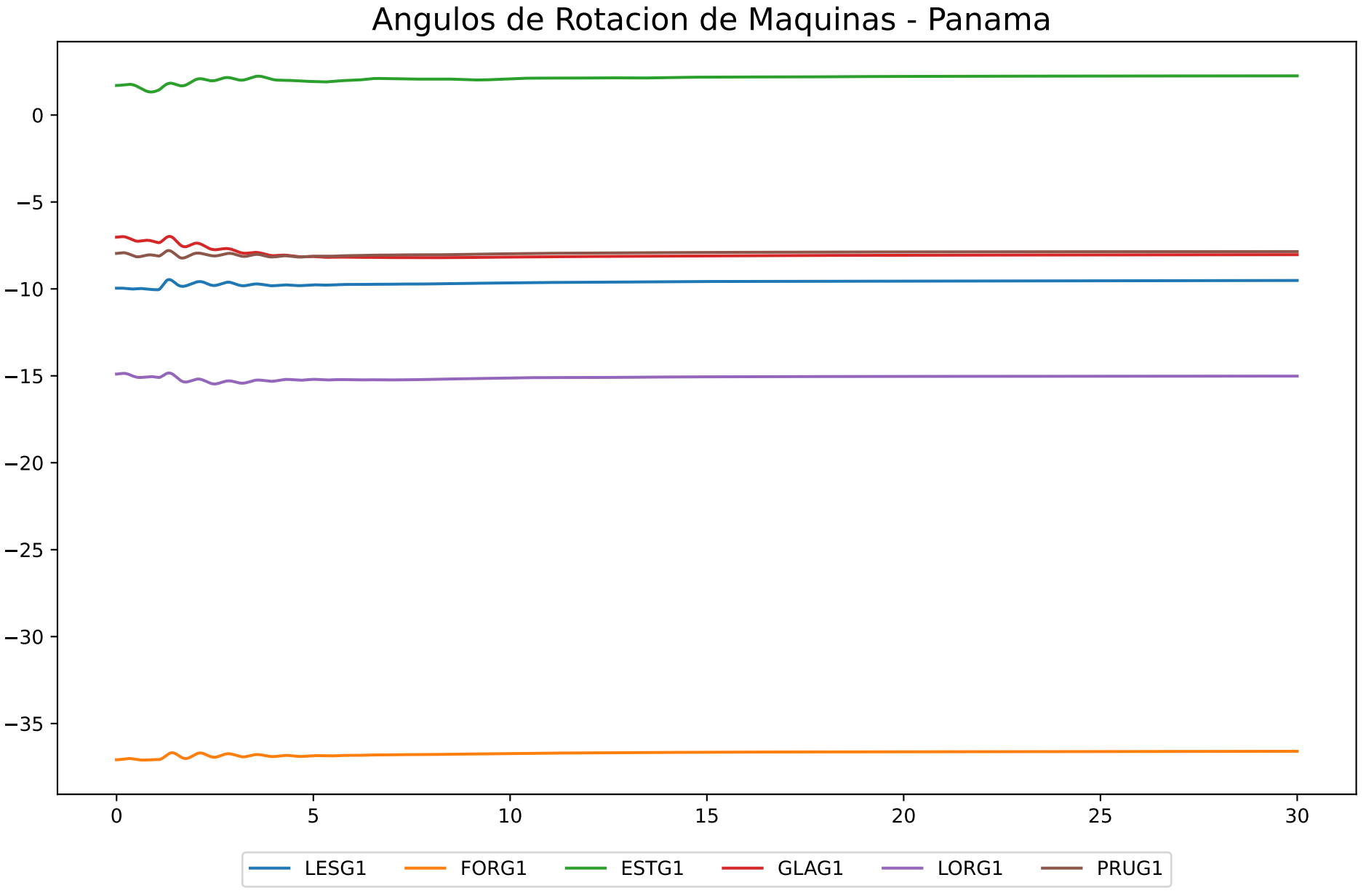
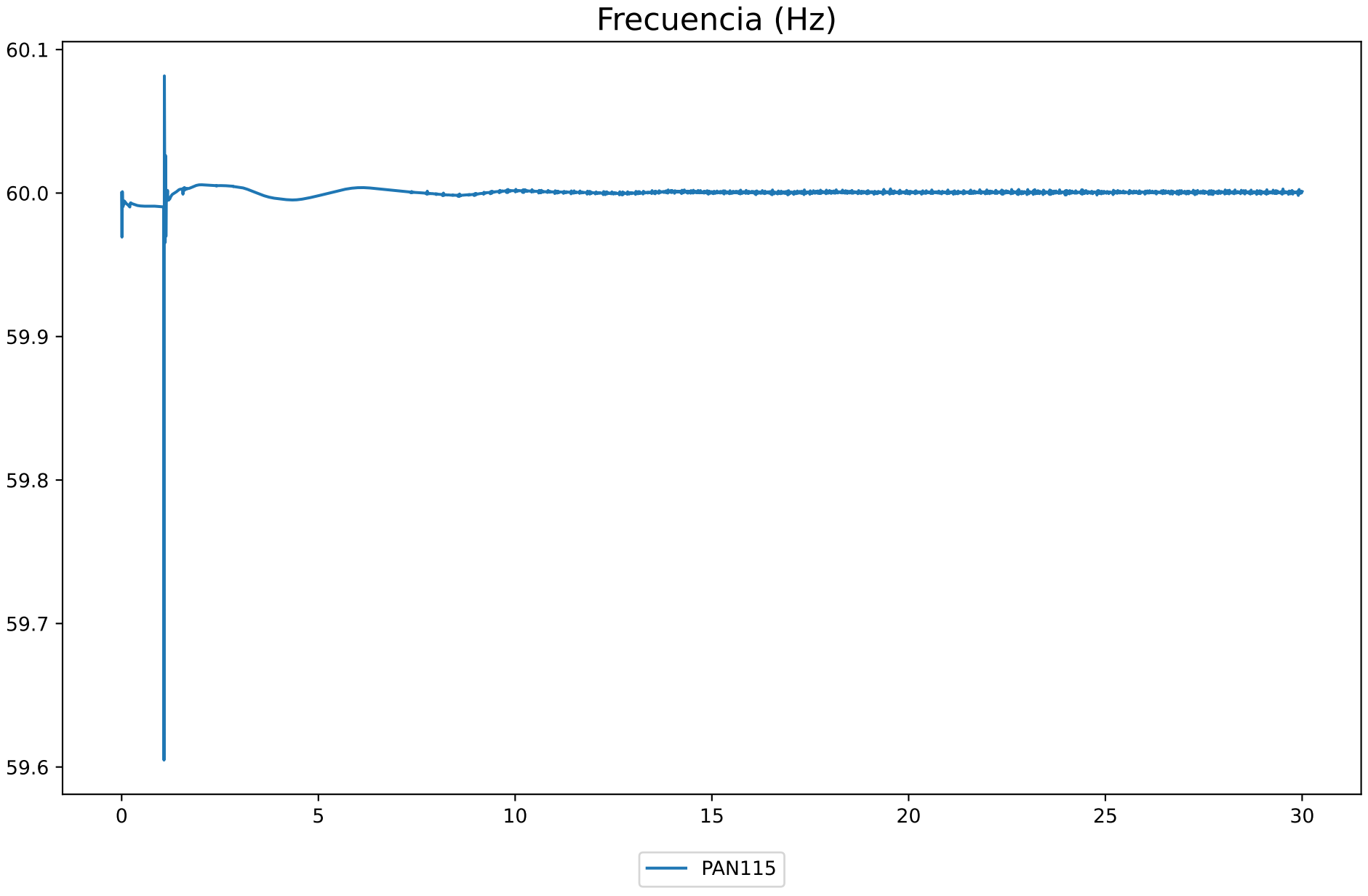
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.1
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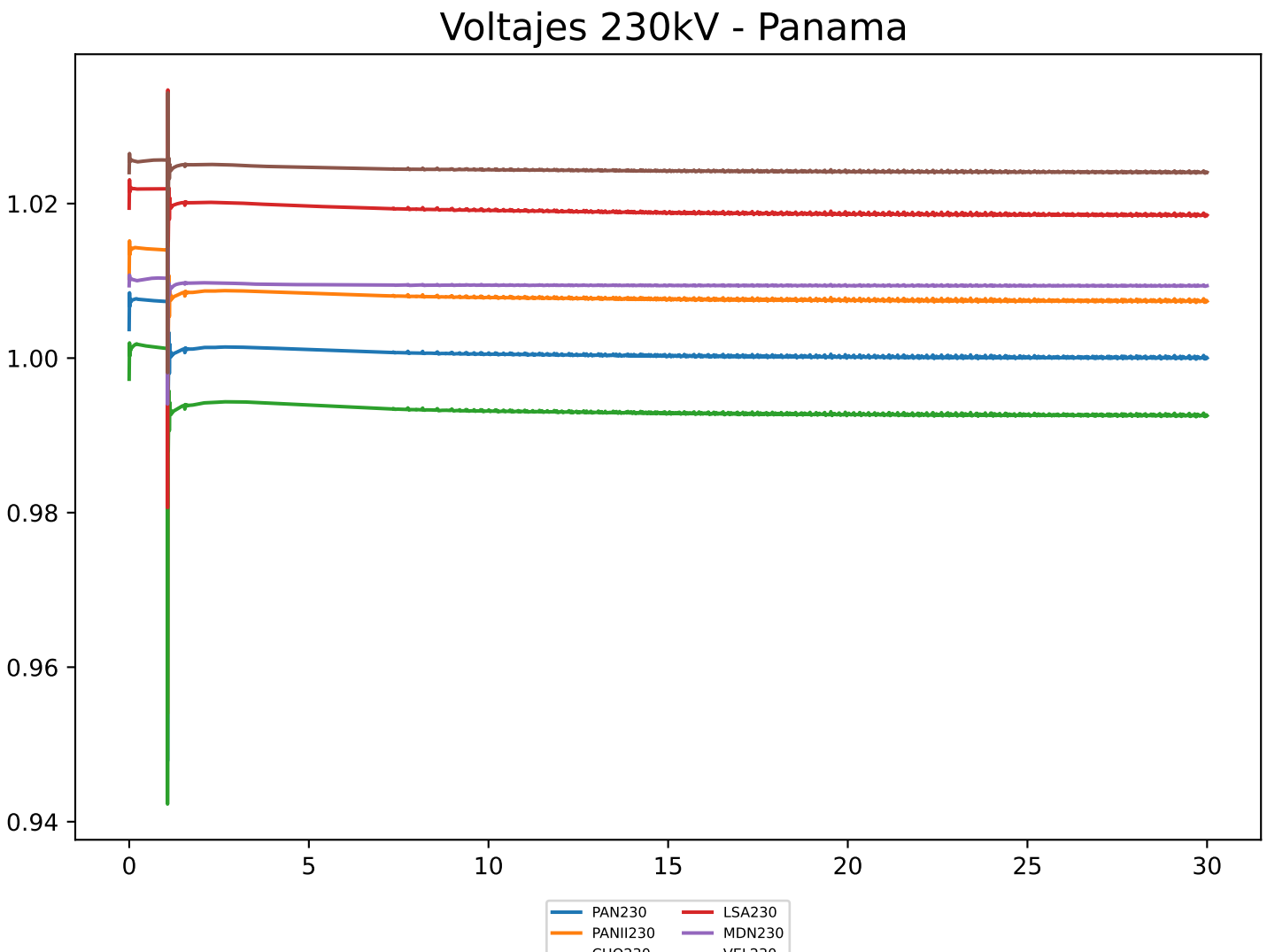
59.9
59.8
59.7
59.6
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
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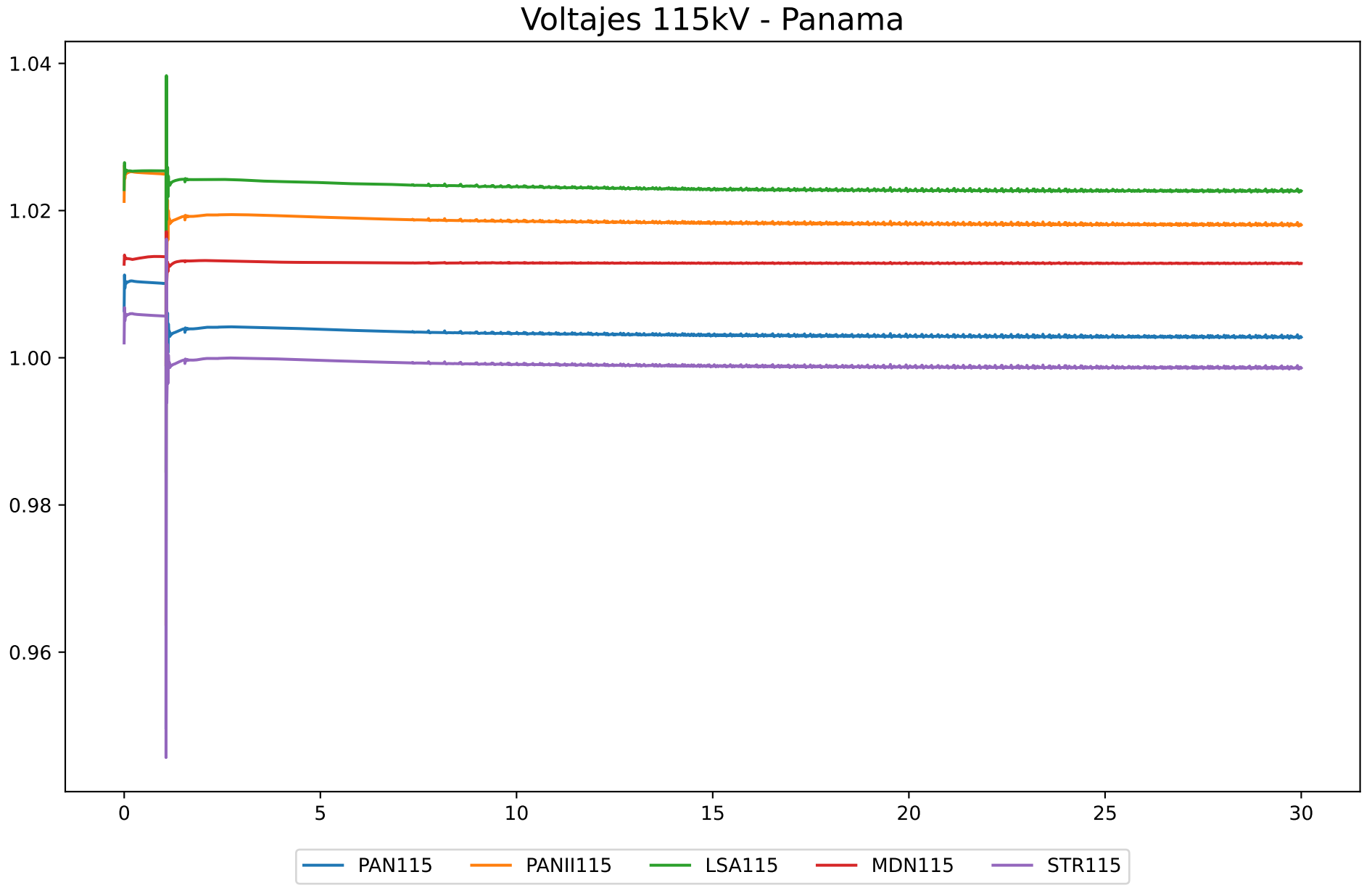
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
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0
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10
15
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25
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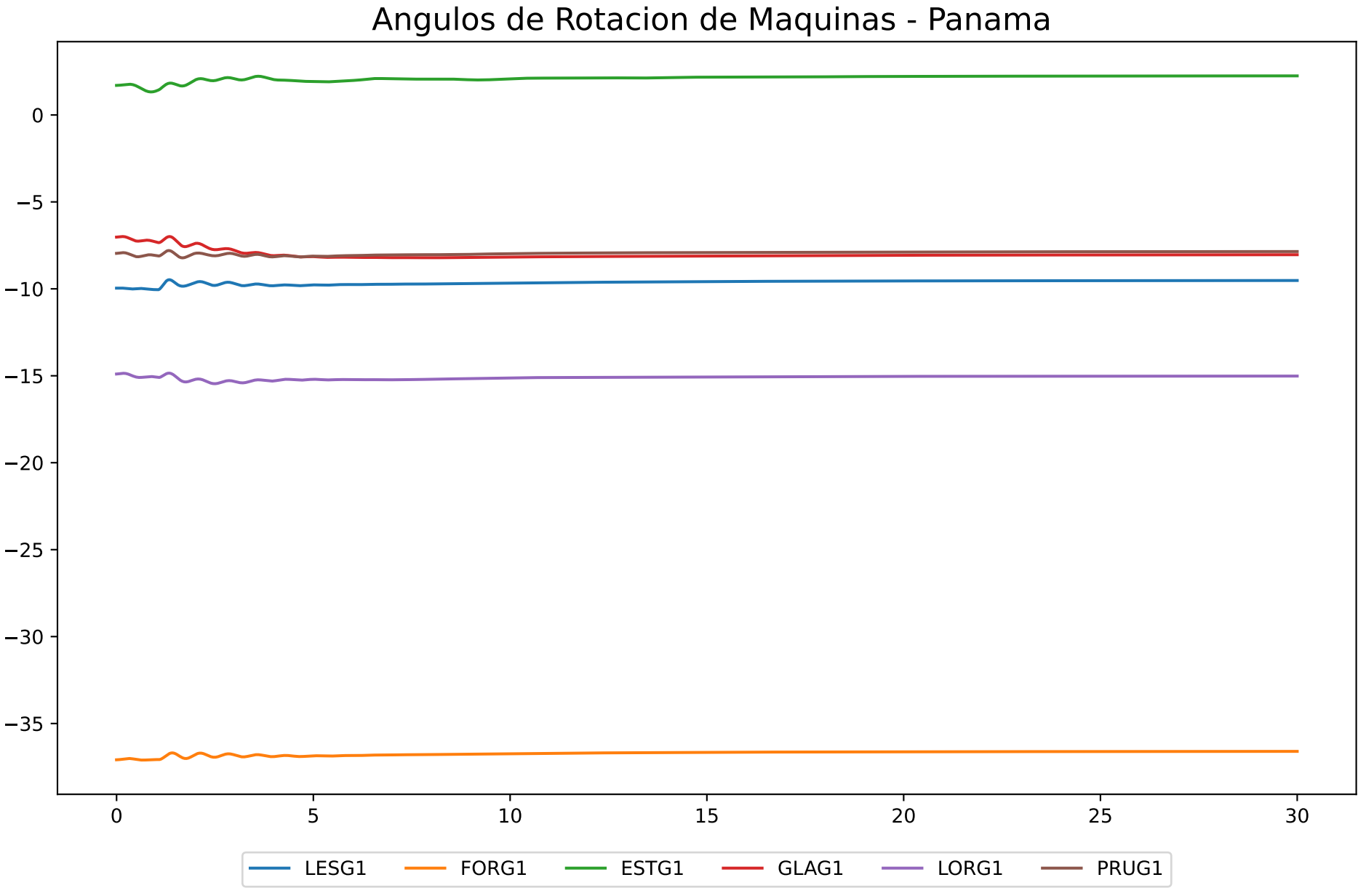
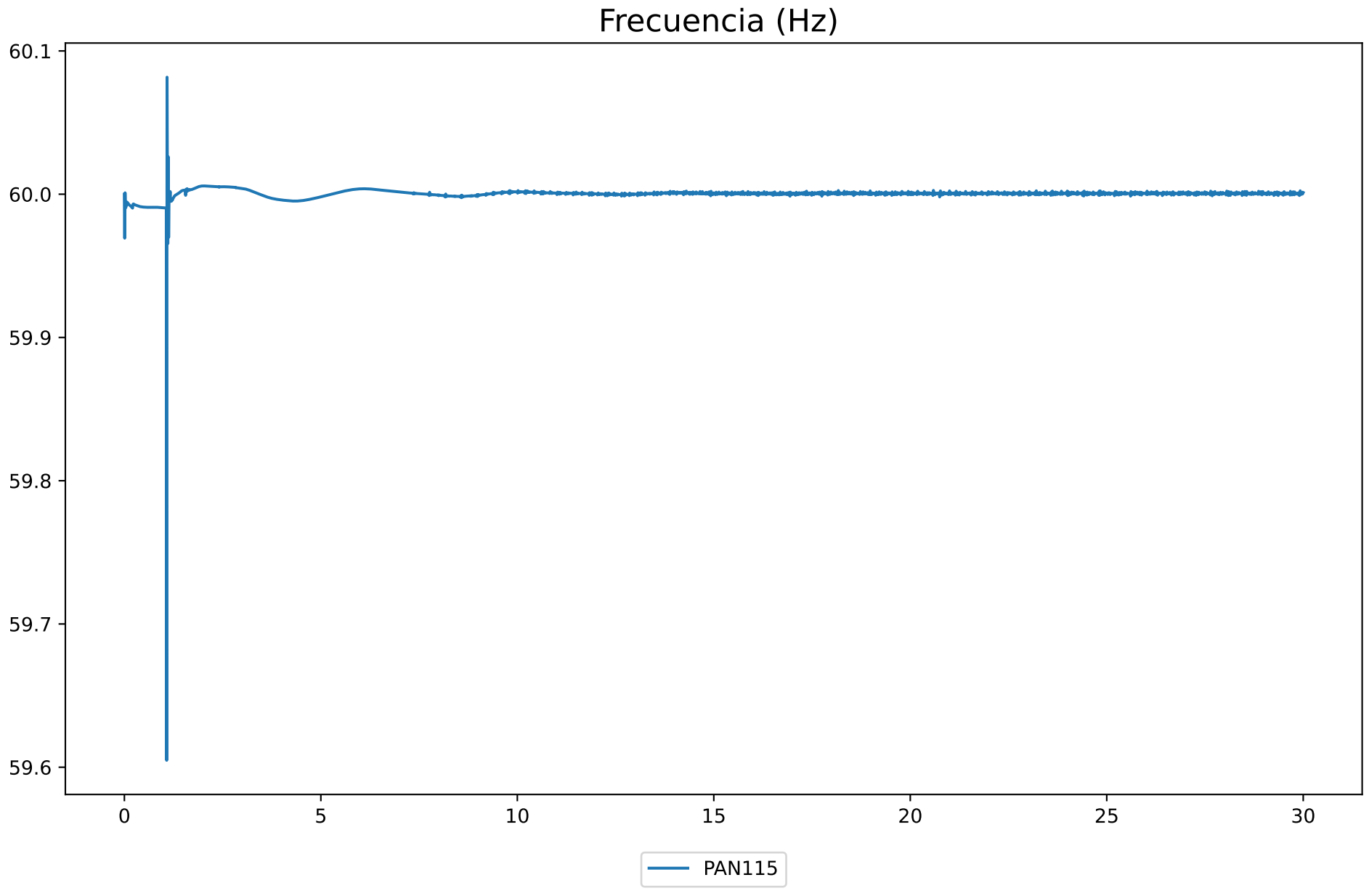
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
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59.9
59.8
59.7
59.6
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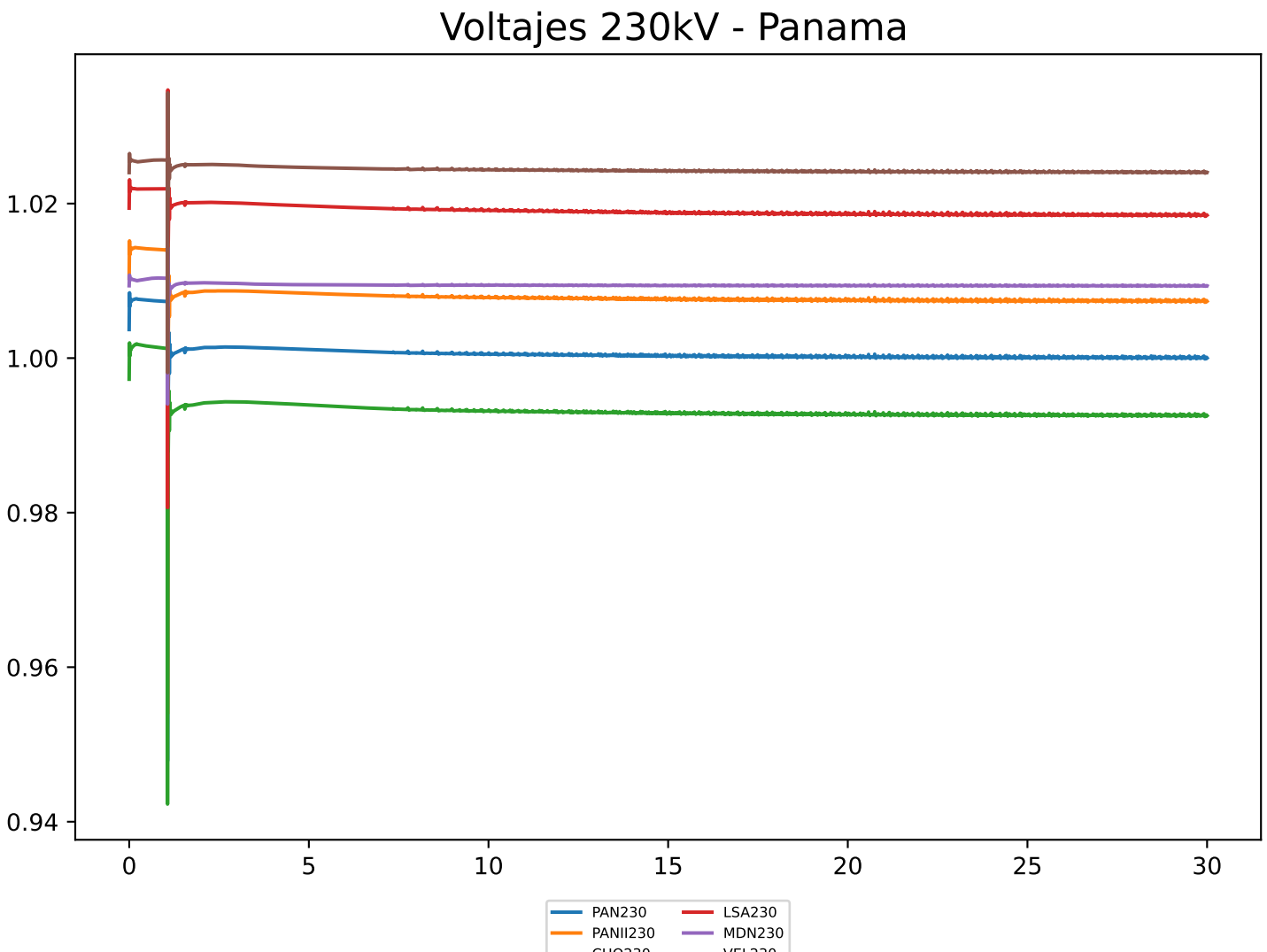
20
25
30
PAN115


Voltajes 230kV - Panama
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
30
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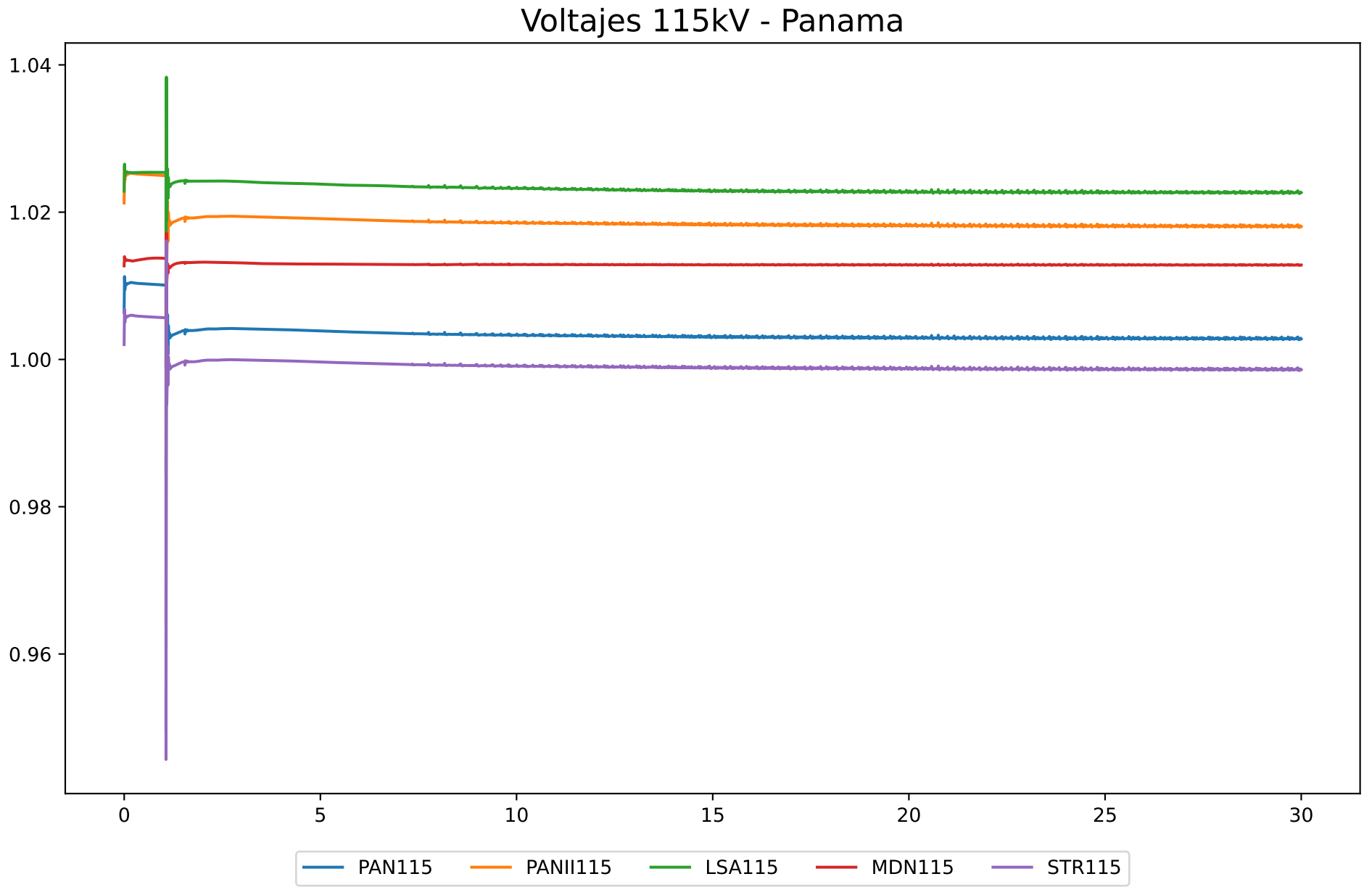
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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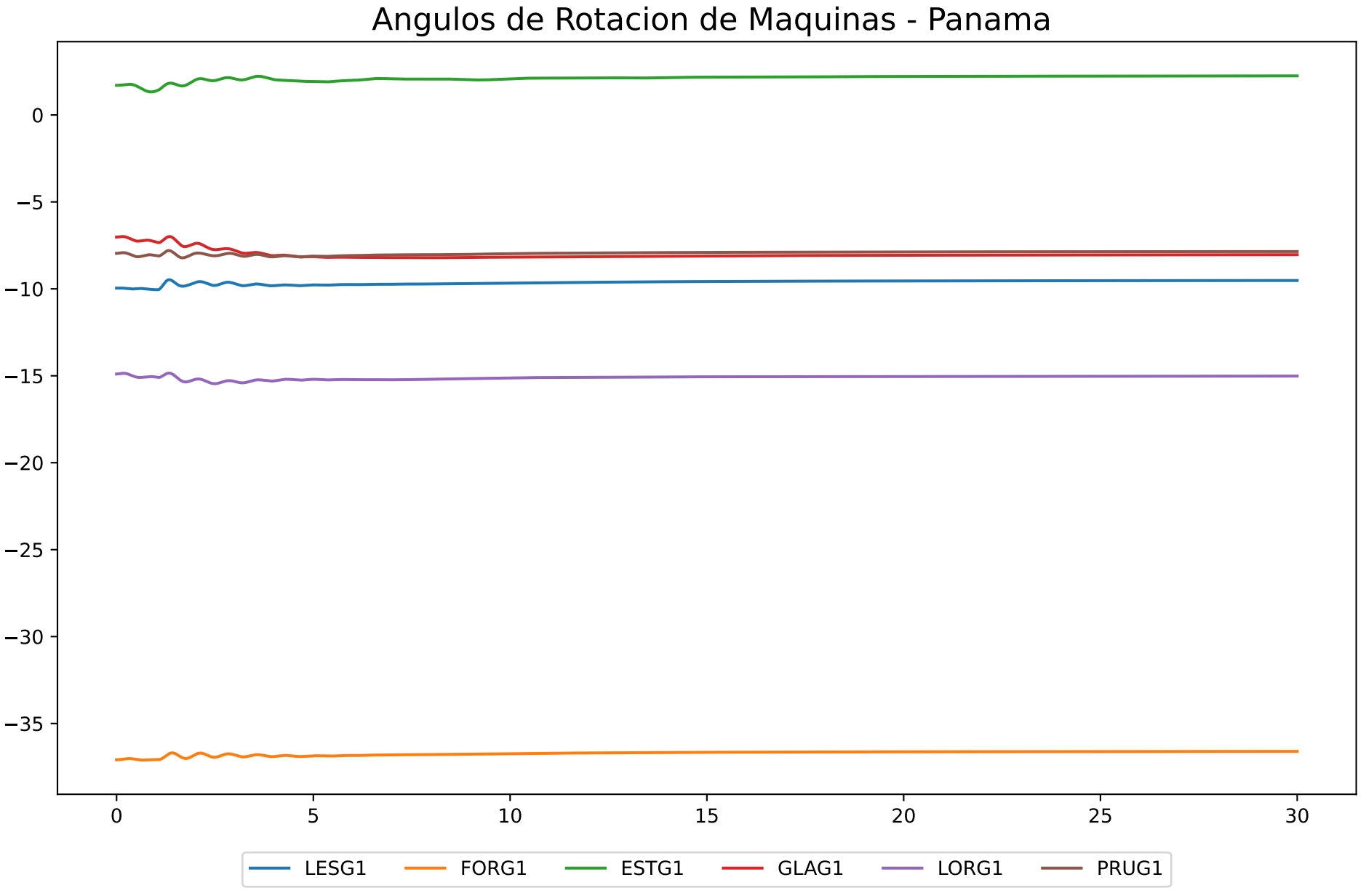
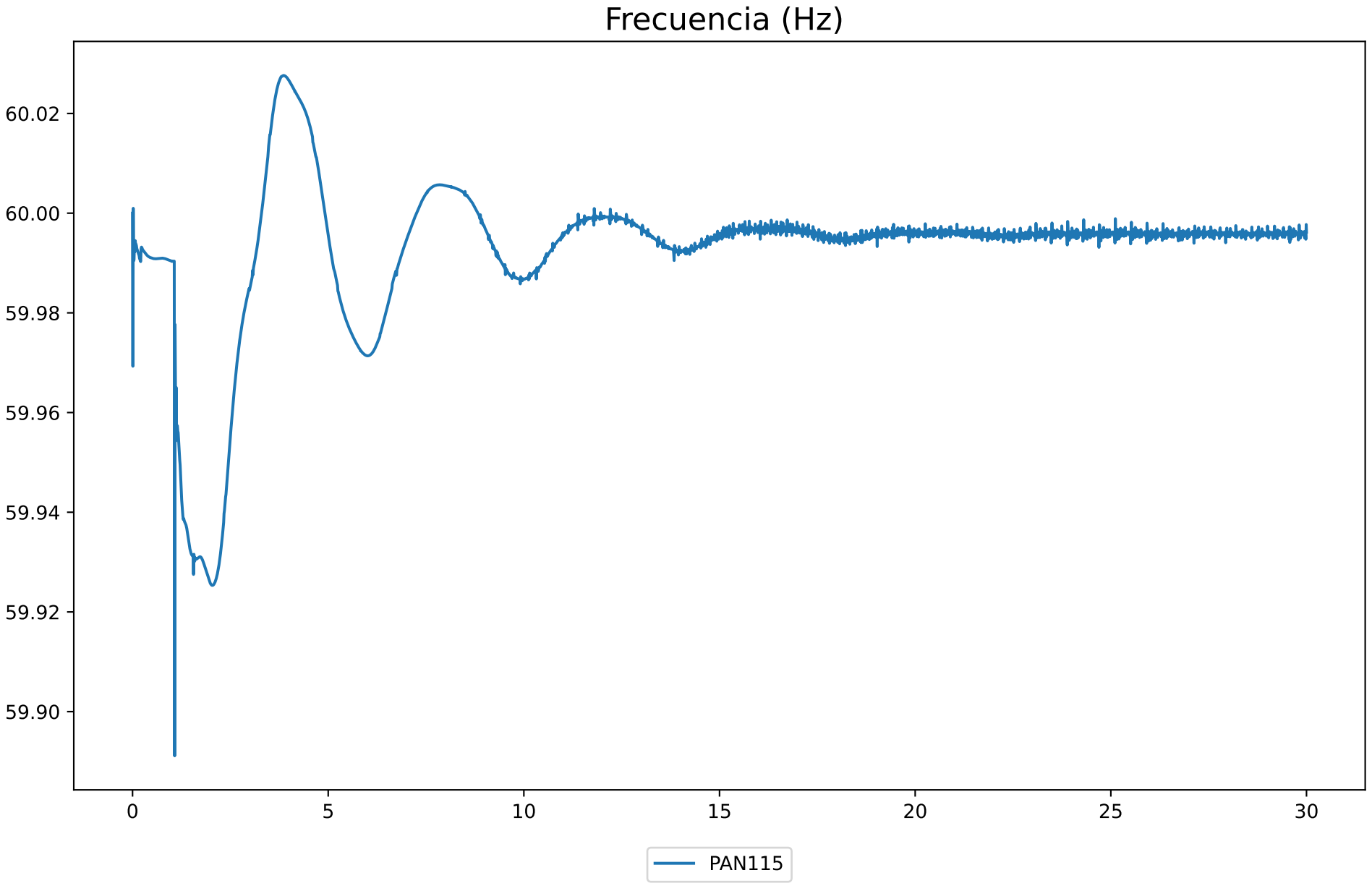
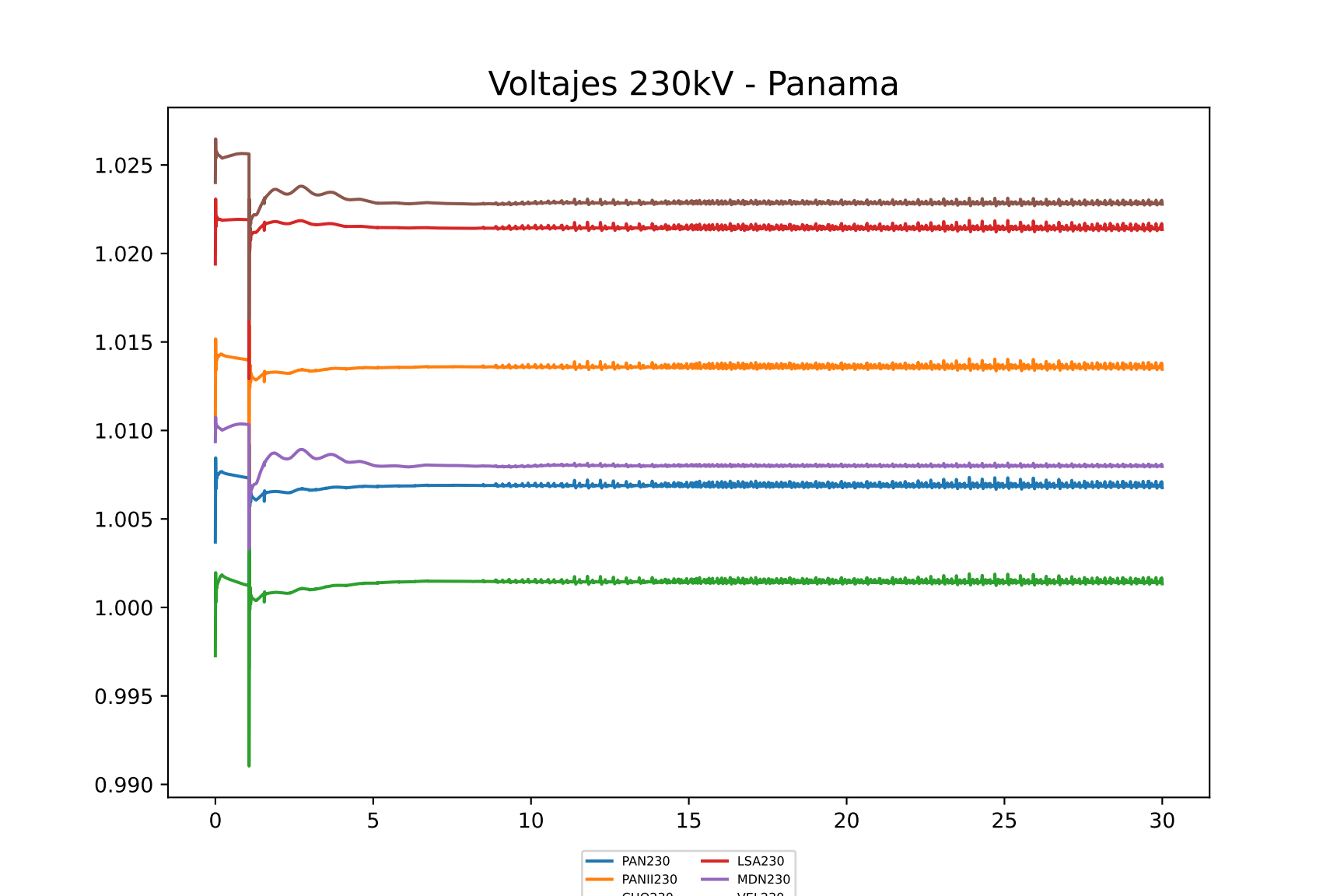
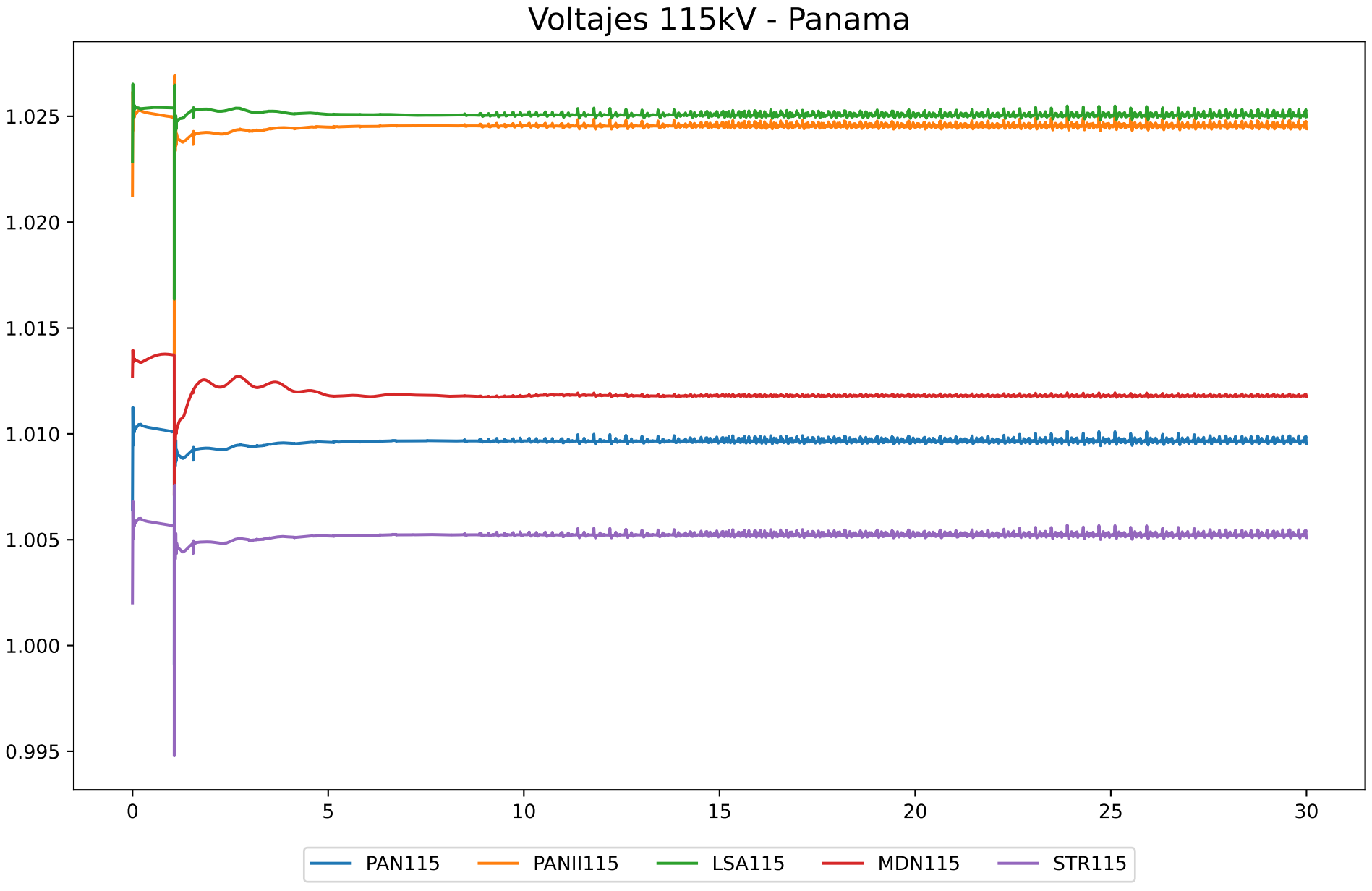
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.02
60.00
59.98
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0.990
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0
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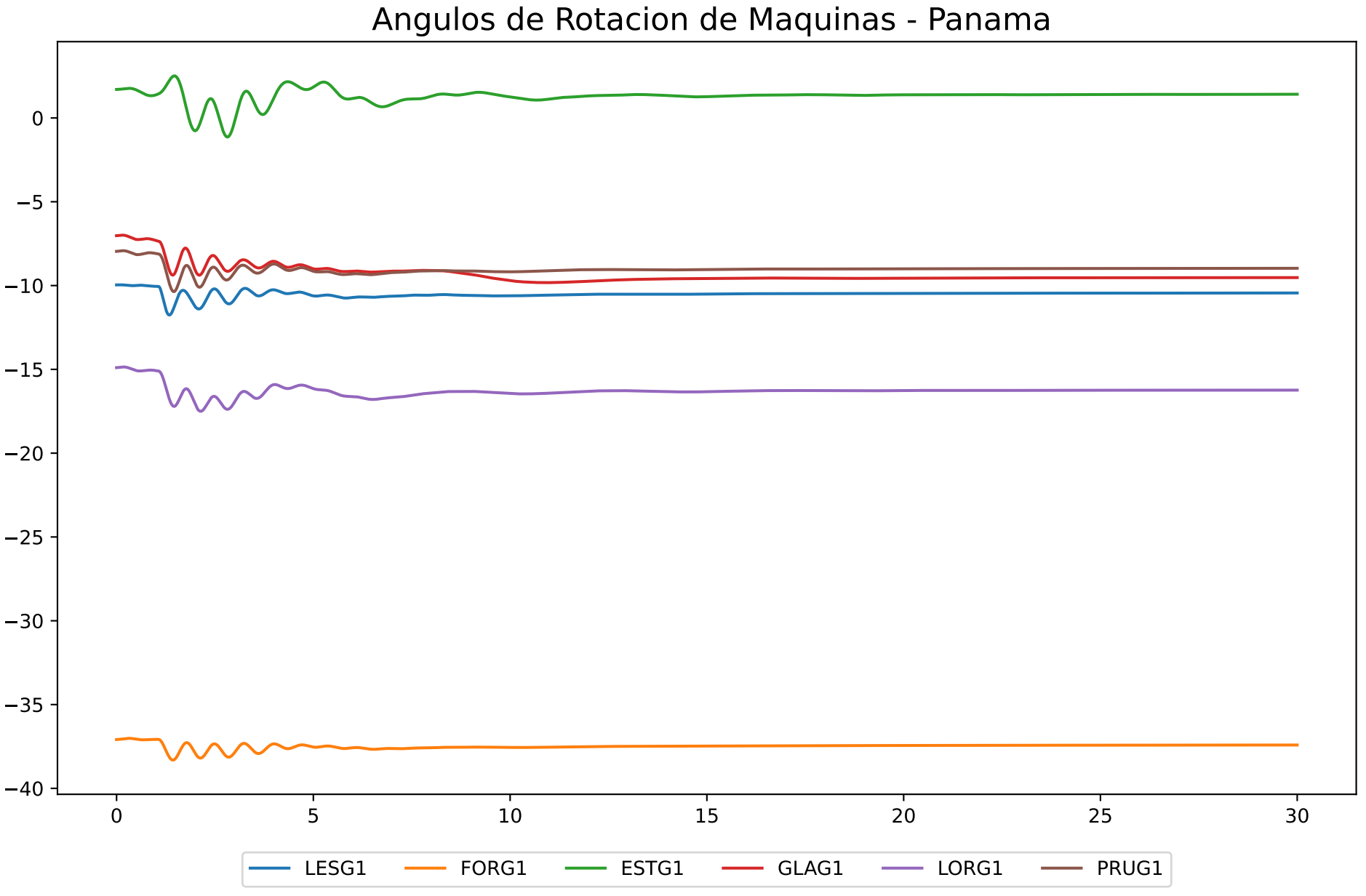
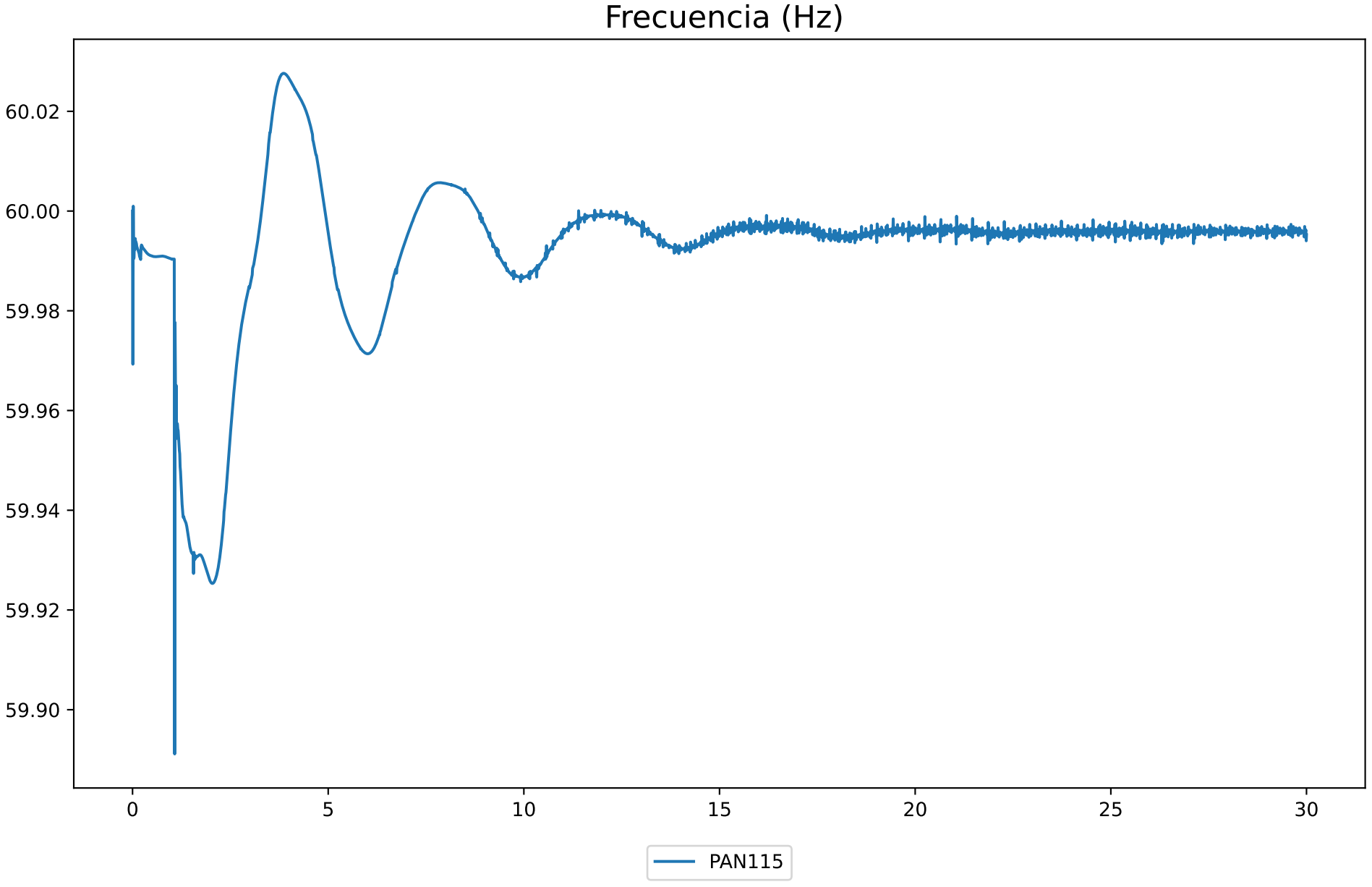
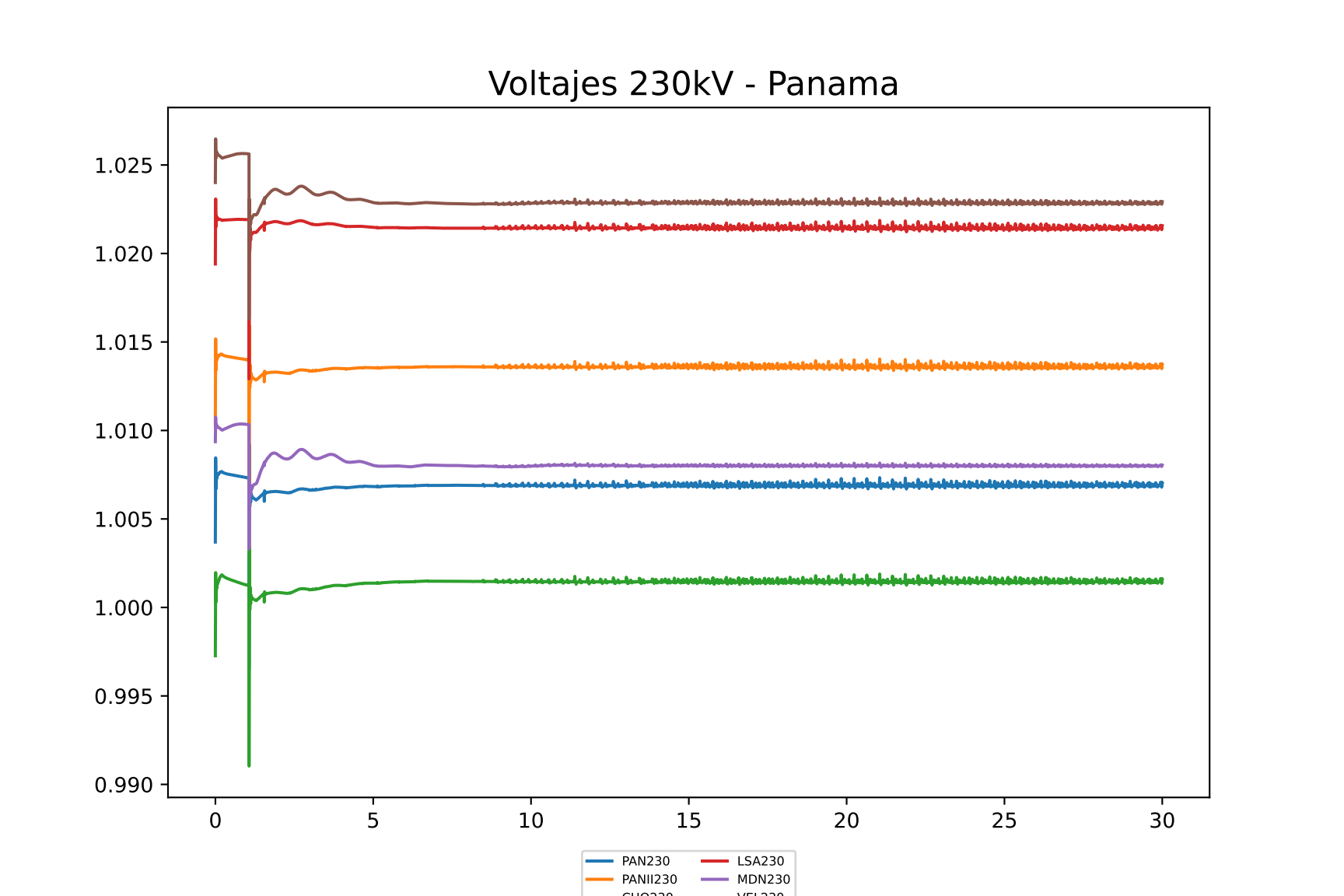
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.02
60.00
59.98
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0.990
0
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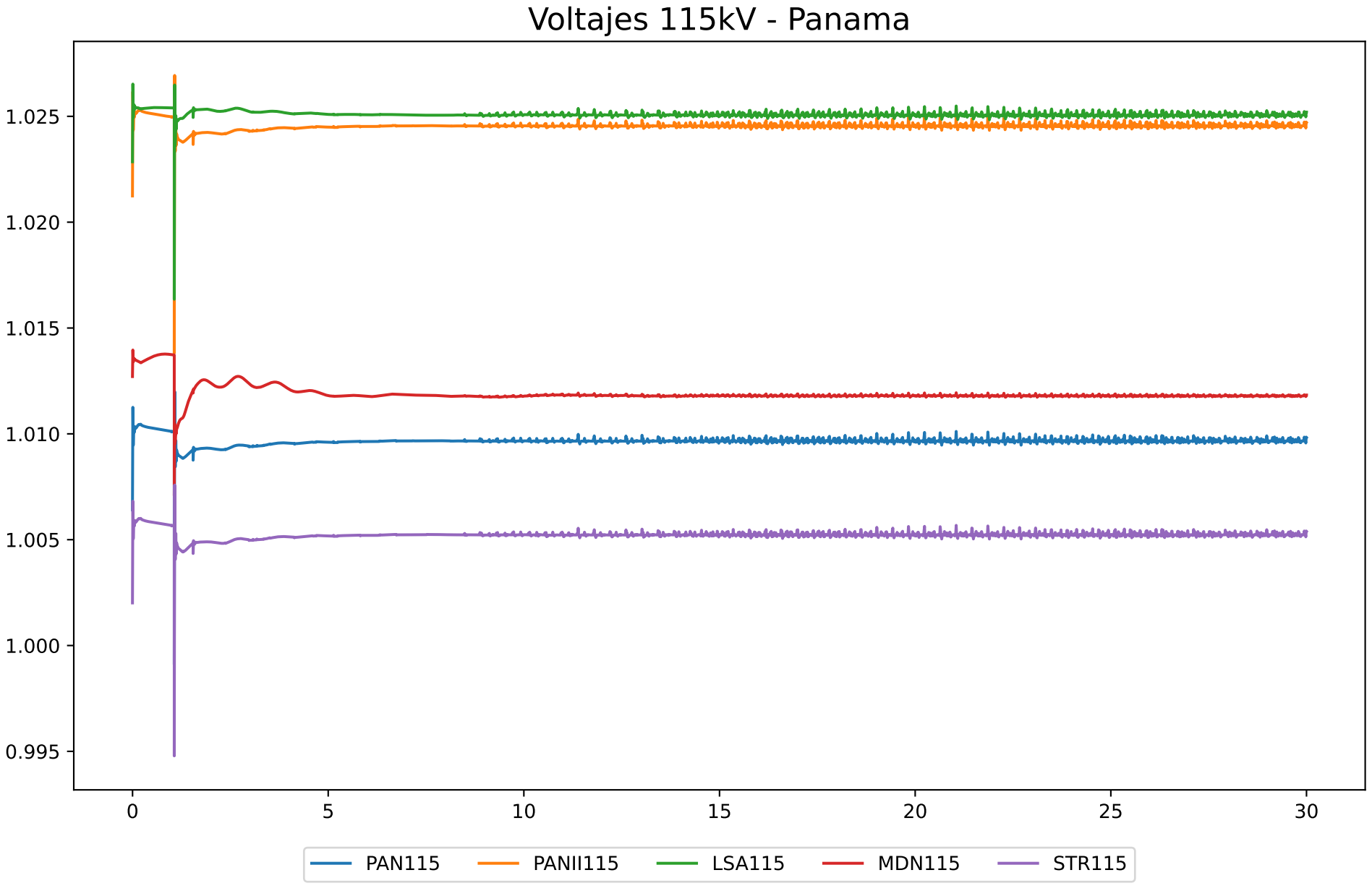
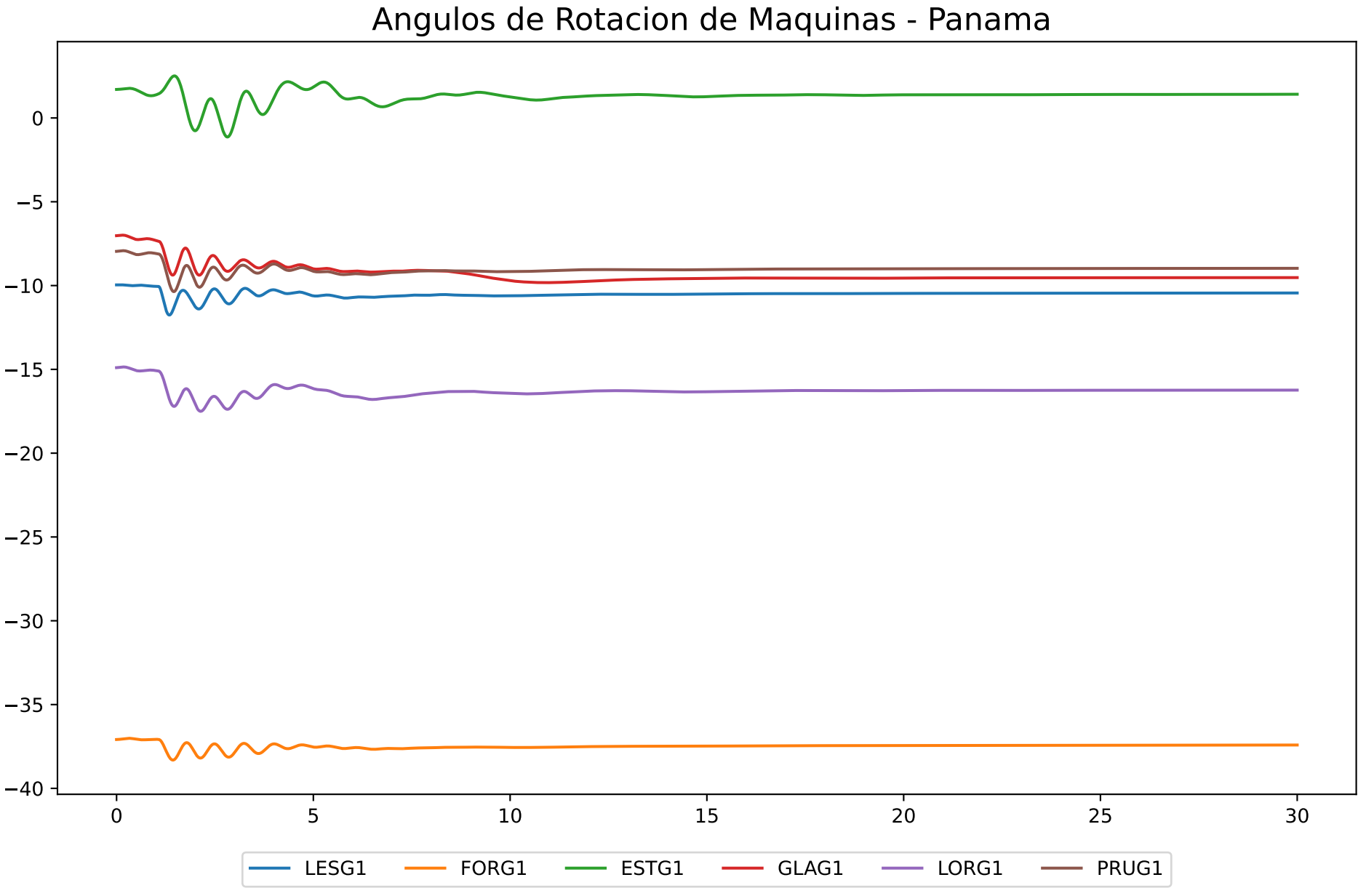
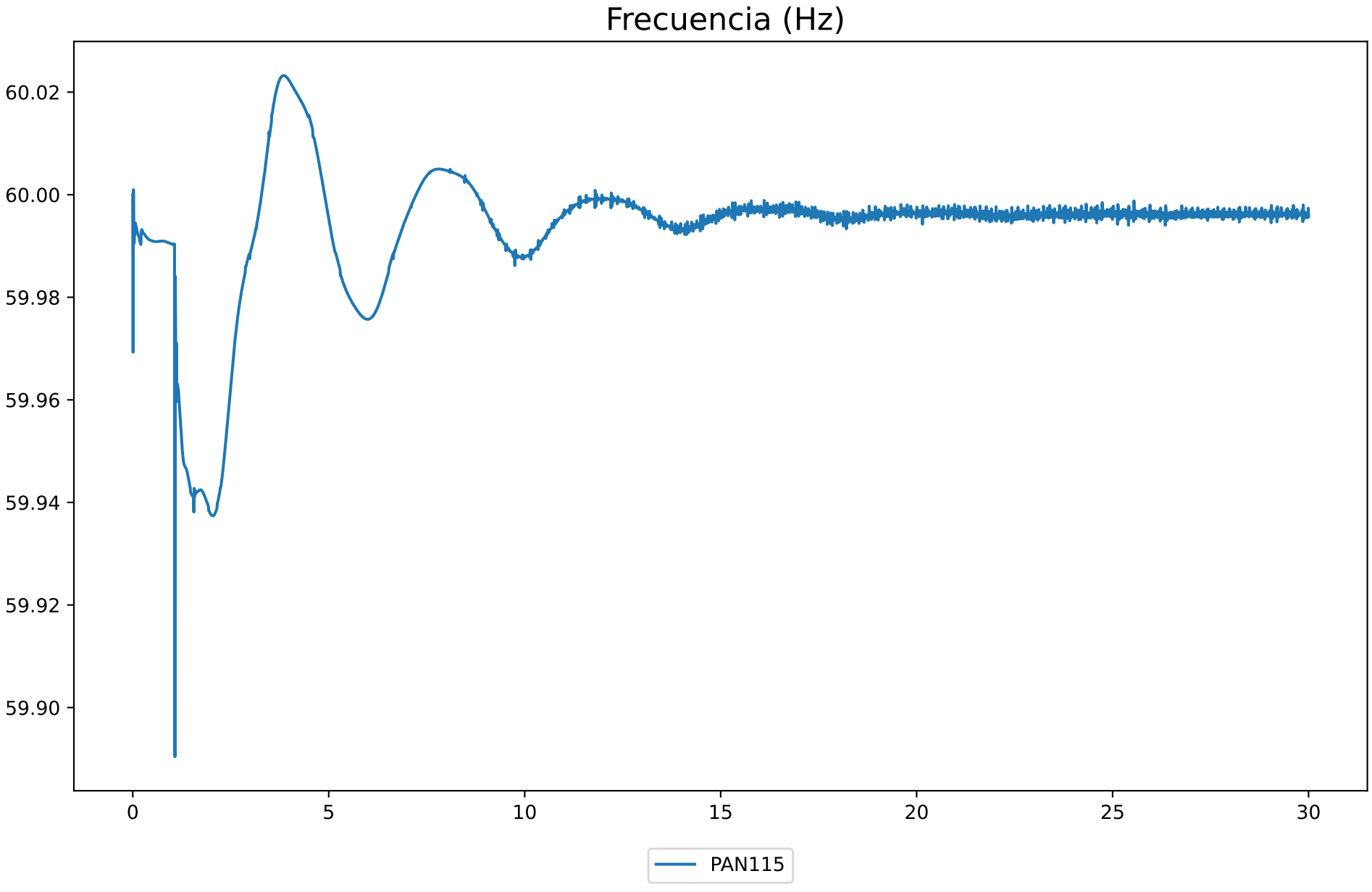
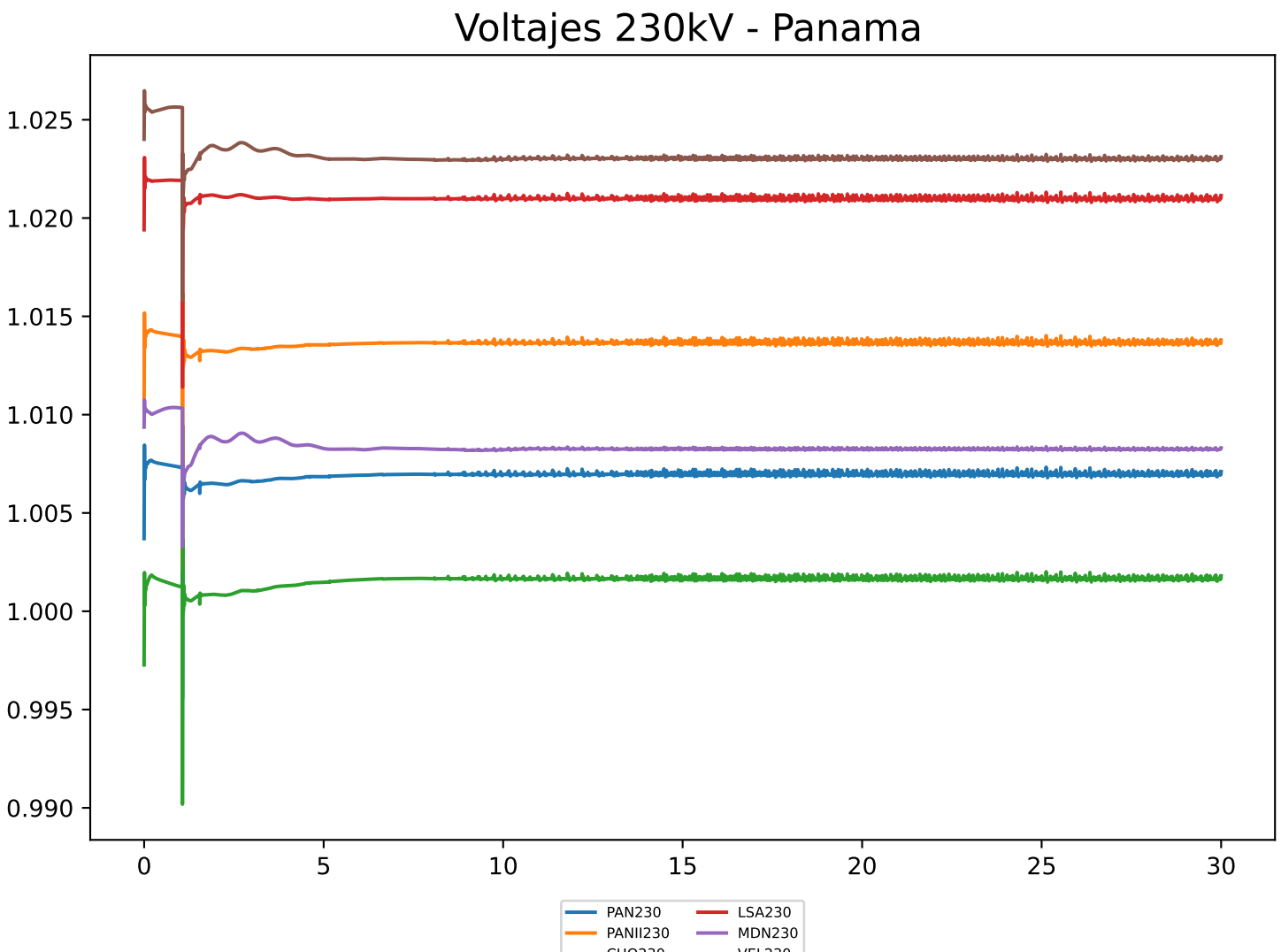
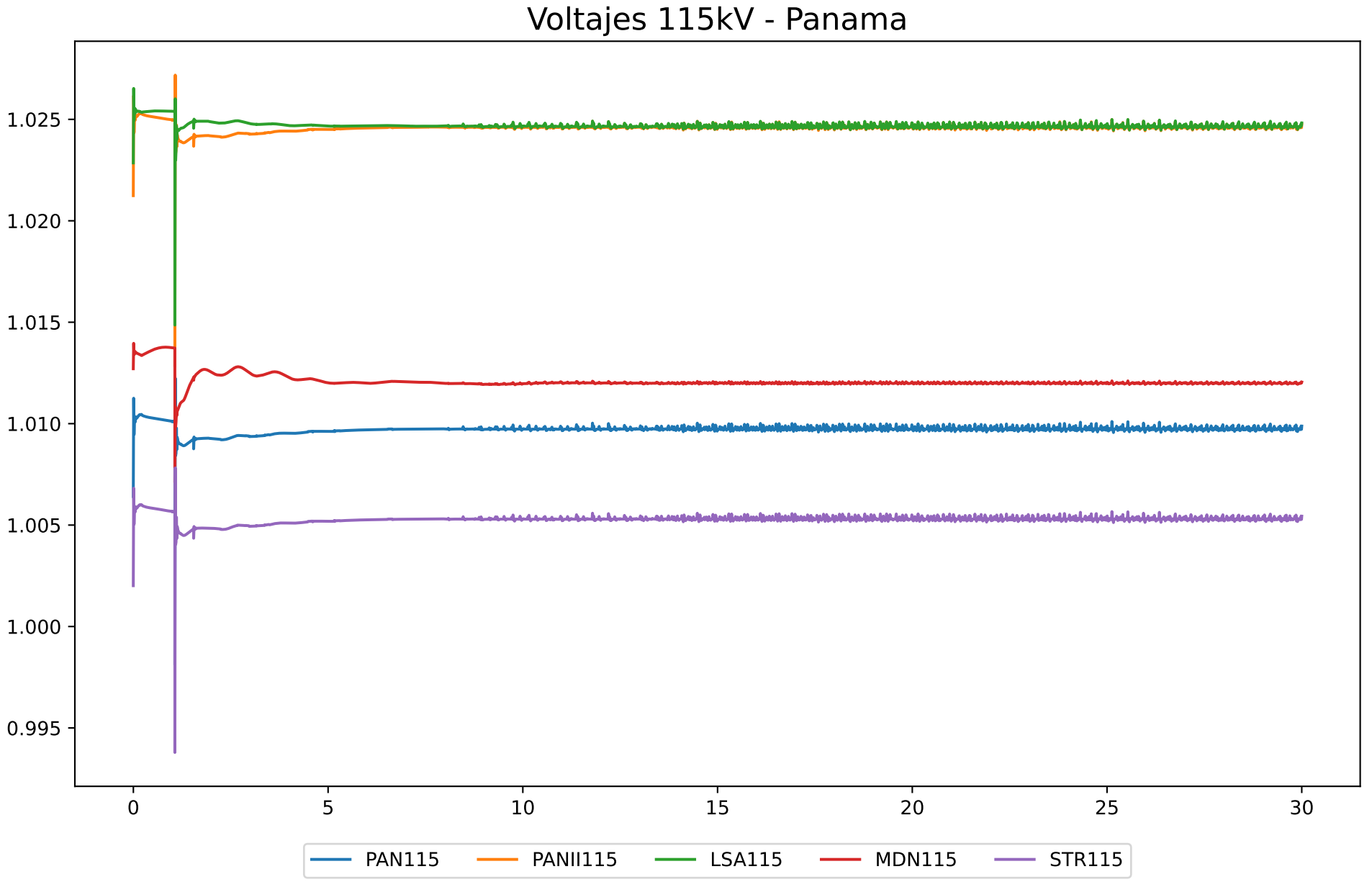
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230

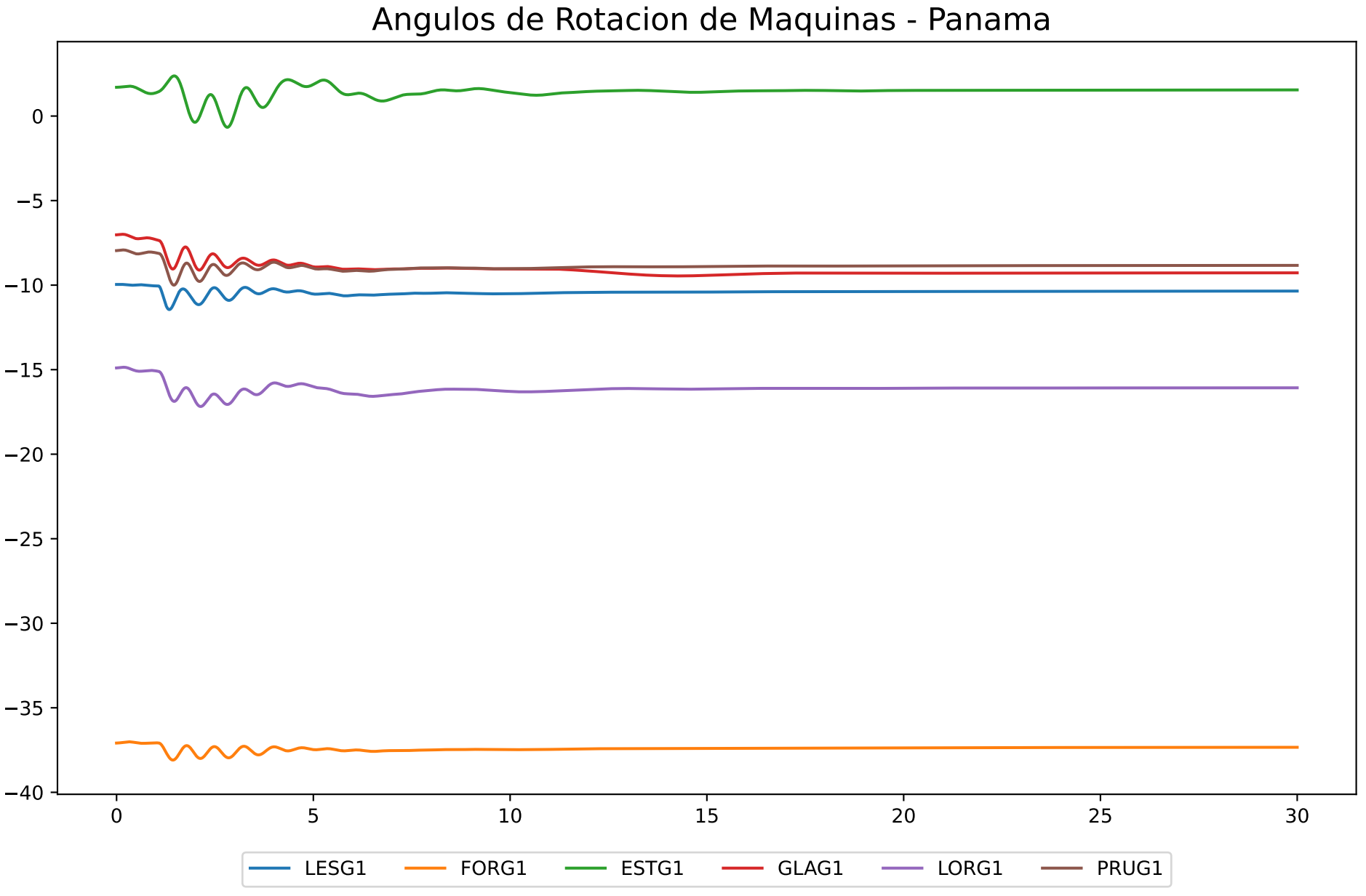

Voltajes 115kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115

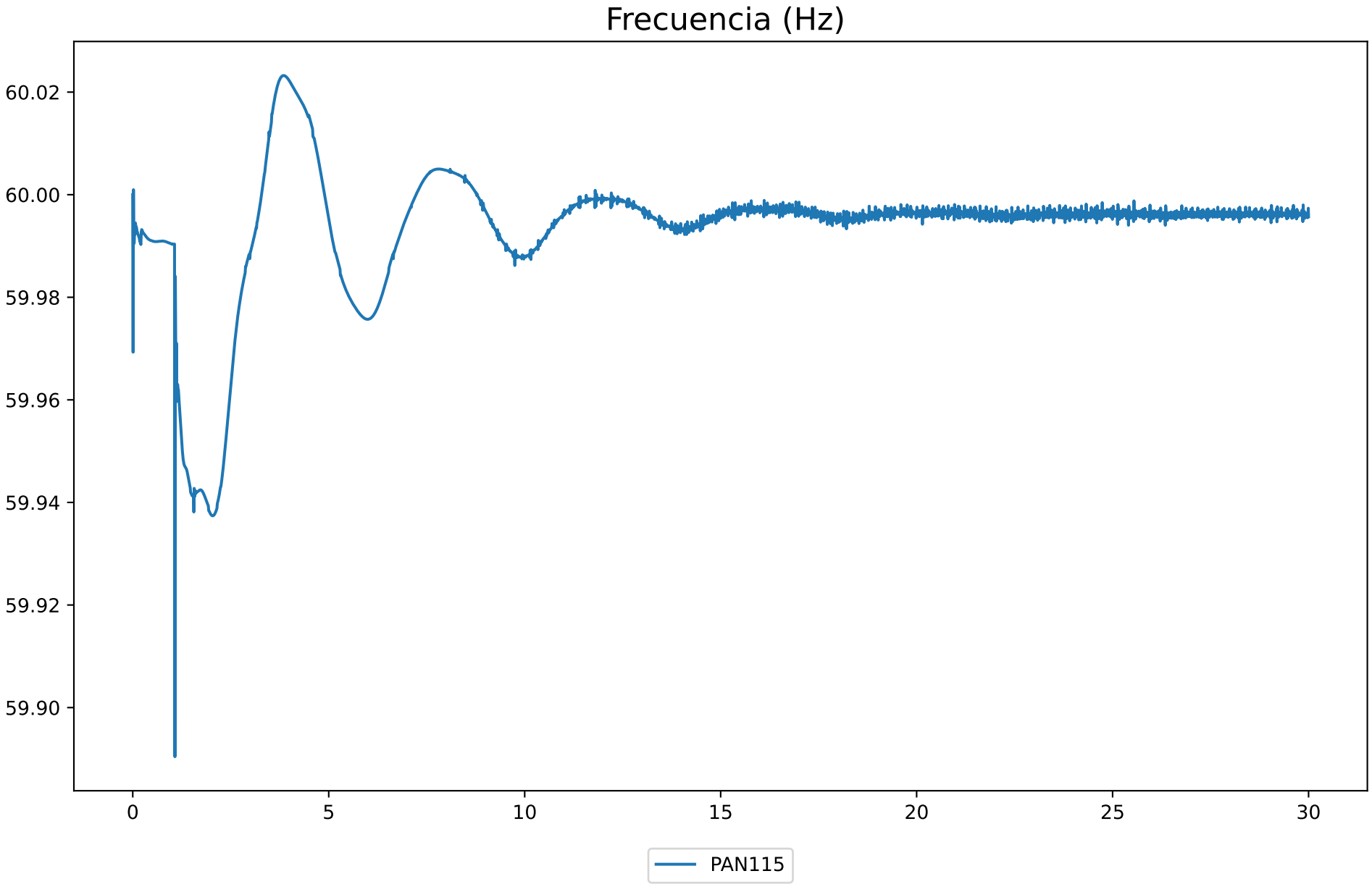

Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1

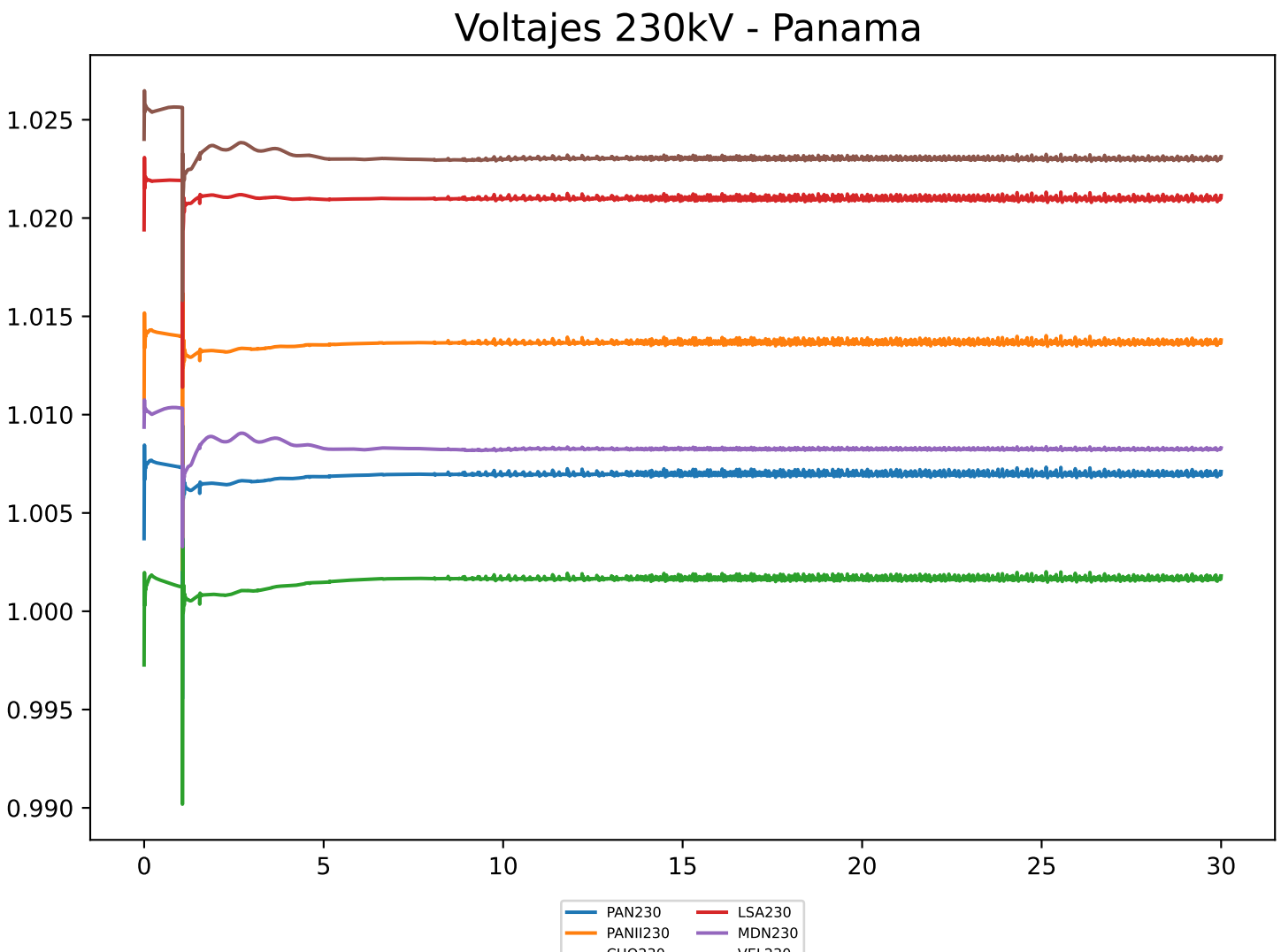

Frecuencia (Hz)
60.02
60.00
59.98
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0.990
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1


Frecuencia (Hz)
60.02
60.00
59.98
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0.990
0
5
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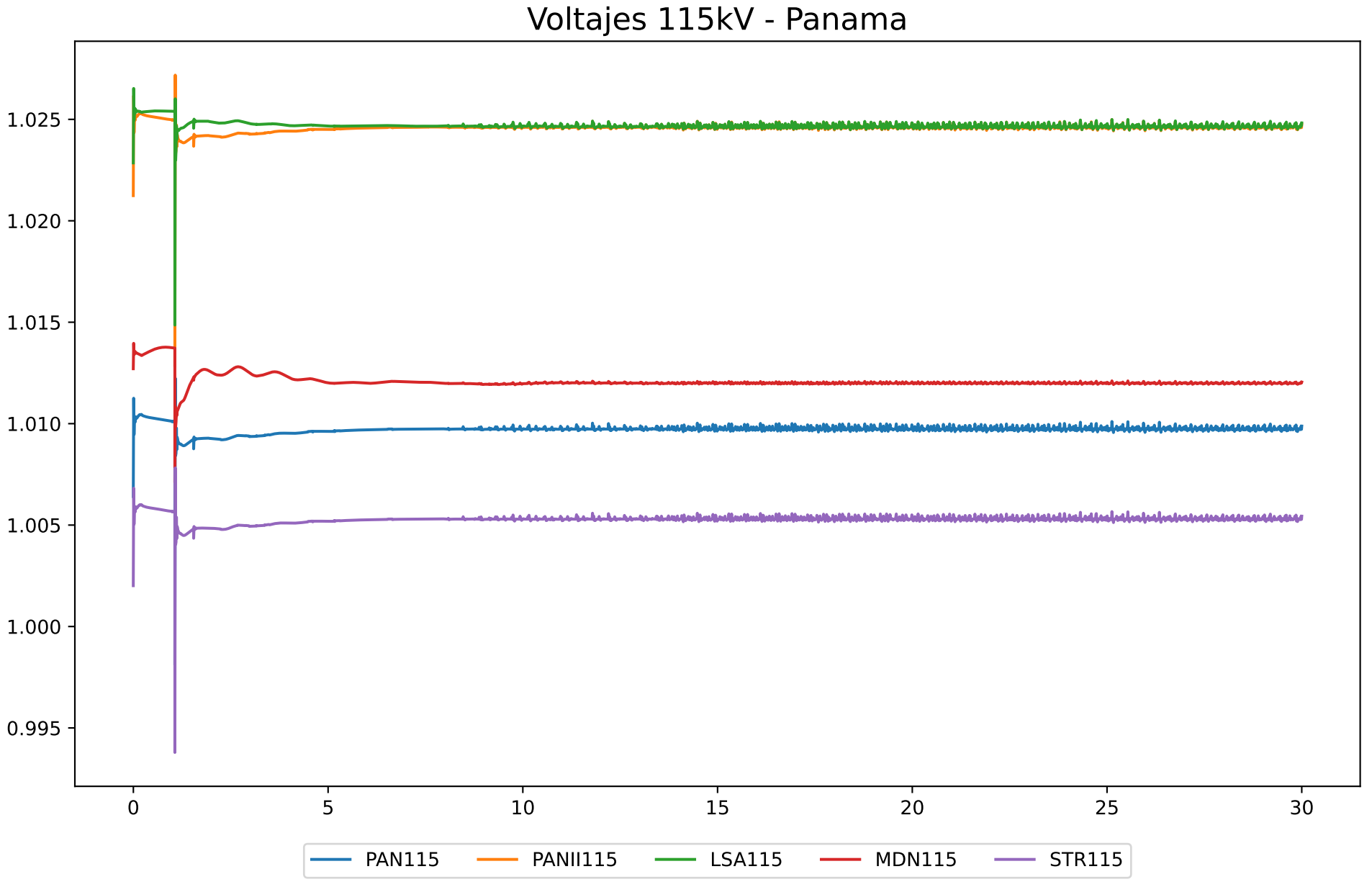
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.025
1.020
1.015
1.010
1.005
1.000
0.995
0
5
10
15
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25
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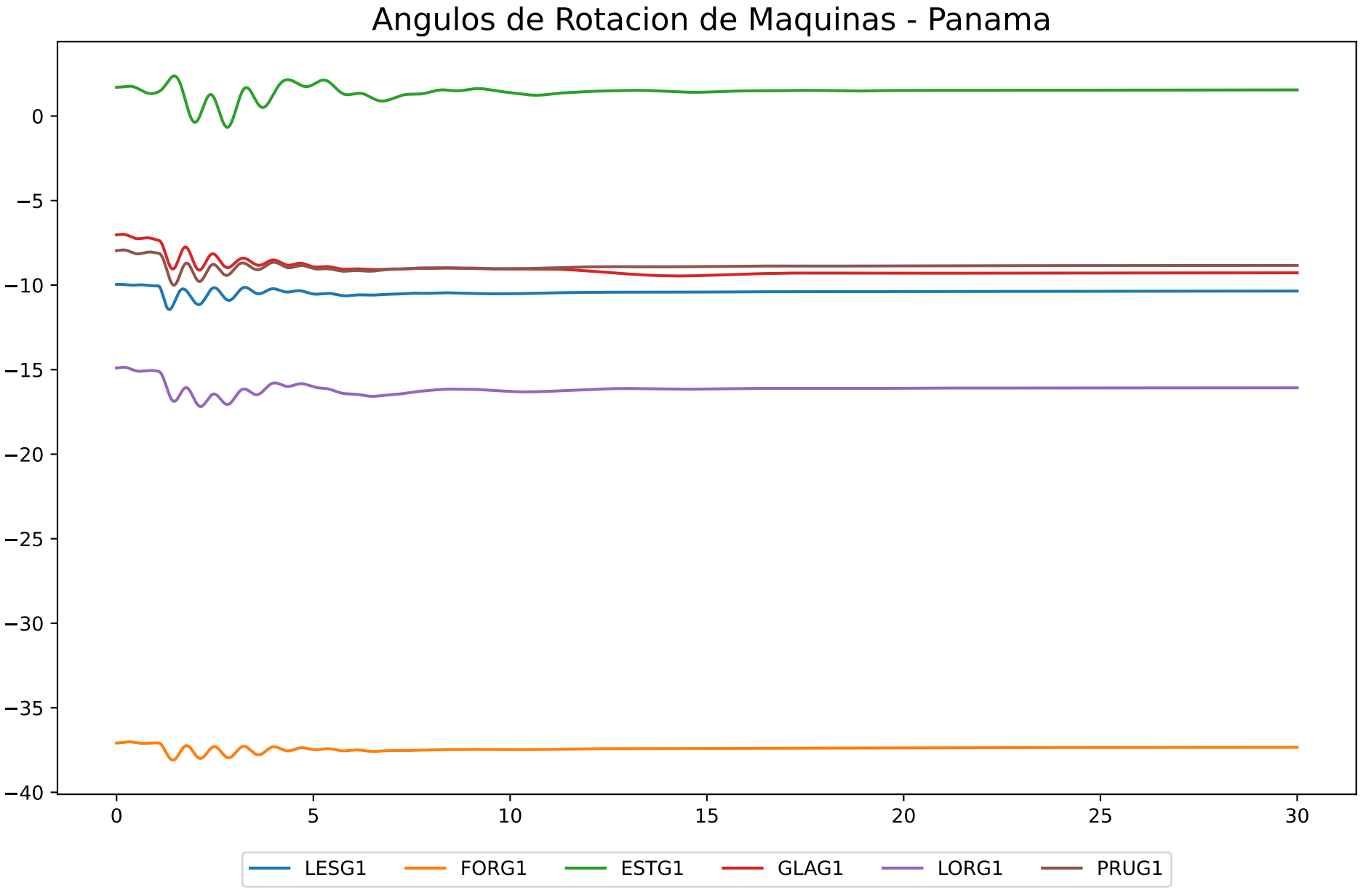
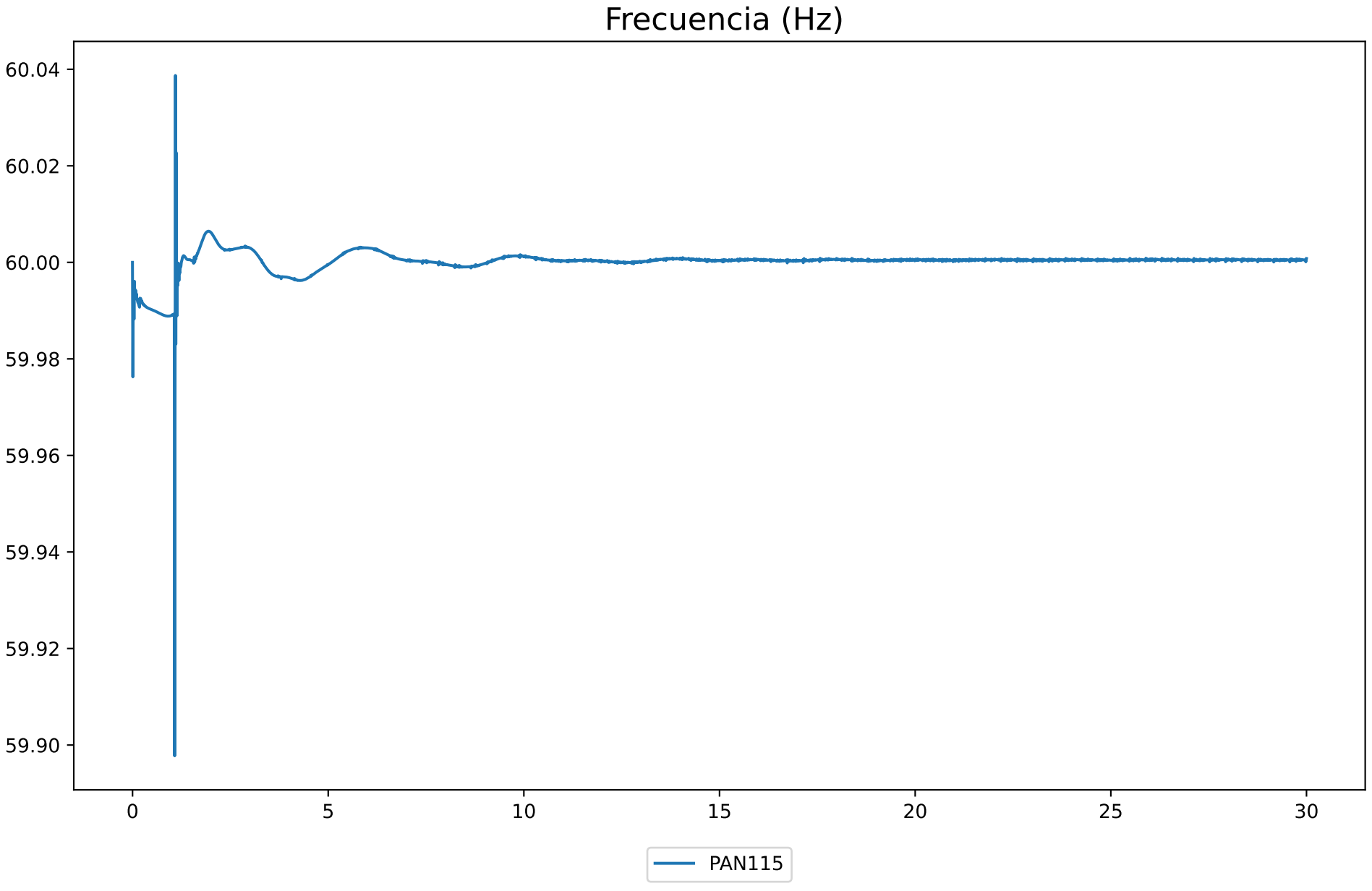
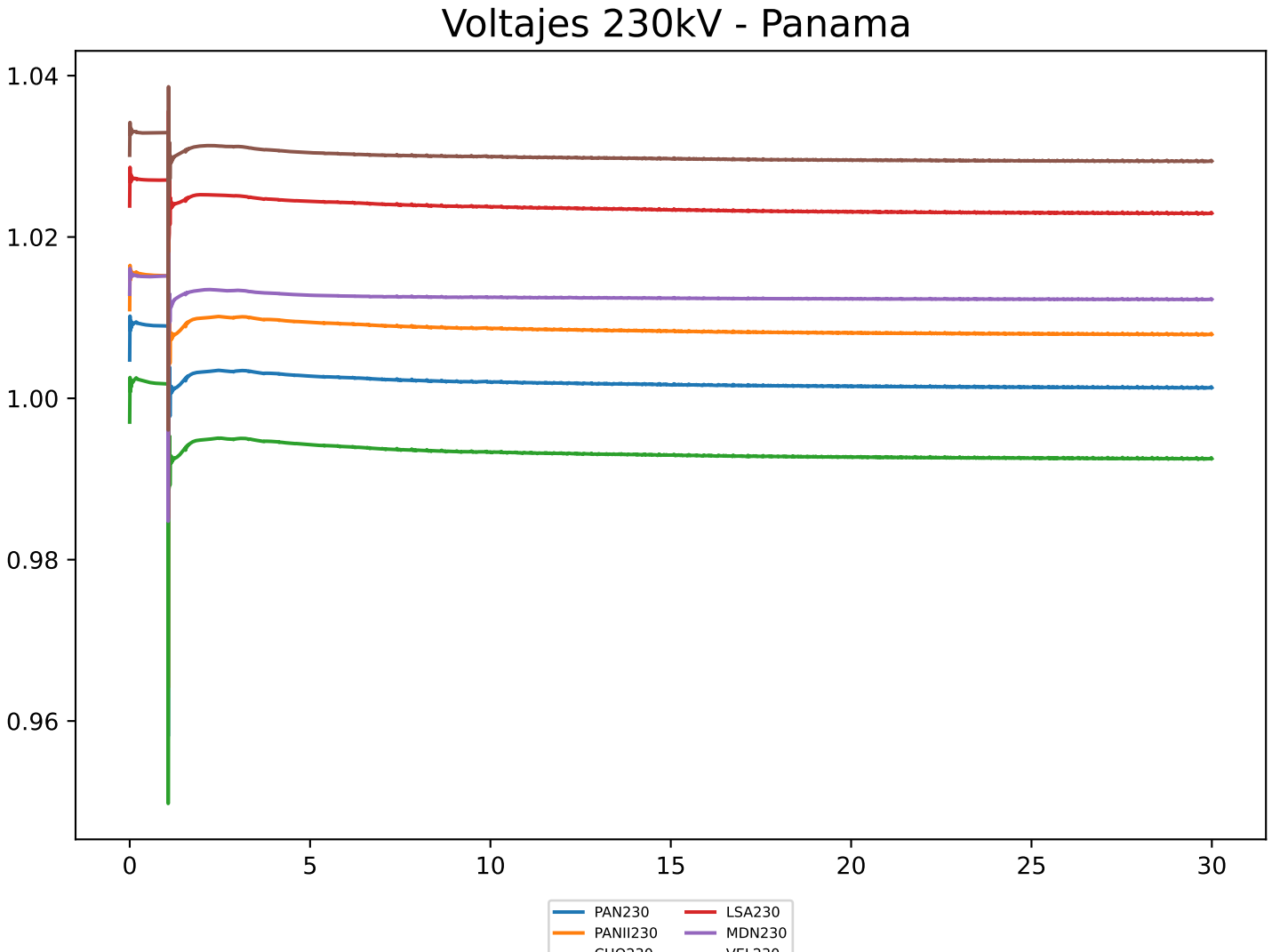
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
FORG1
ESTG1
GLAG1
LORG1
PRUG1

2038


Frecuencia (Hz)
60.04
60.02
60.00
59.98
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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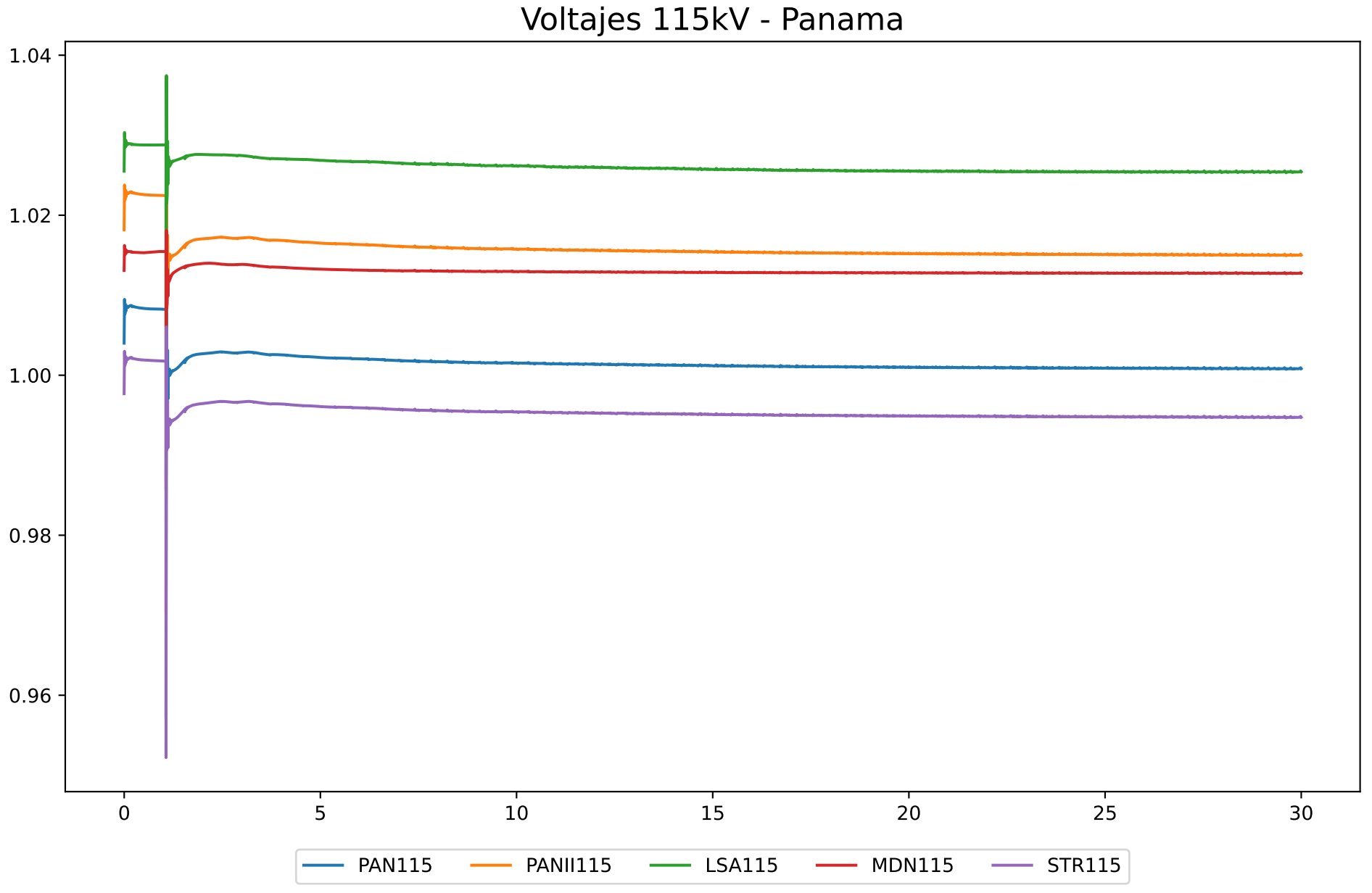
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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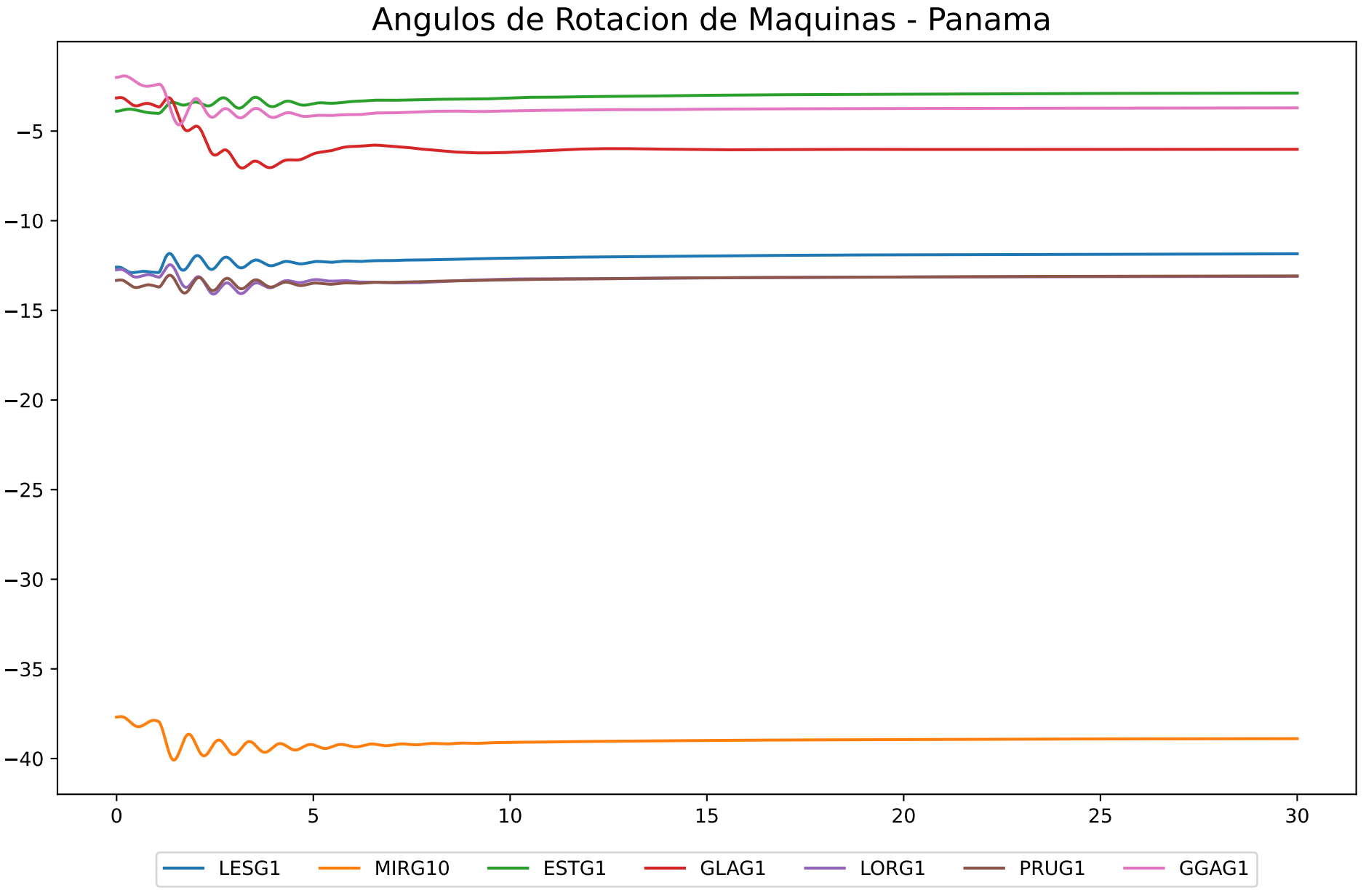
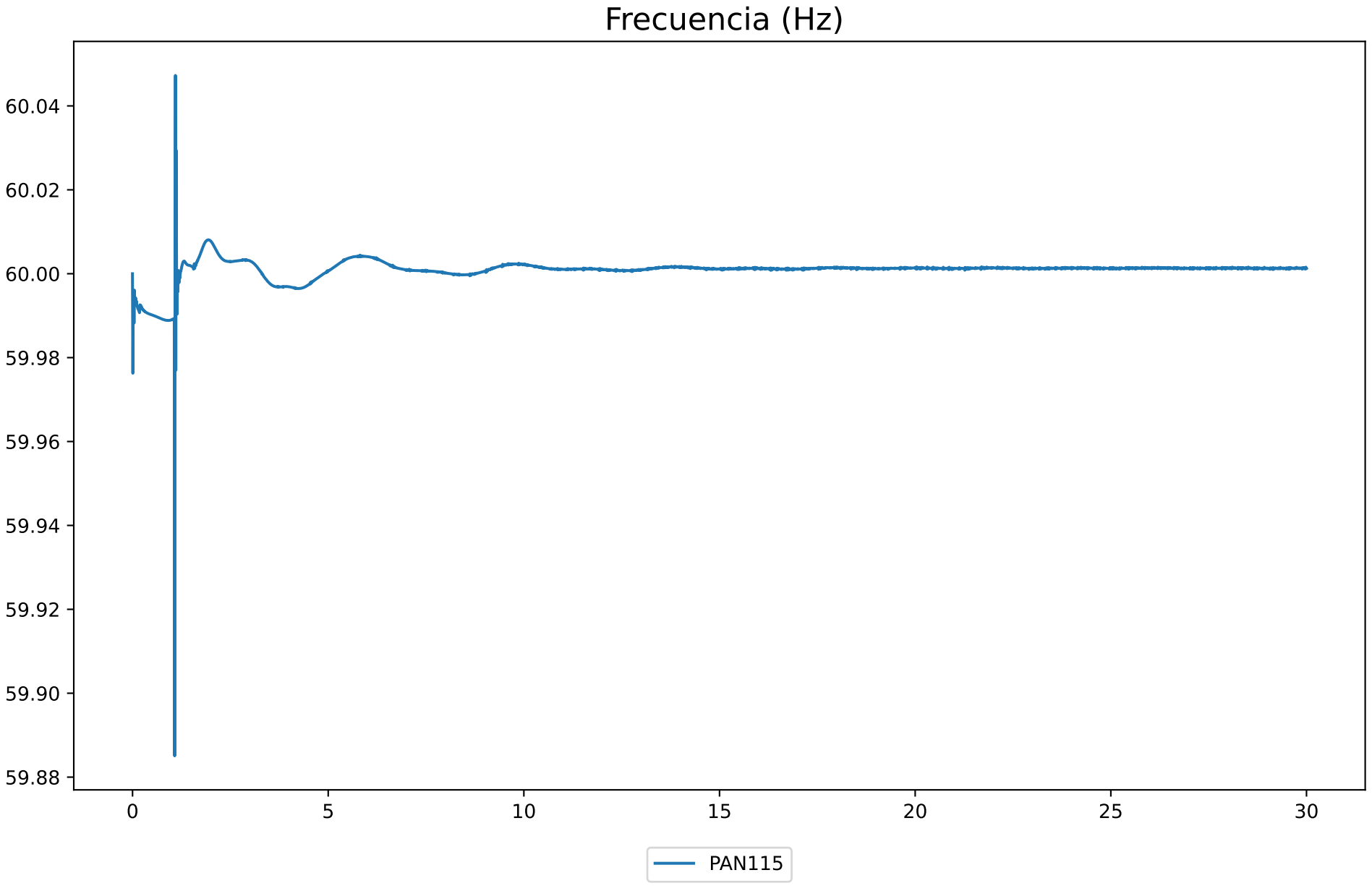
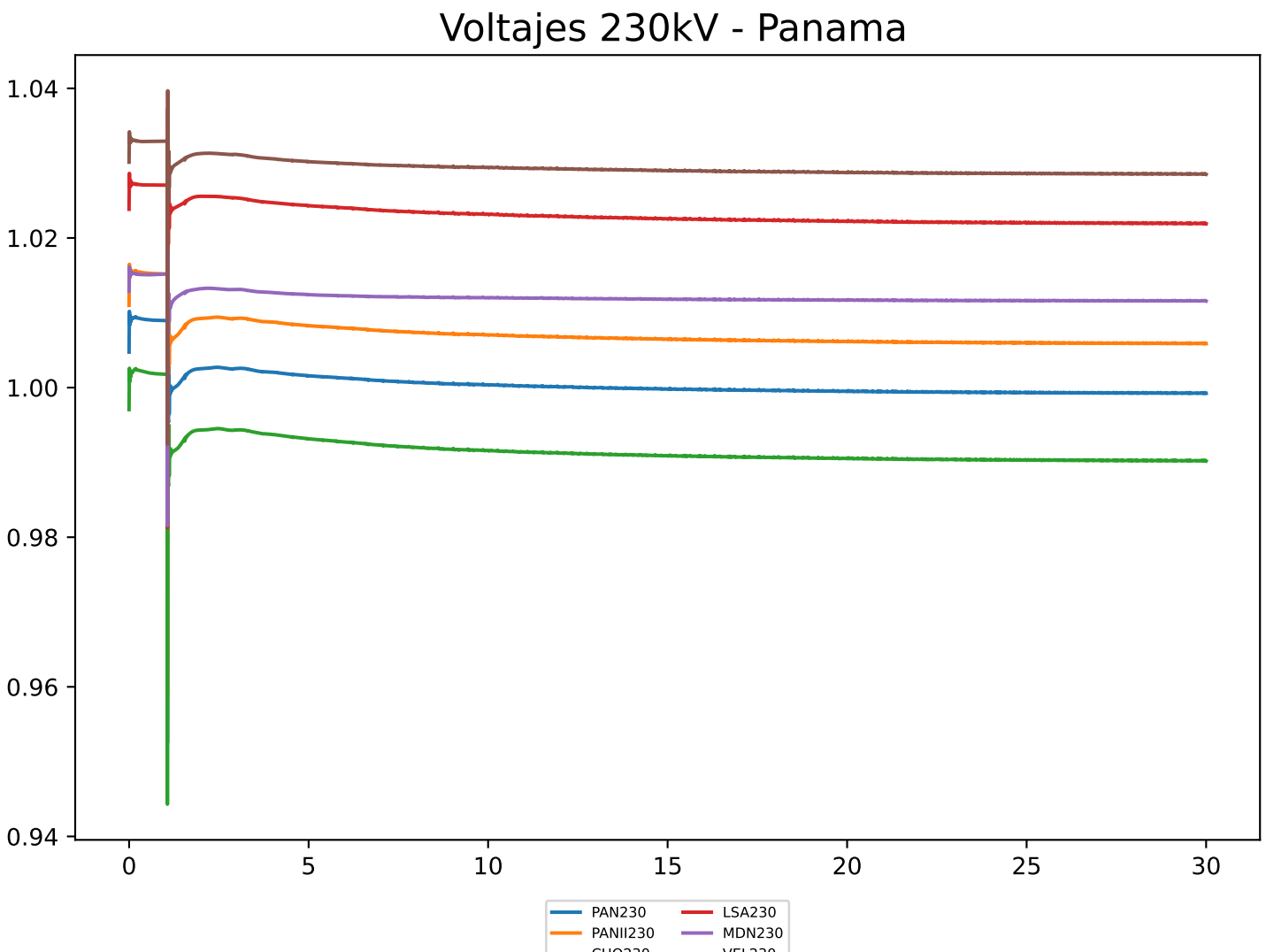
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
60.04
60.02
60.00
59.98
59.96
59.94
59.92
59.90
59.88
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
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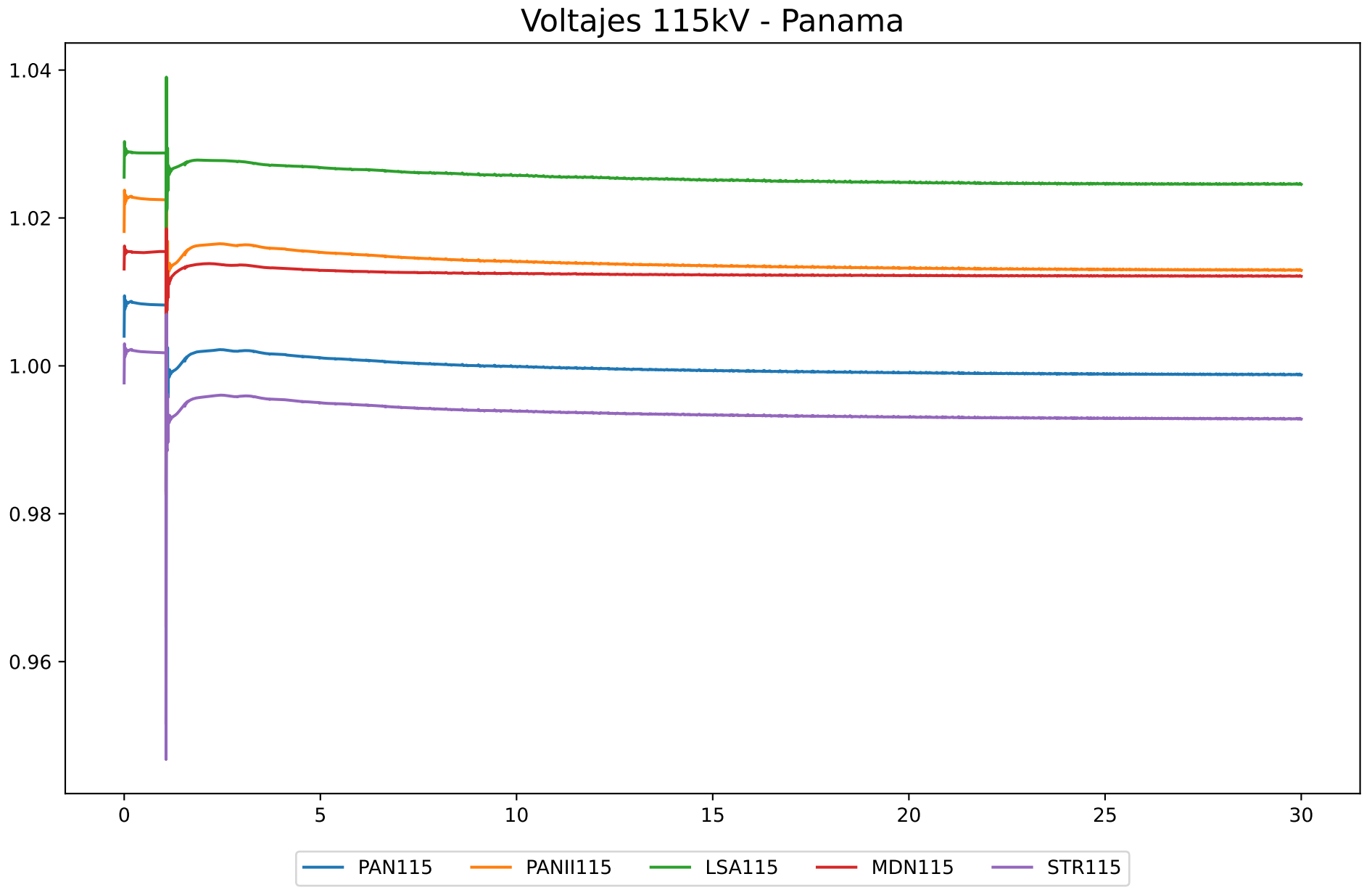
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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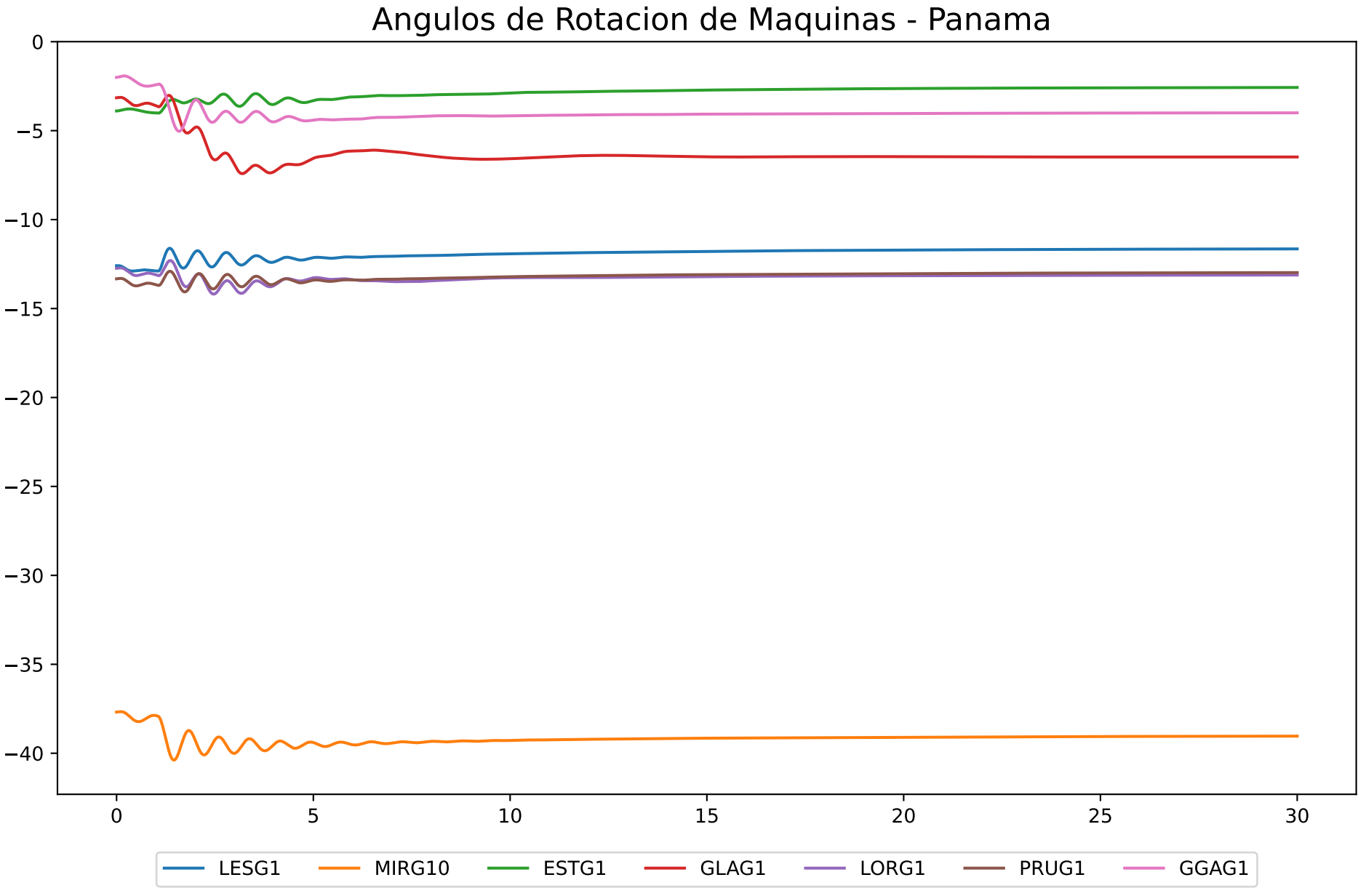
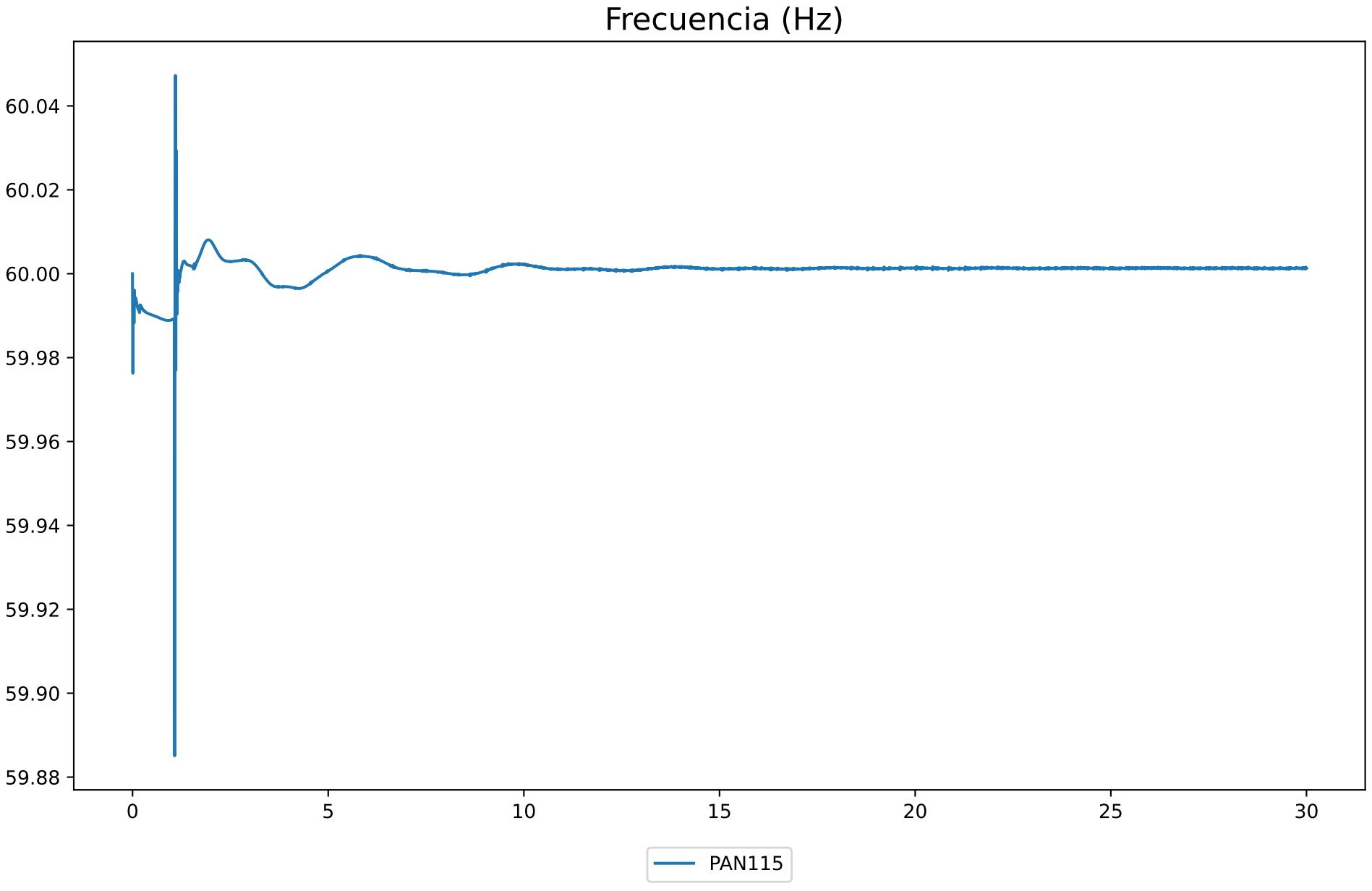
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
60.04
60.02
60.00
59.98
59.96
59.94
59.92
59.90
59.88
0
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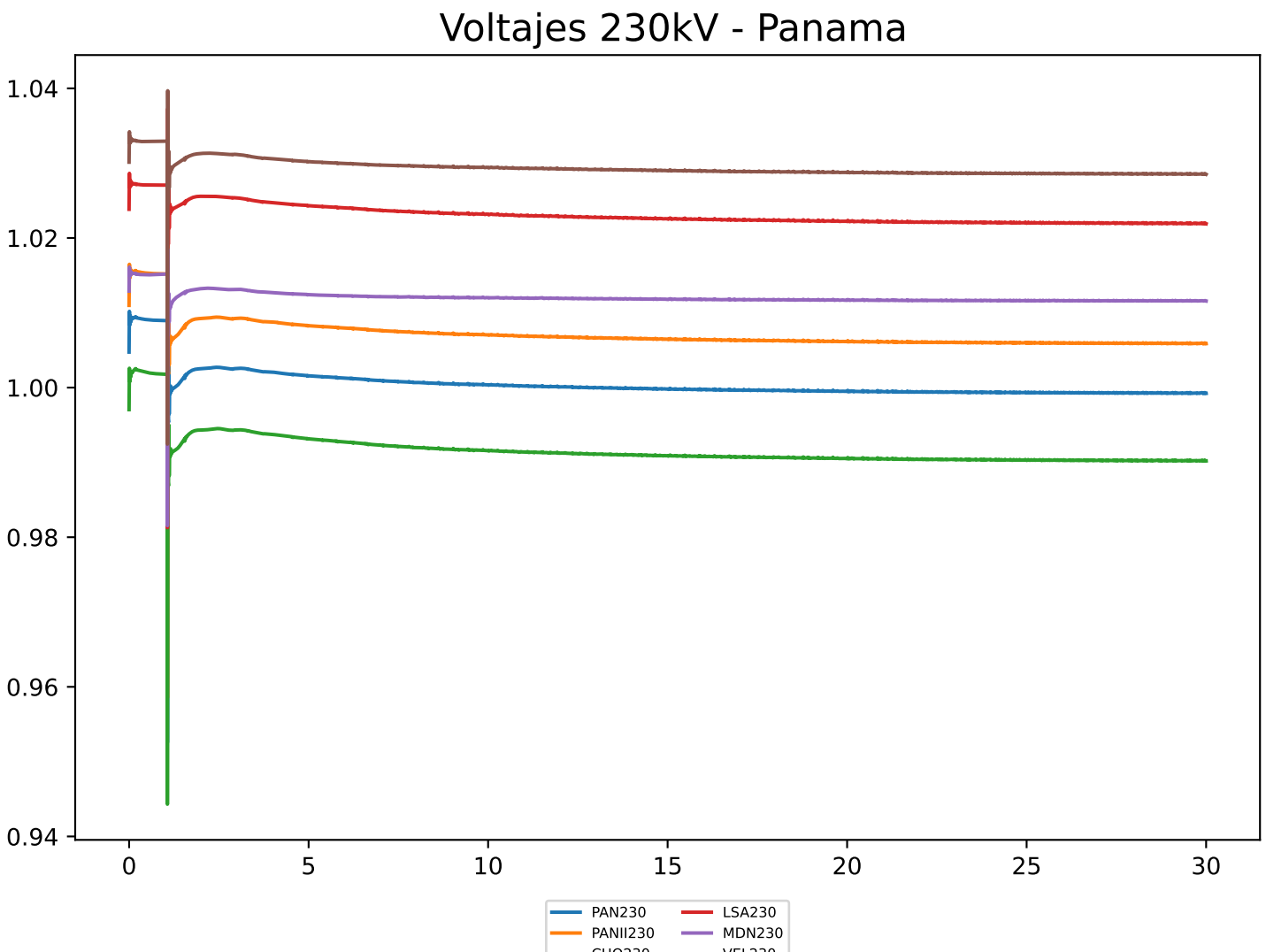
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0.94
0
5
10
15
20
25
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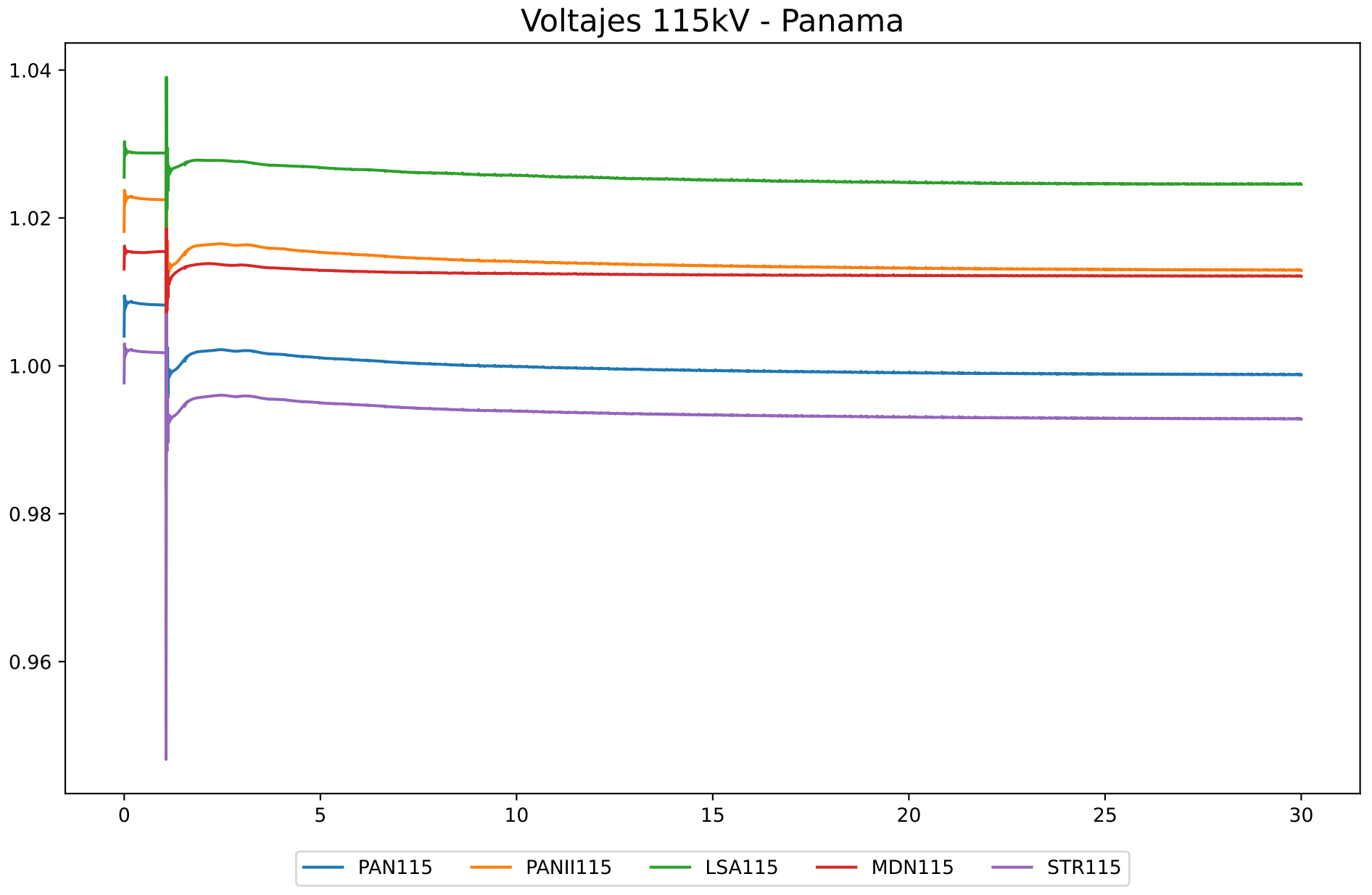
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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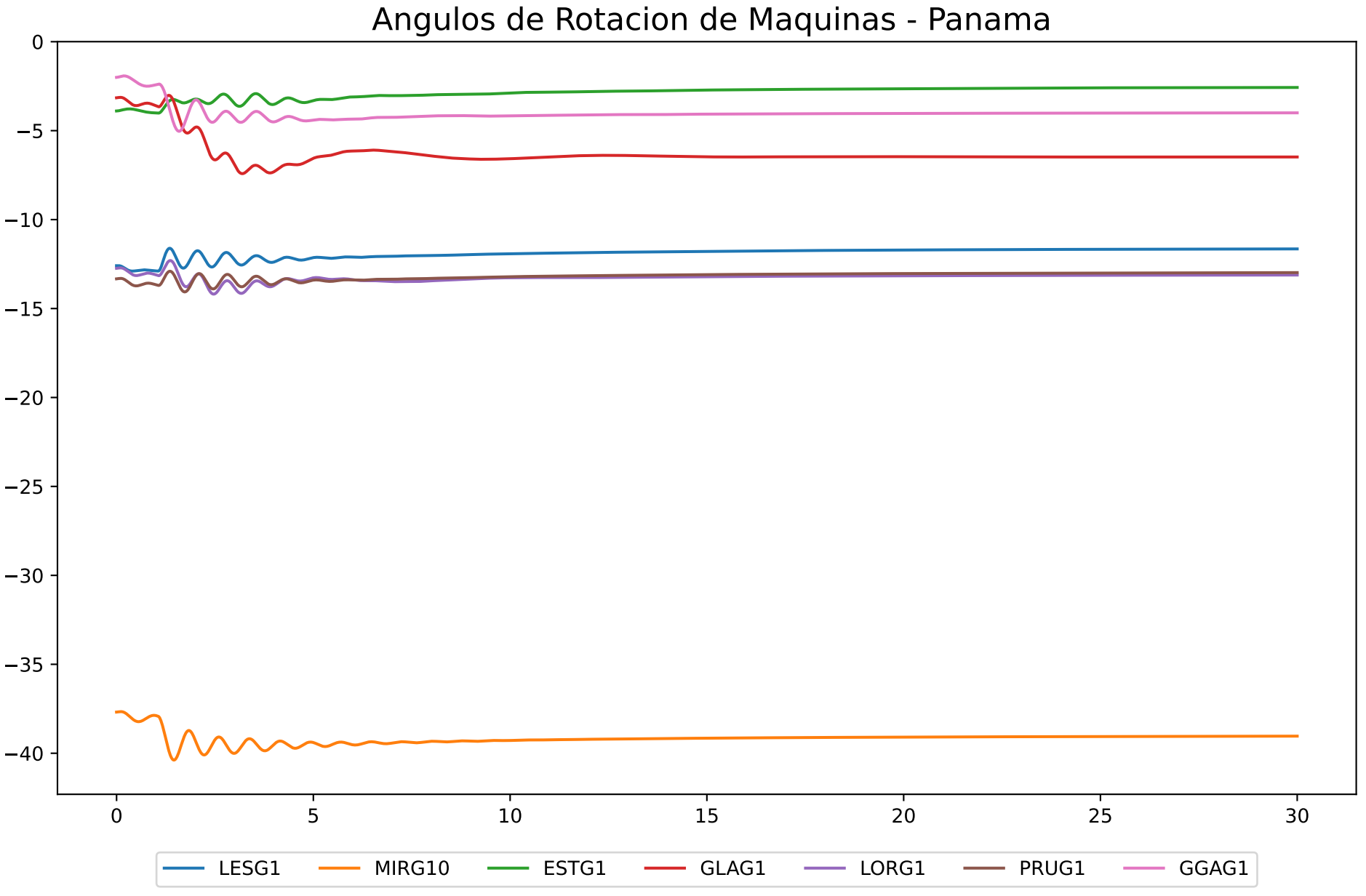
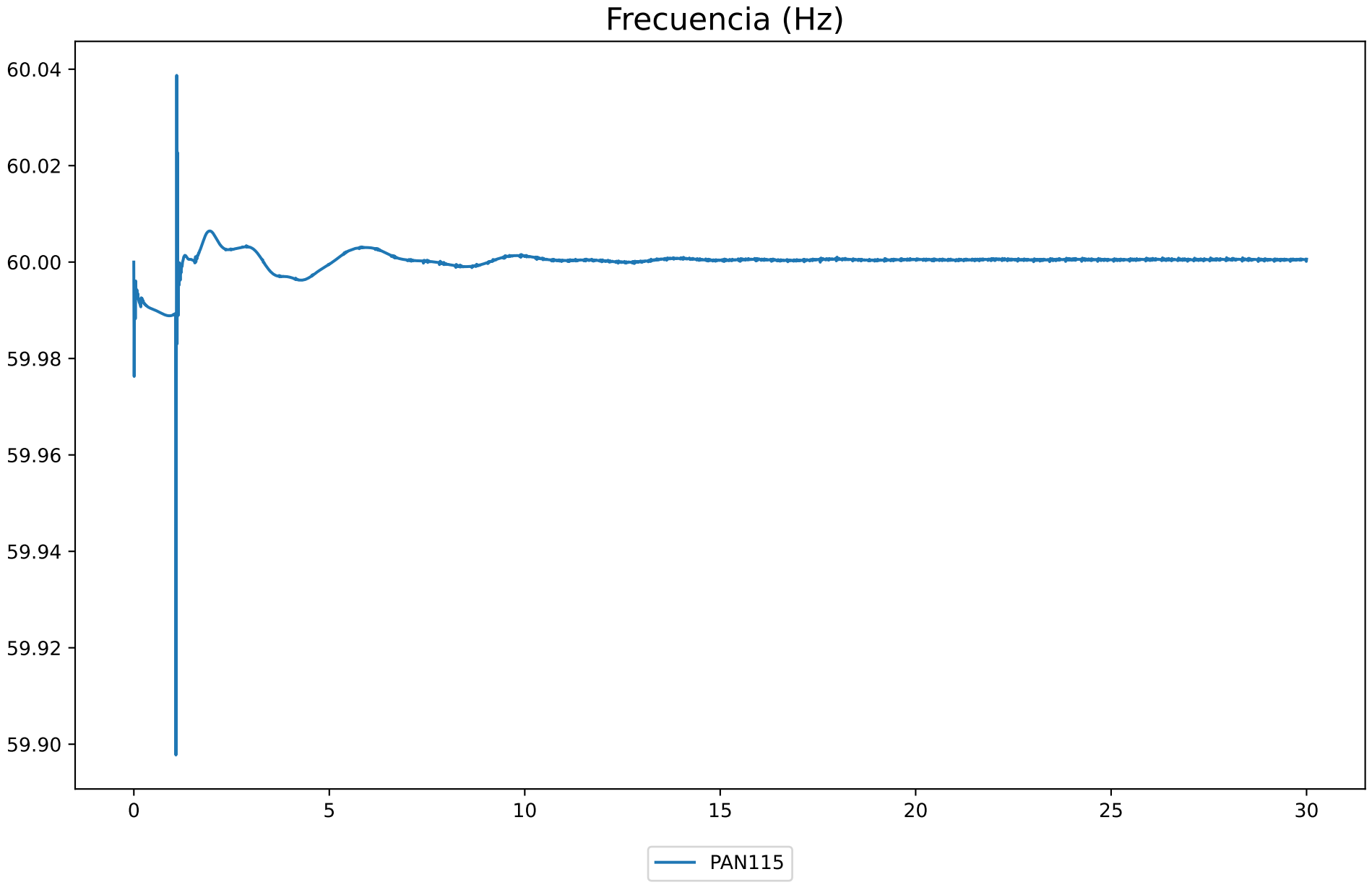
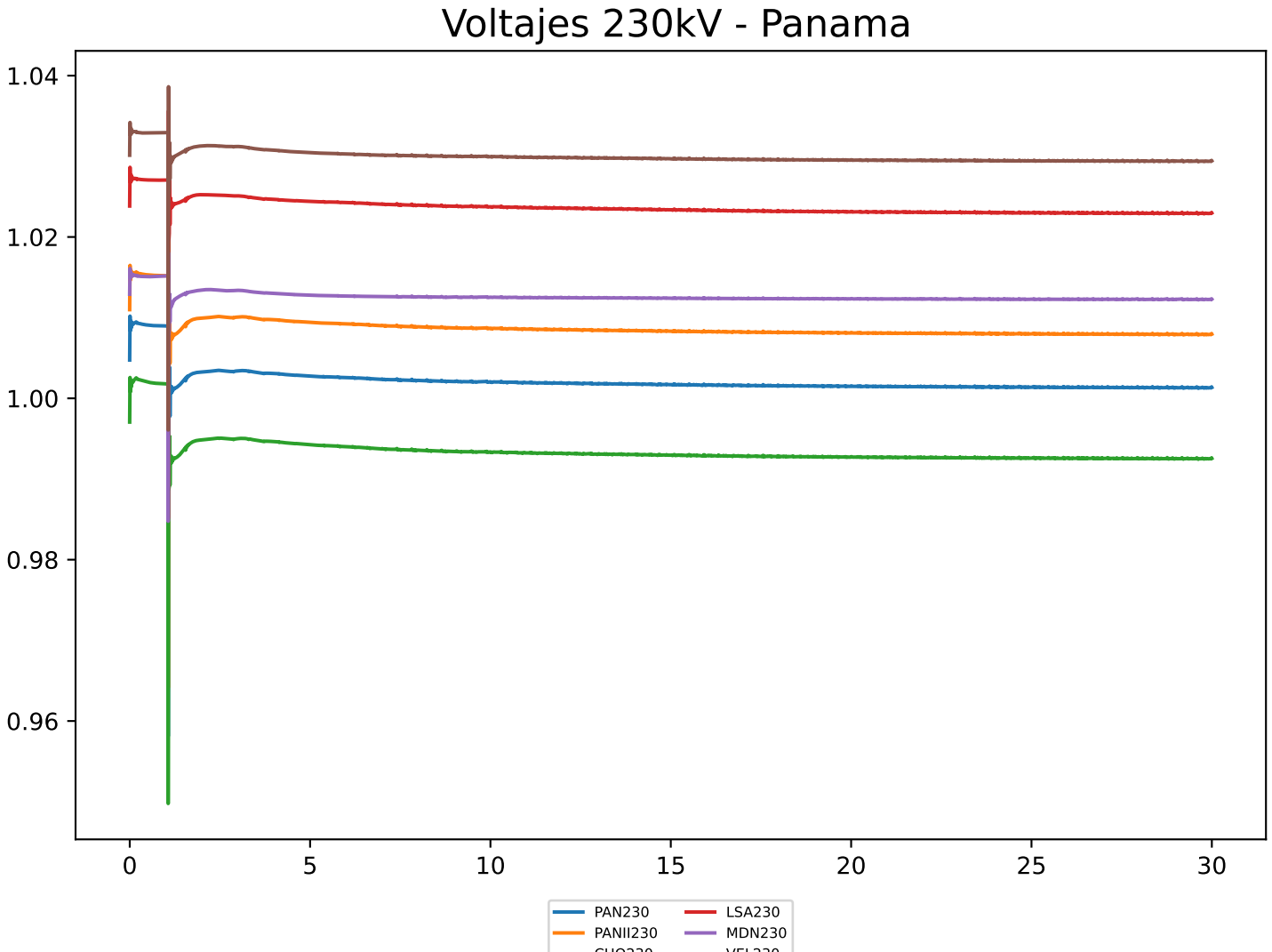
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
60.04
60.02
60.00
59.98
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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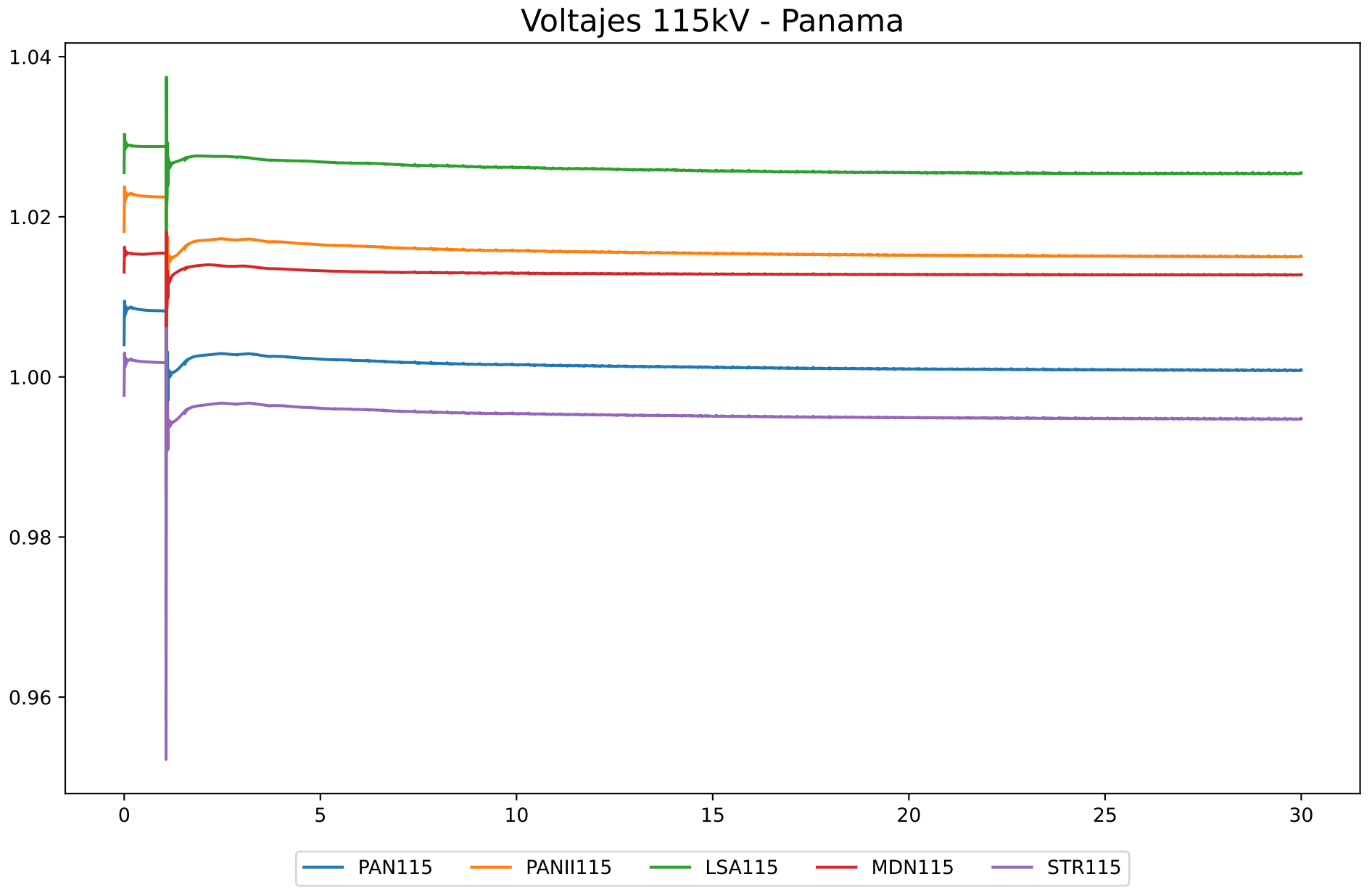
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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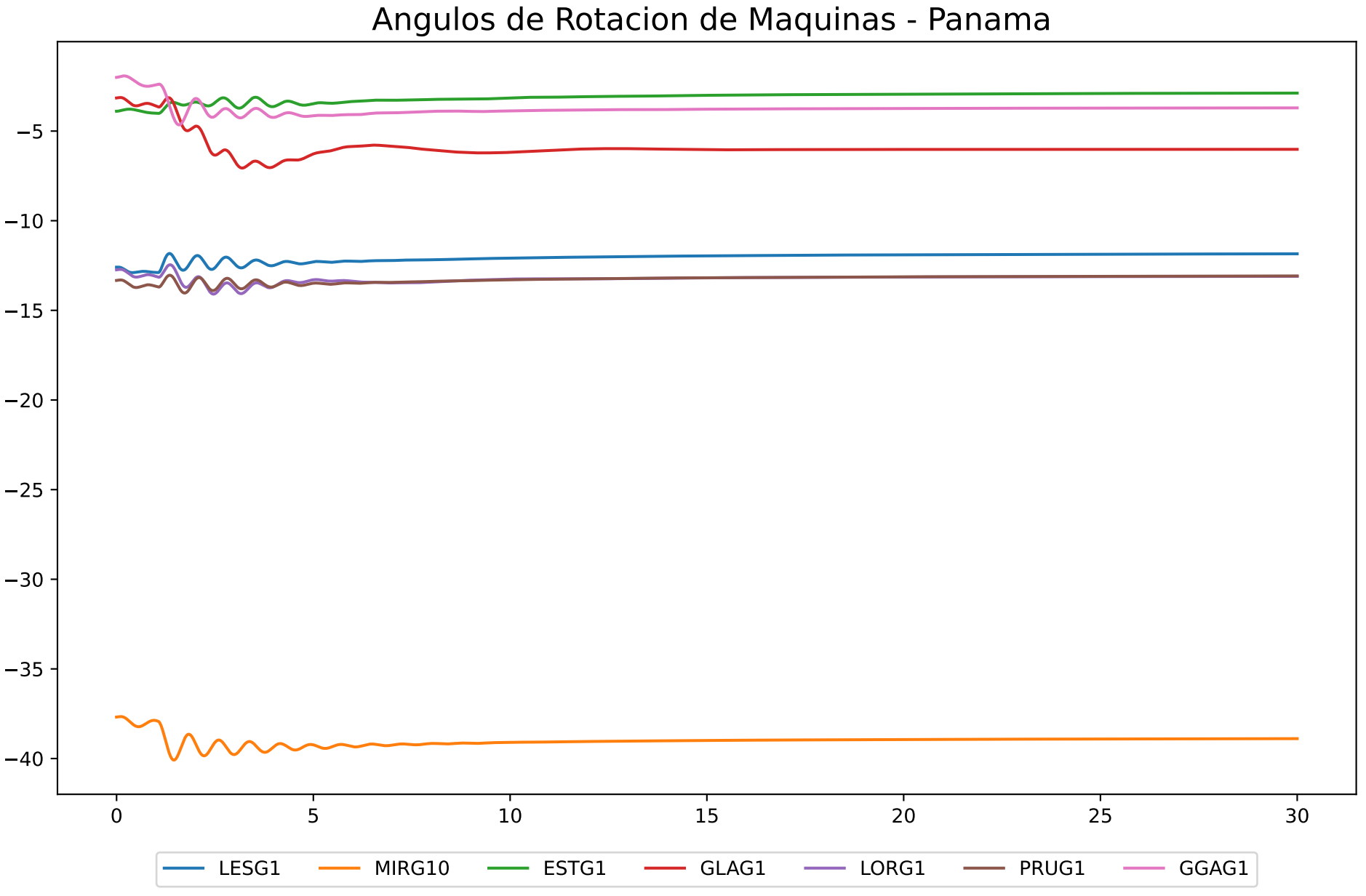
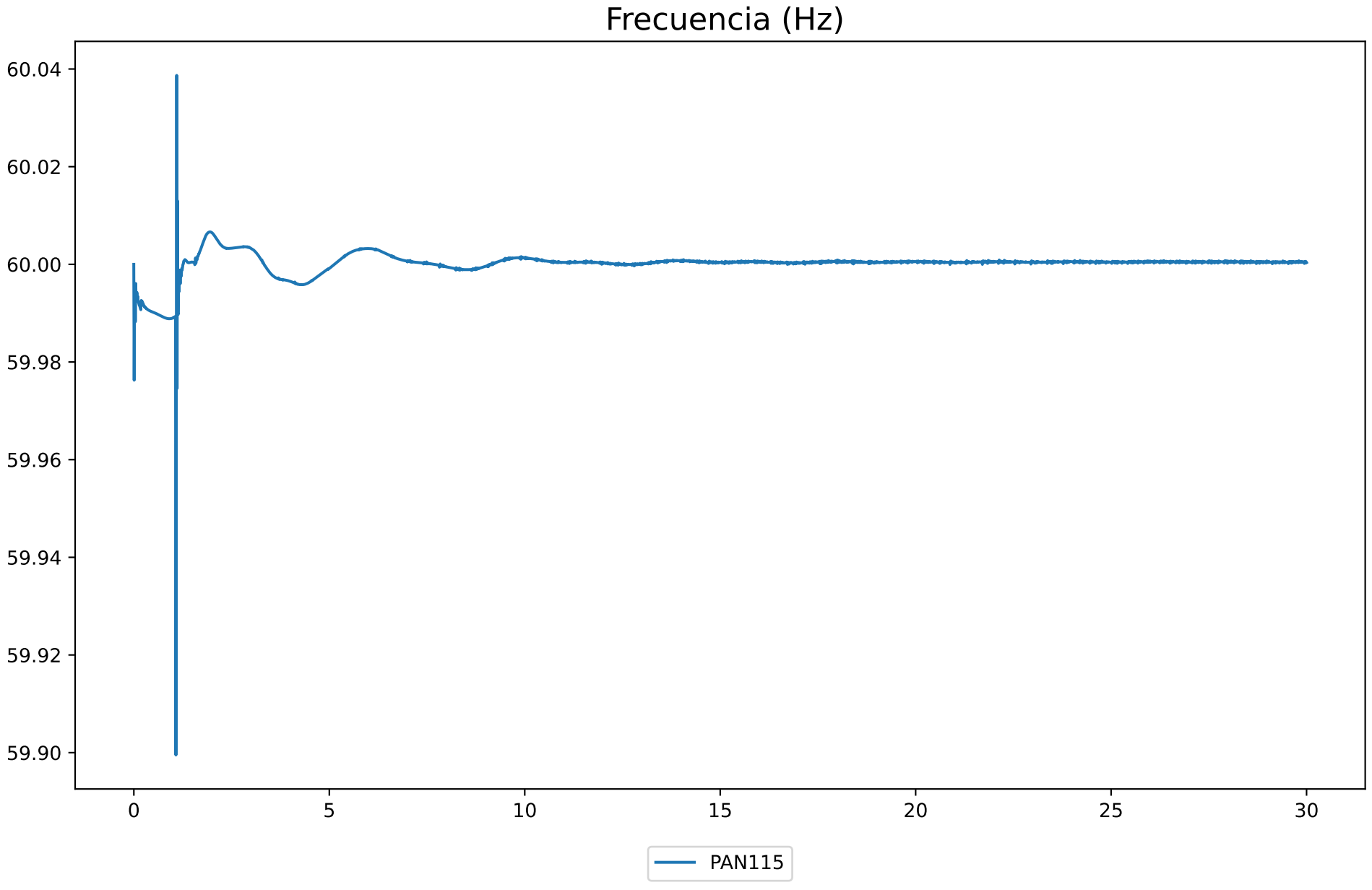
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
60.04
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60.00
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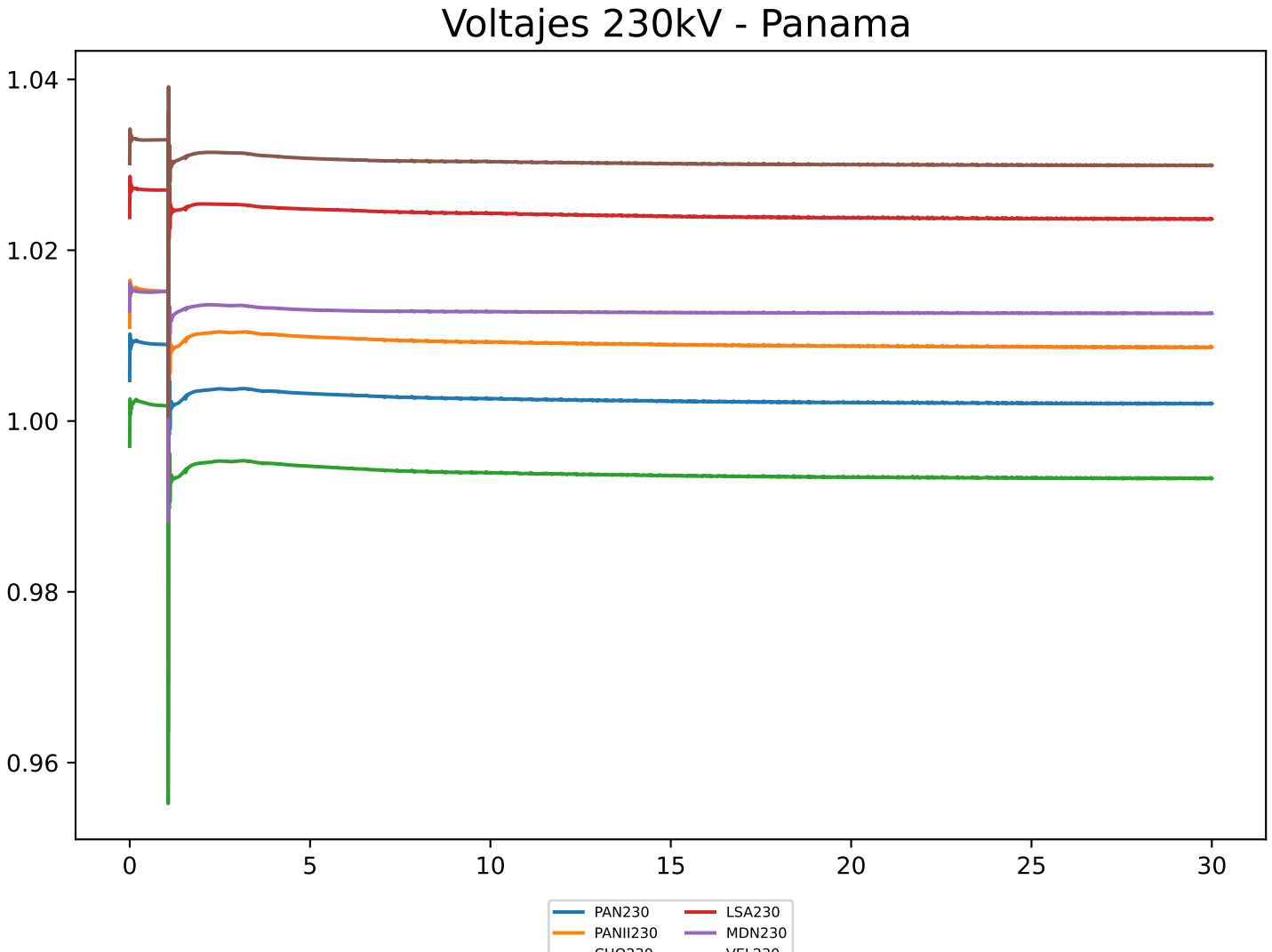
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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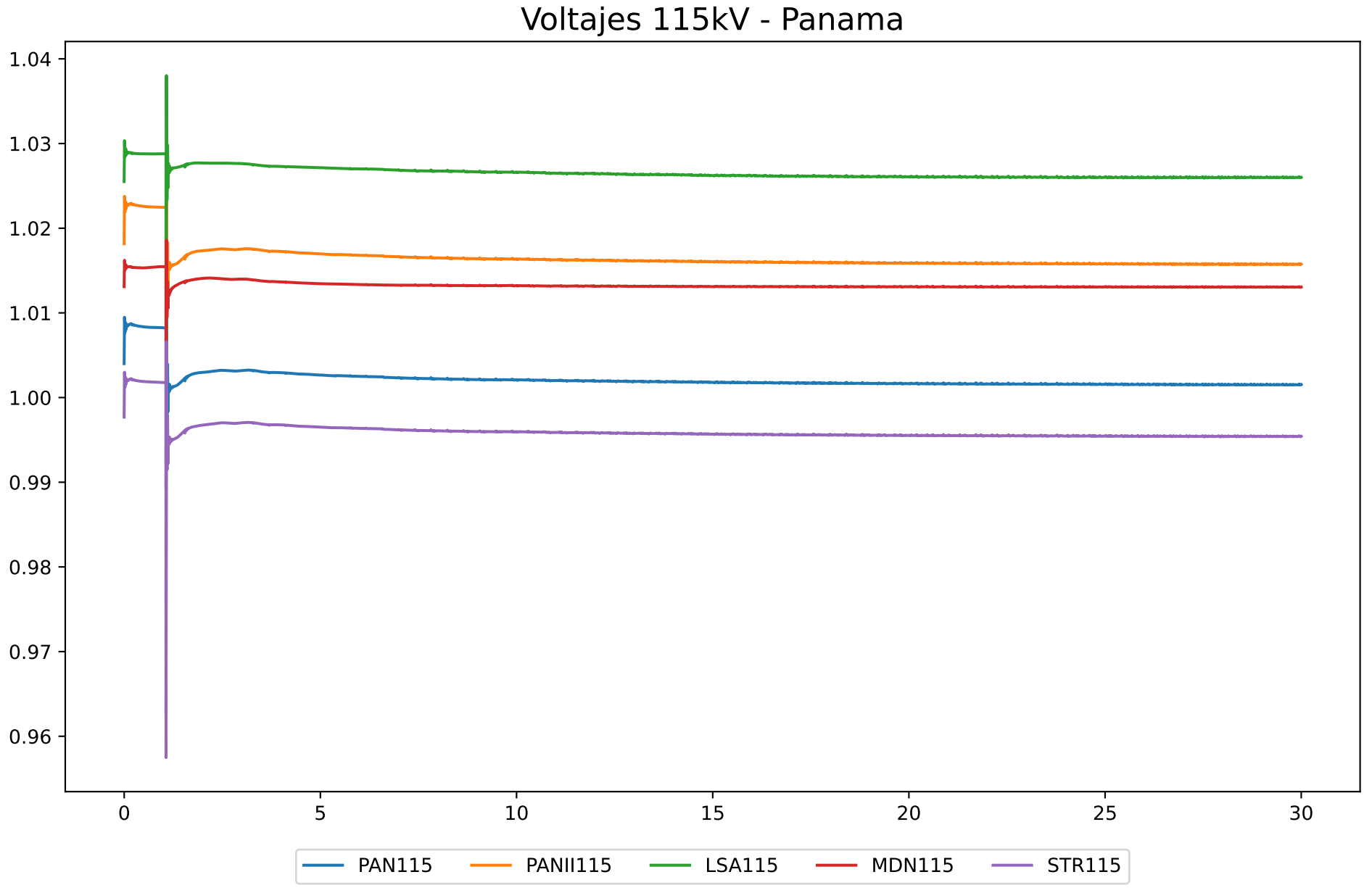
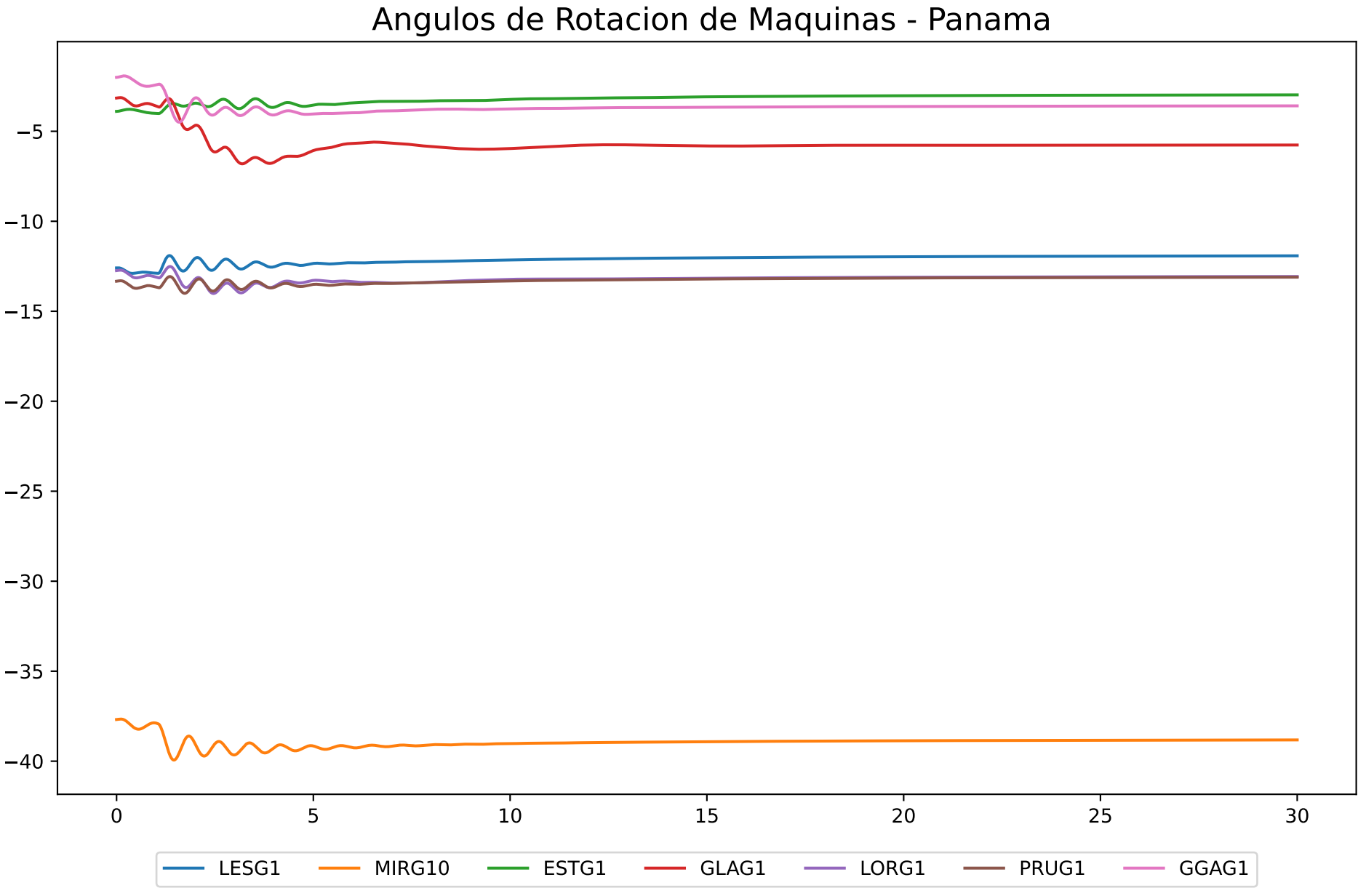
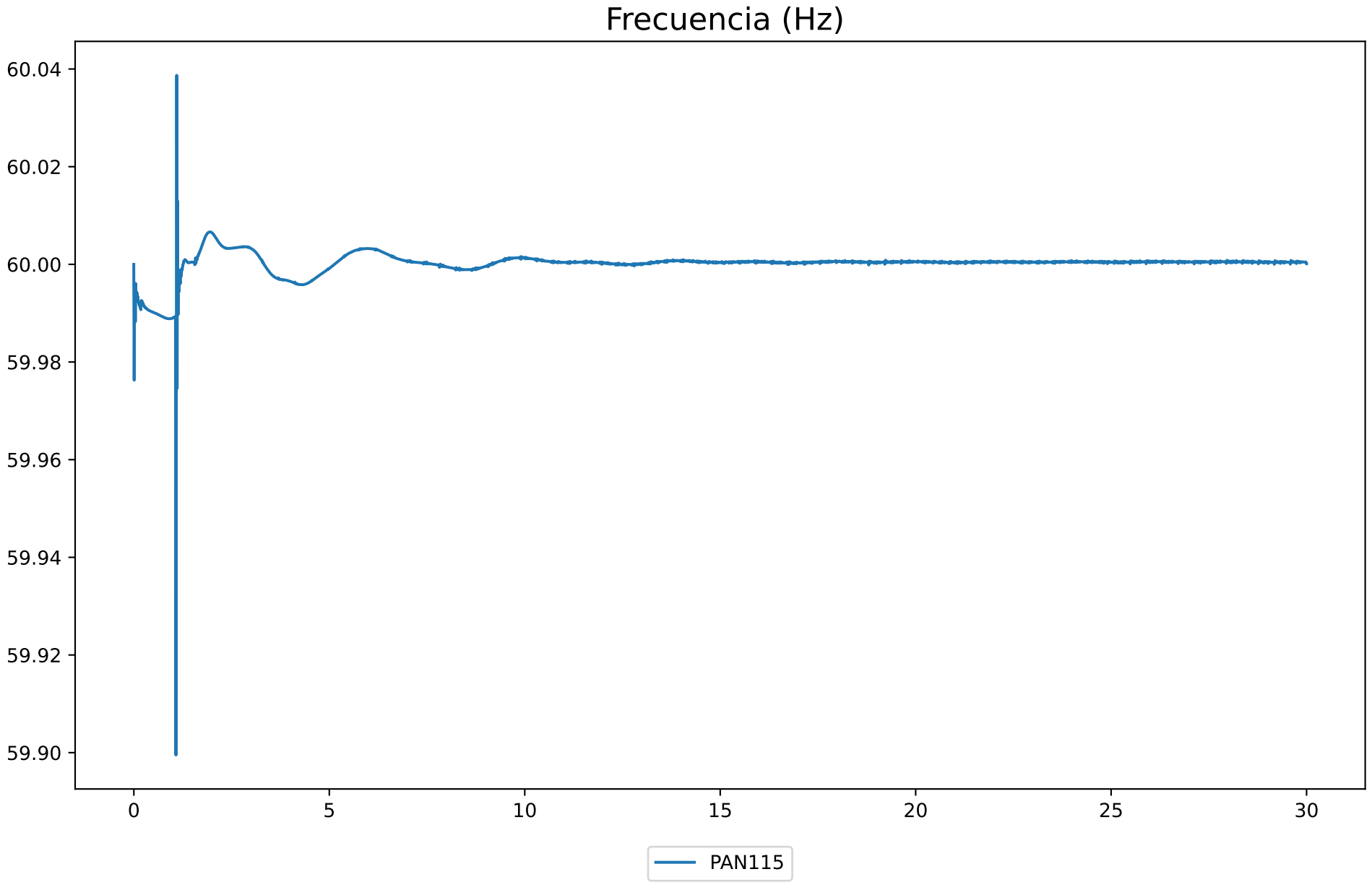
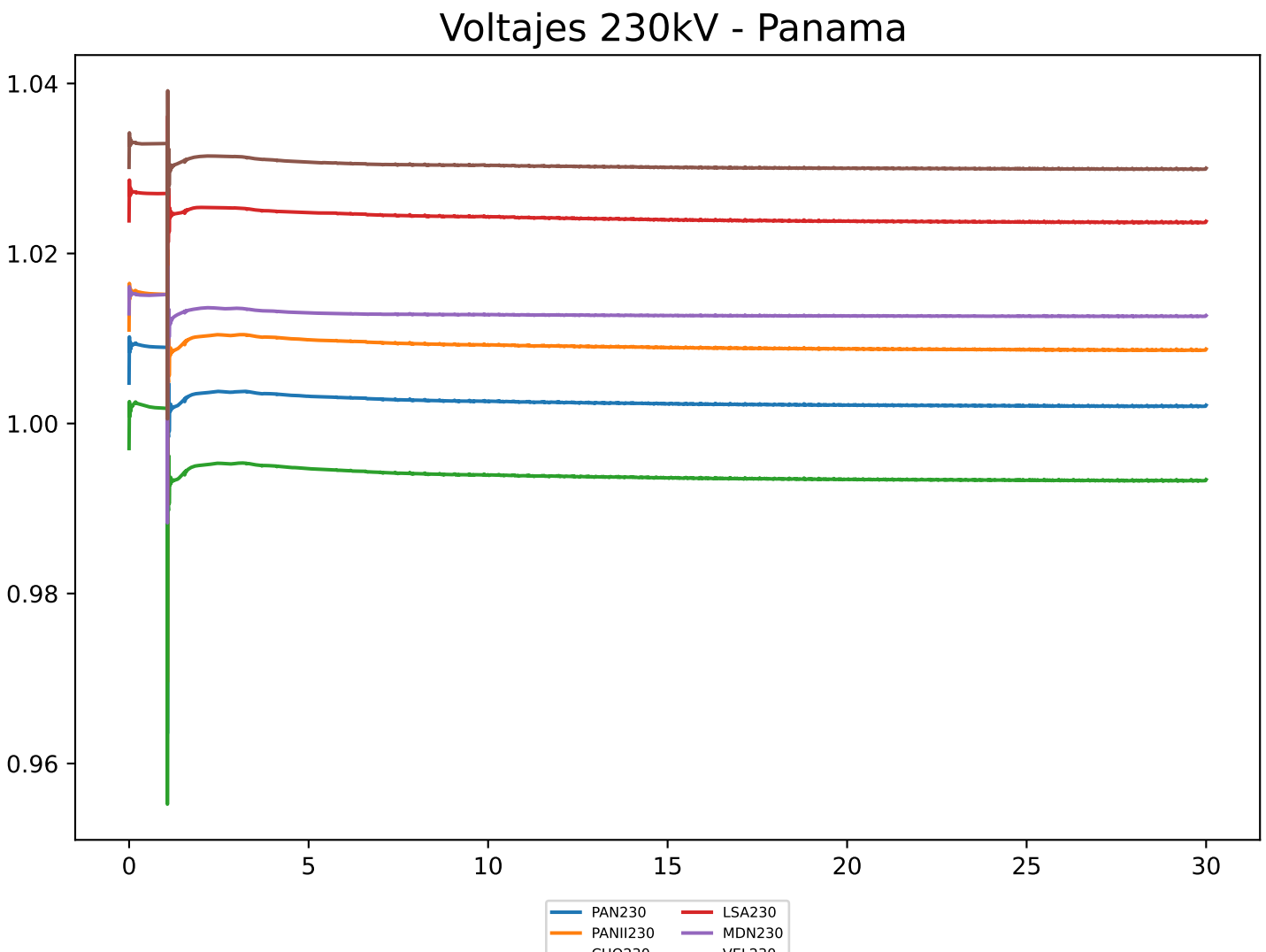
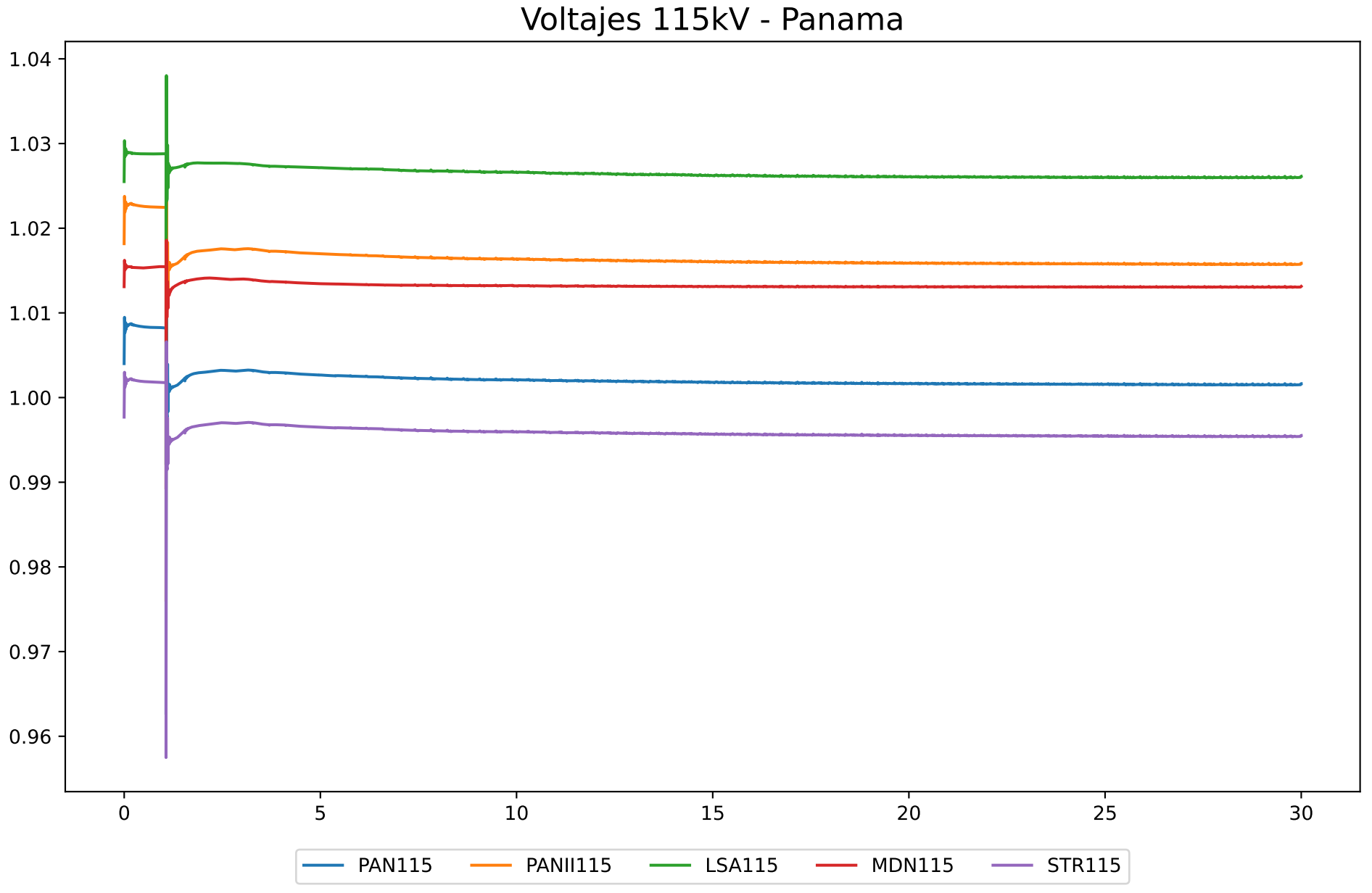
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
60.04
60.02
60.00
59.98
59.96
59.94
59.92
59.90
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.03
1.02
1.01
1.00
0.99
0.98
0.97
0.96
0
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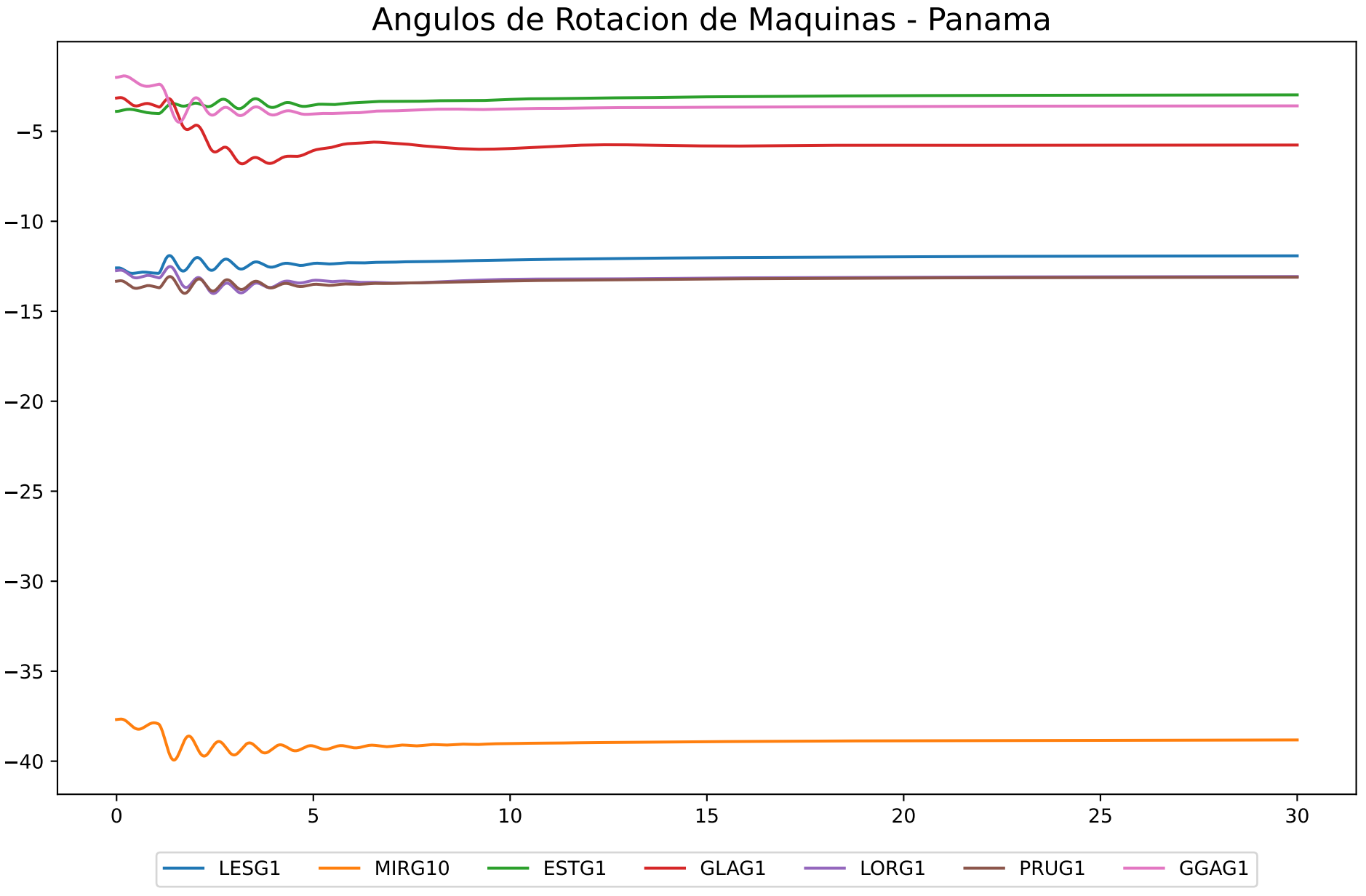
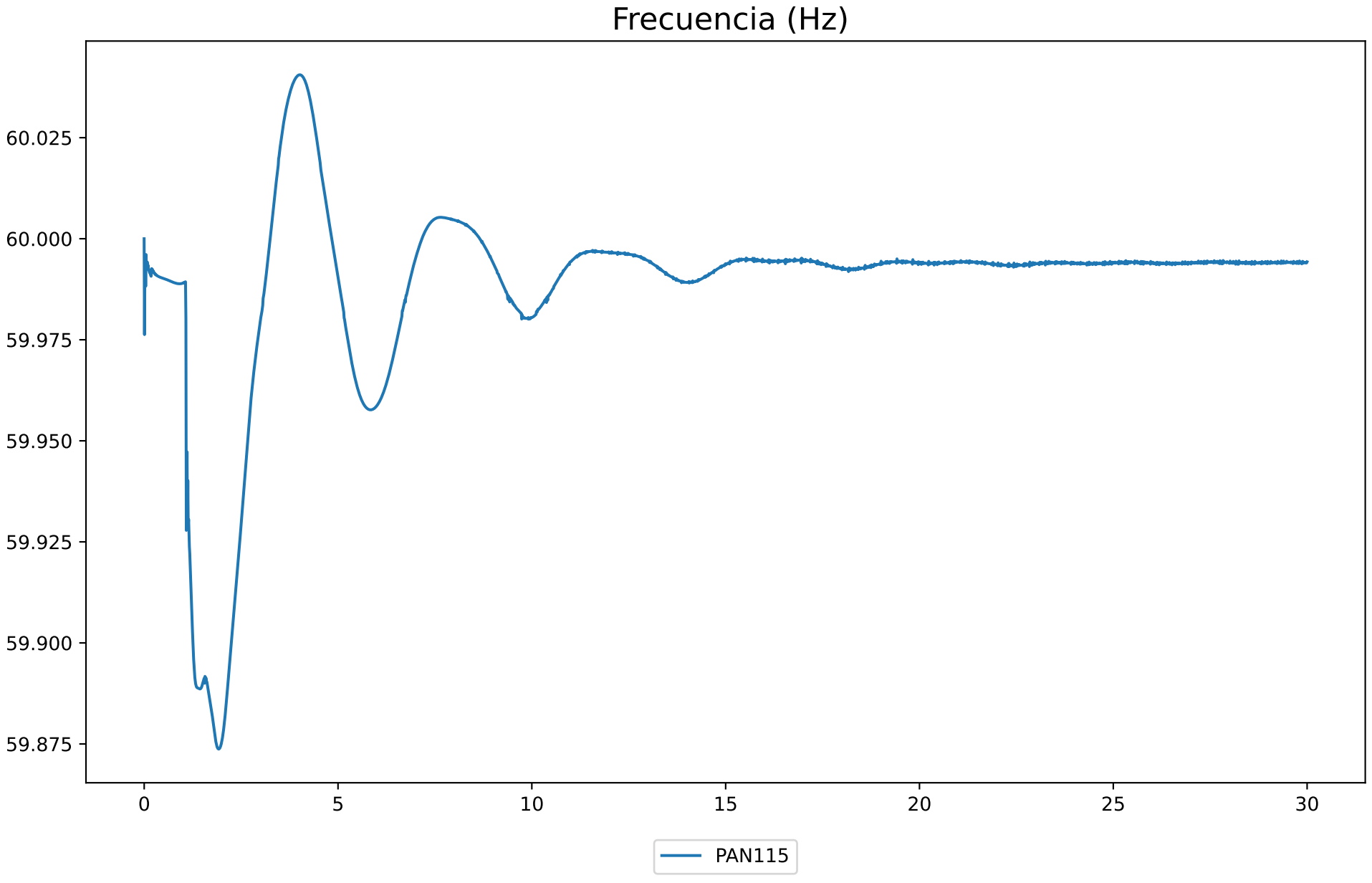
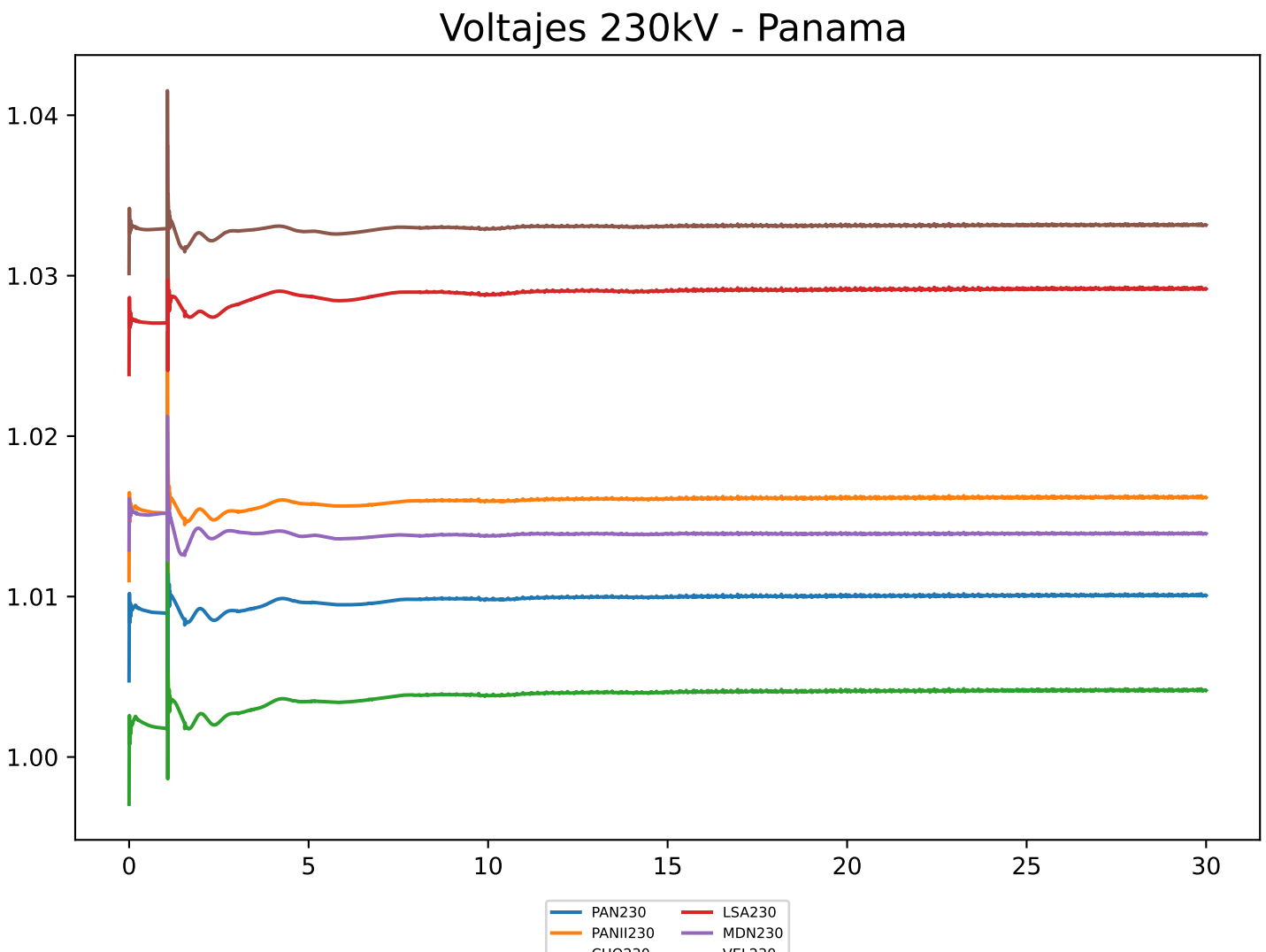
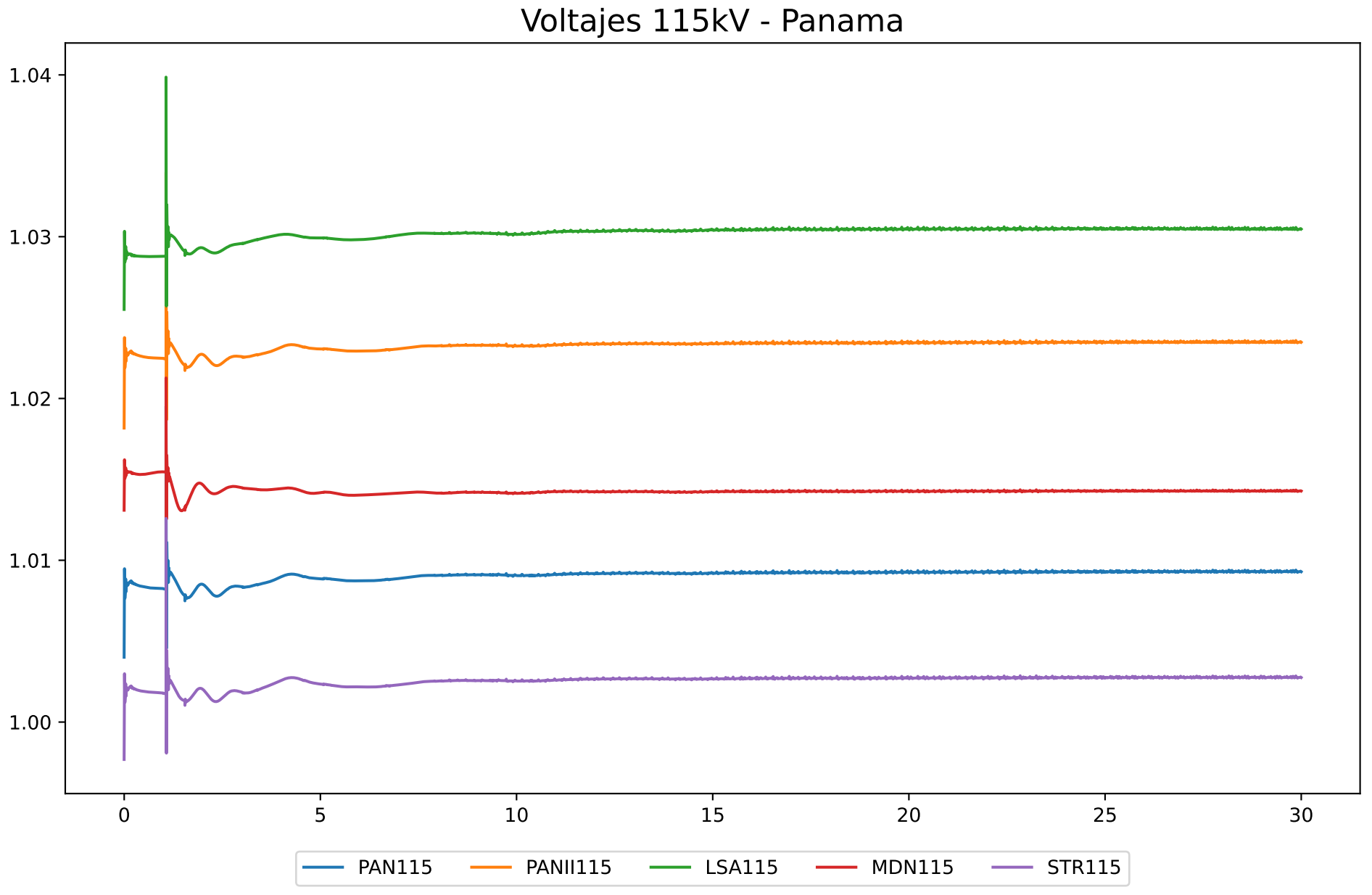
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
60.025
60.000
59.975
59.950
59.925
59.900
59.875
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.03
1.02
1.01
1.00
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.03
1.02
1.01
1.00
0
5
10
15
20
25
30
PAN115
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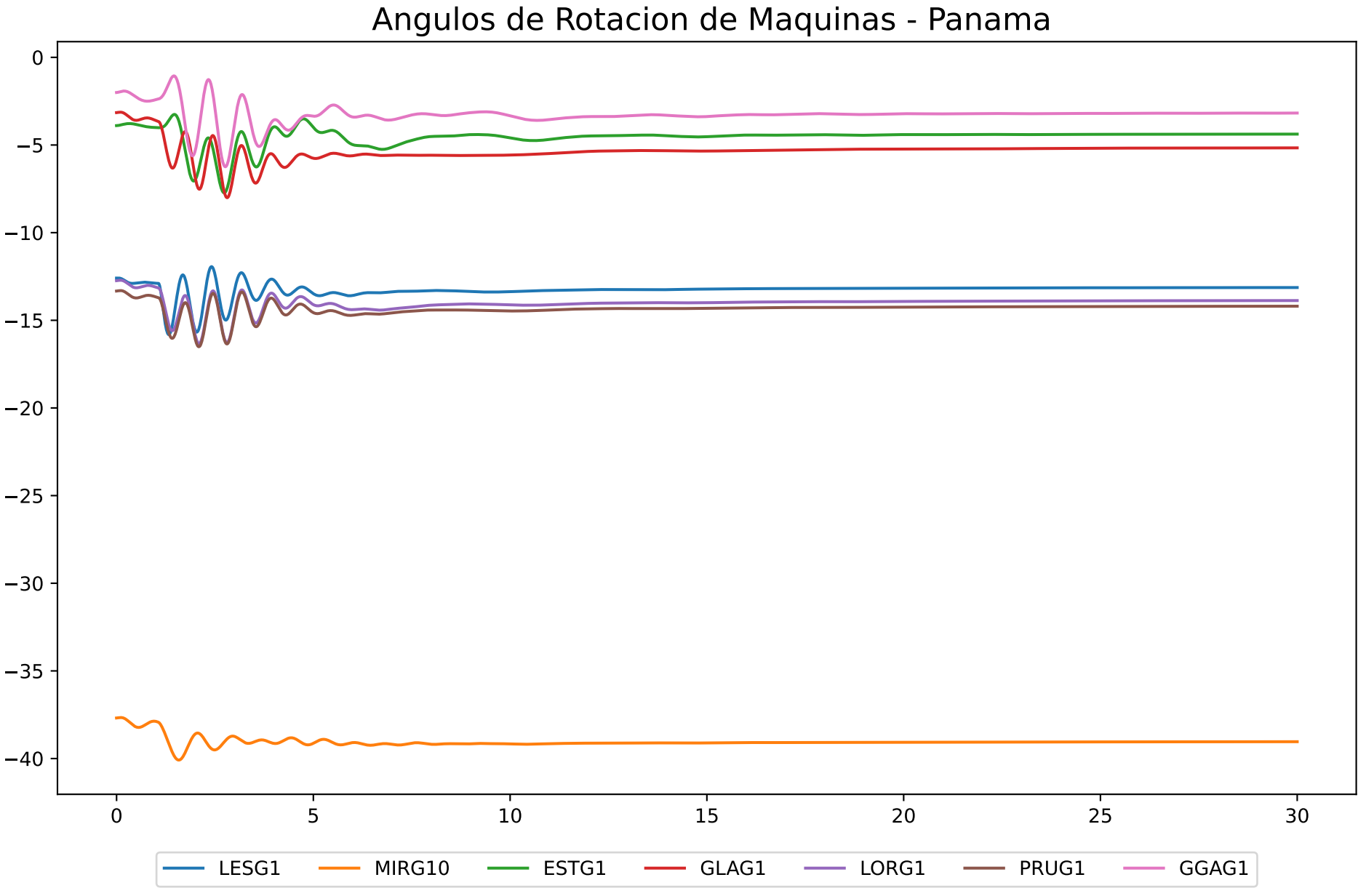
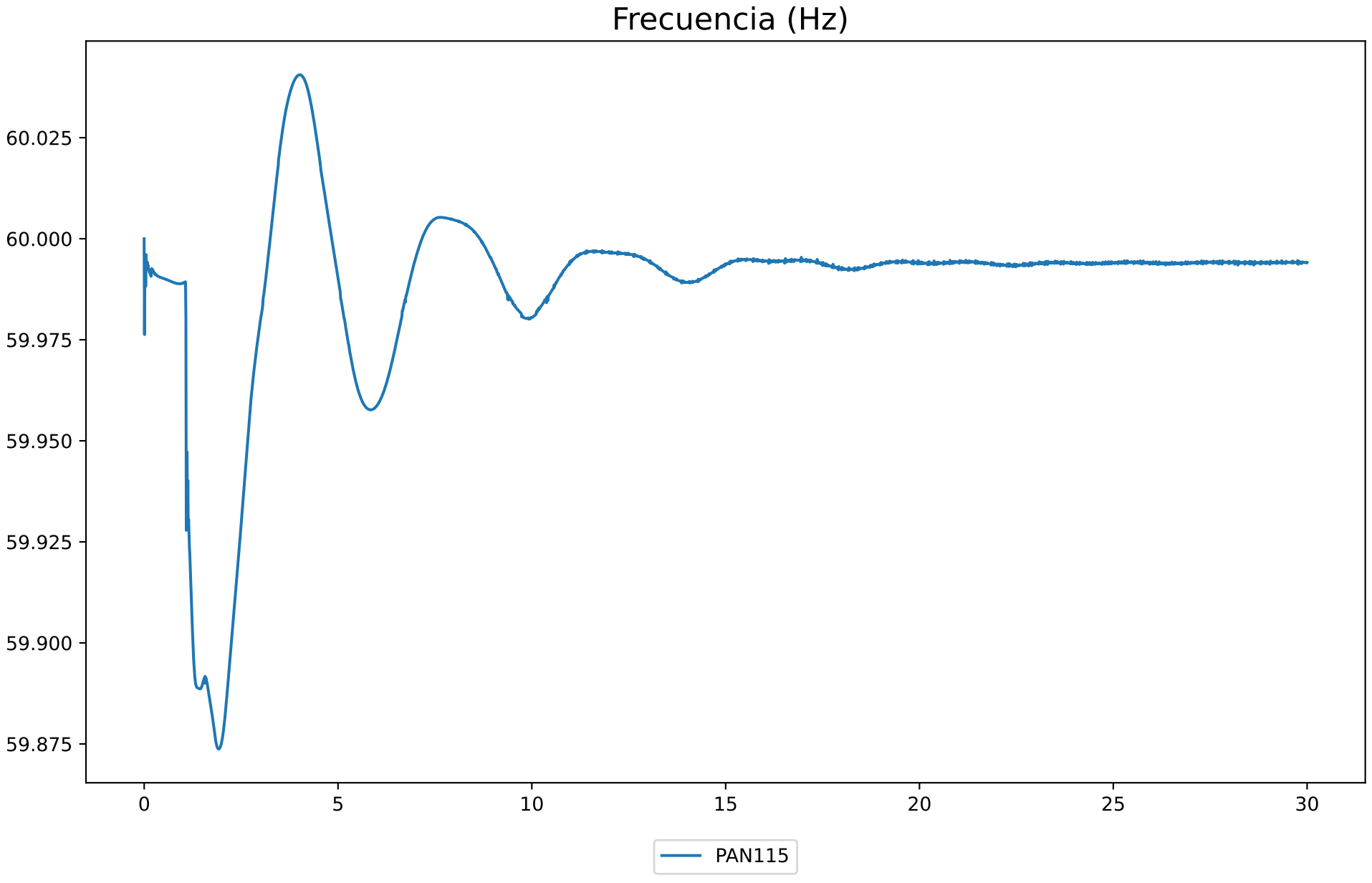
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
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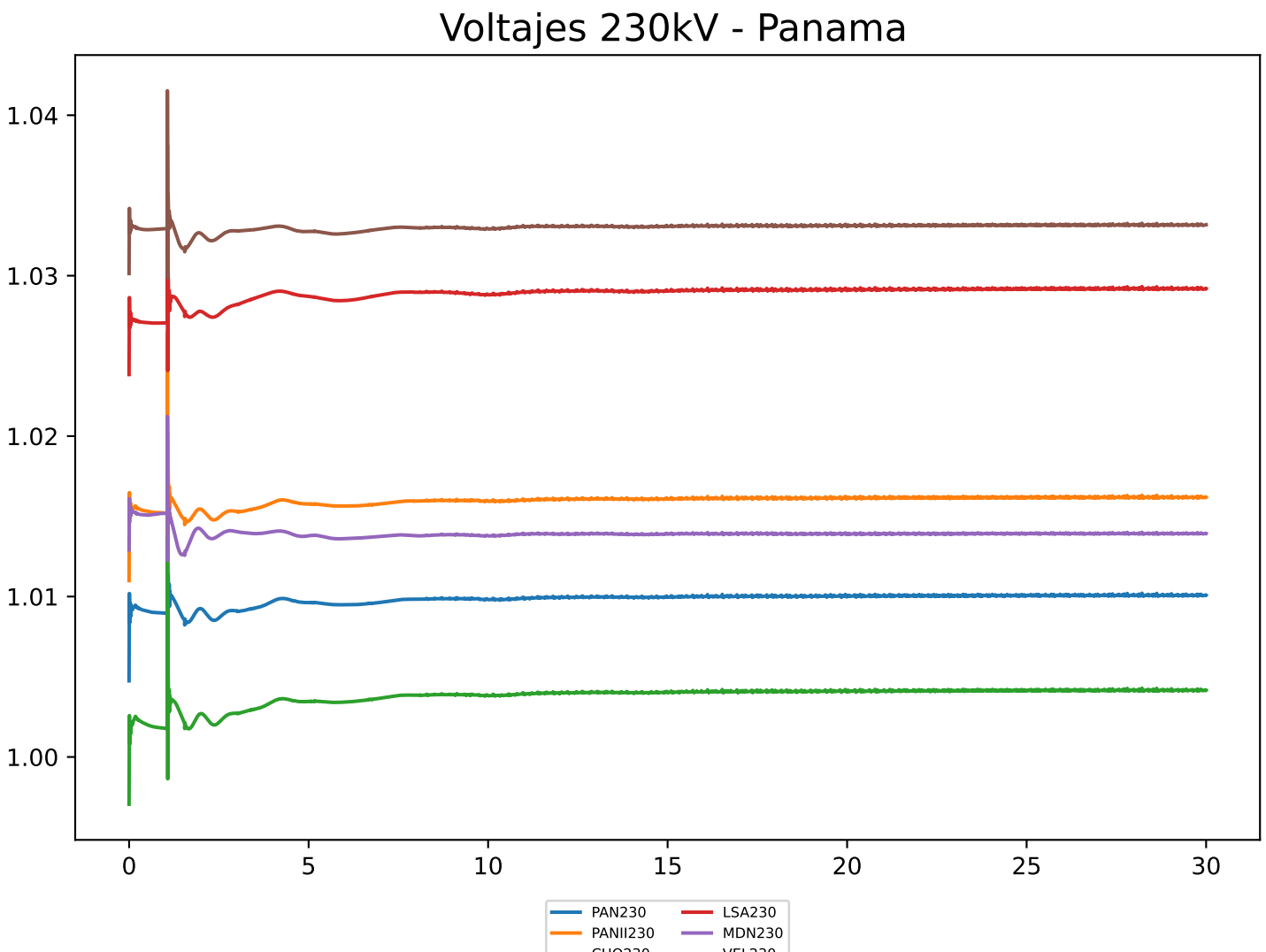
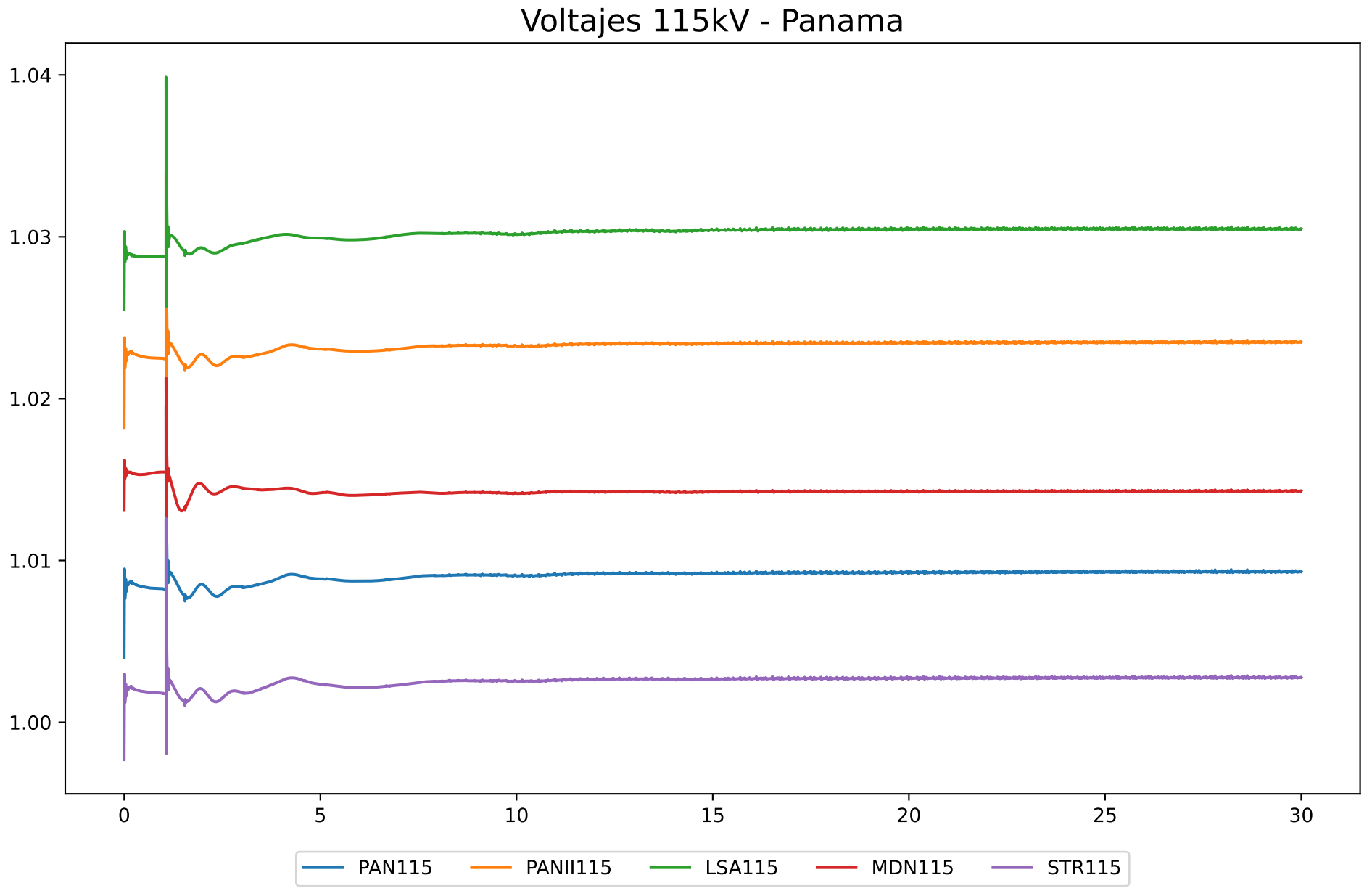
60.000
59.975
59.950
59.925
59.900
59.875
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.03
1.02
1.01
1.00
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.03
1.02
1.01
1.00
0
5
10
15
20
25
30
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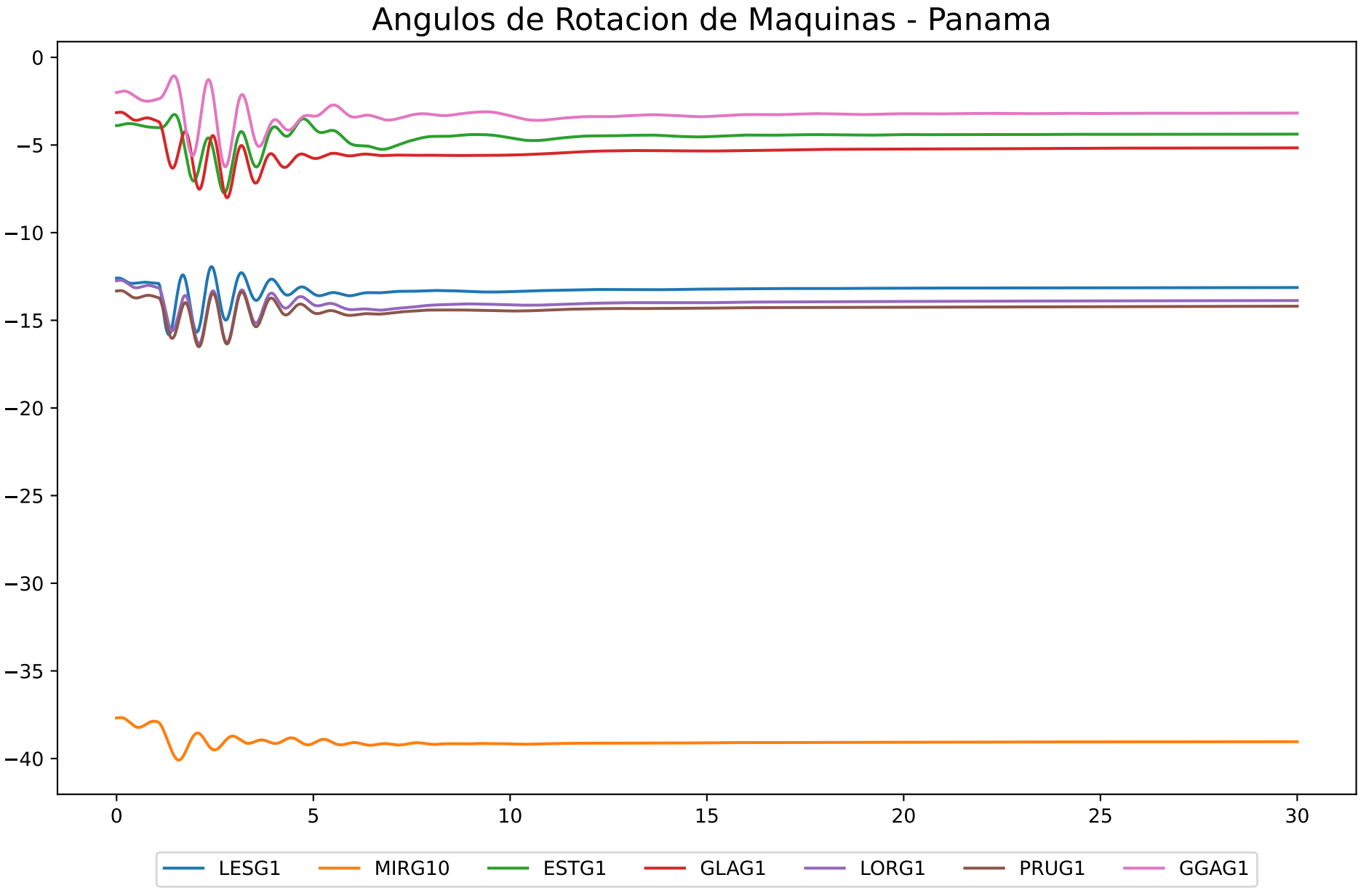
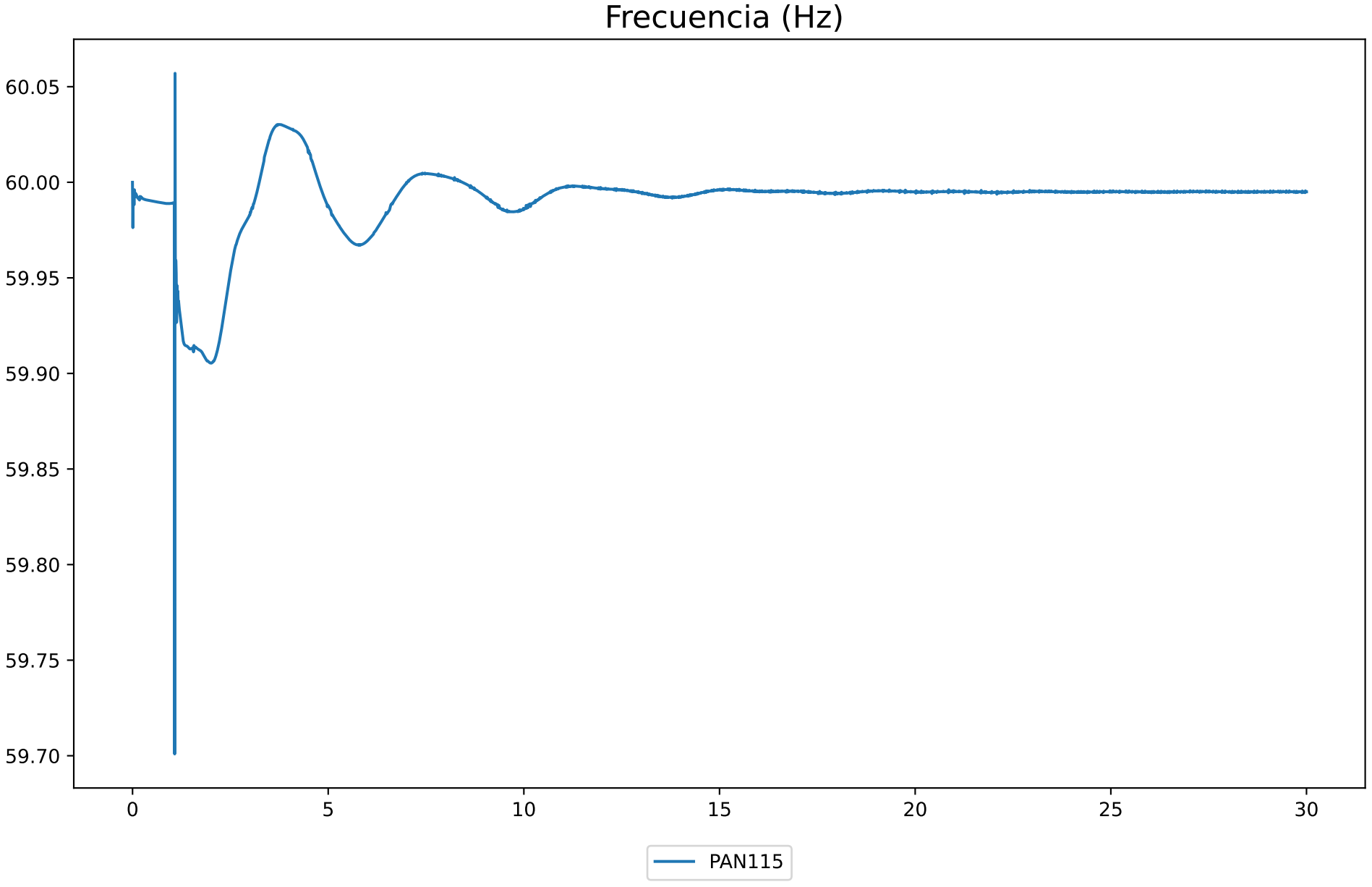
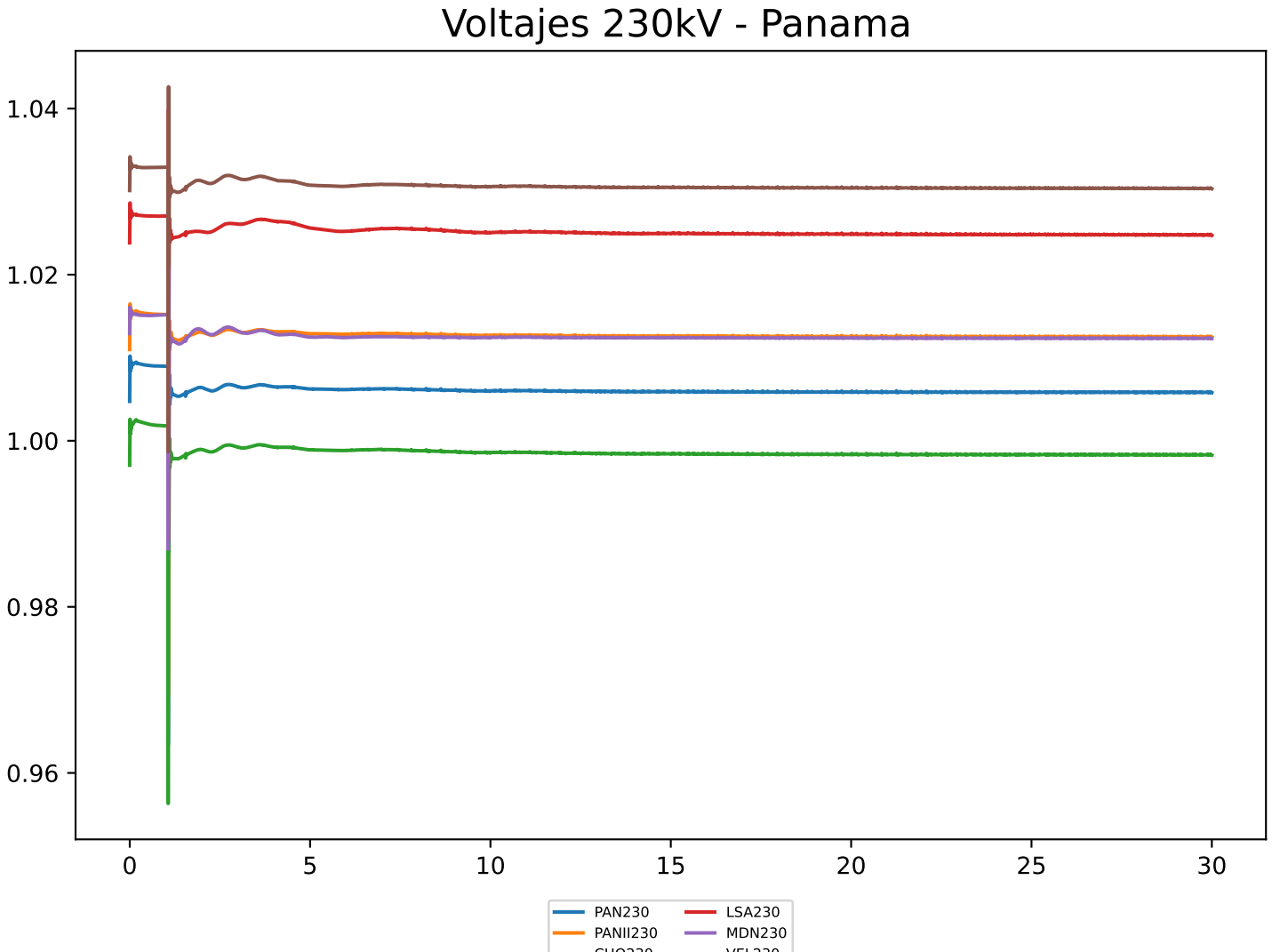
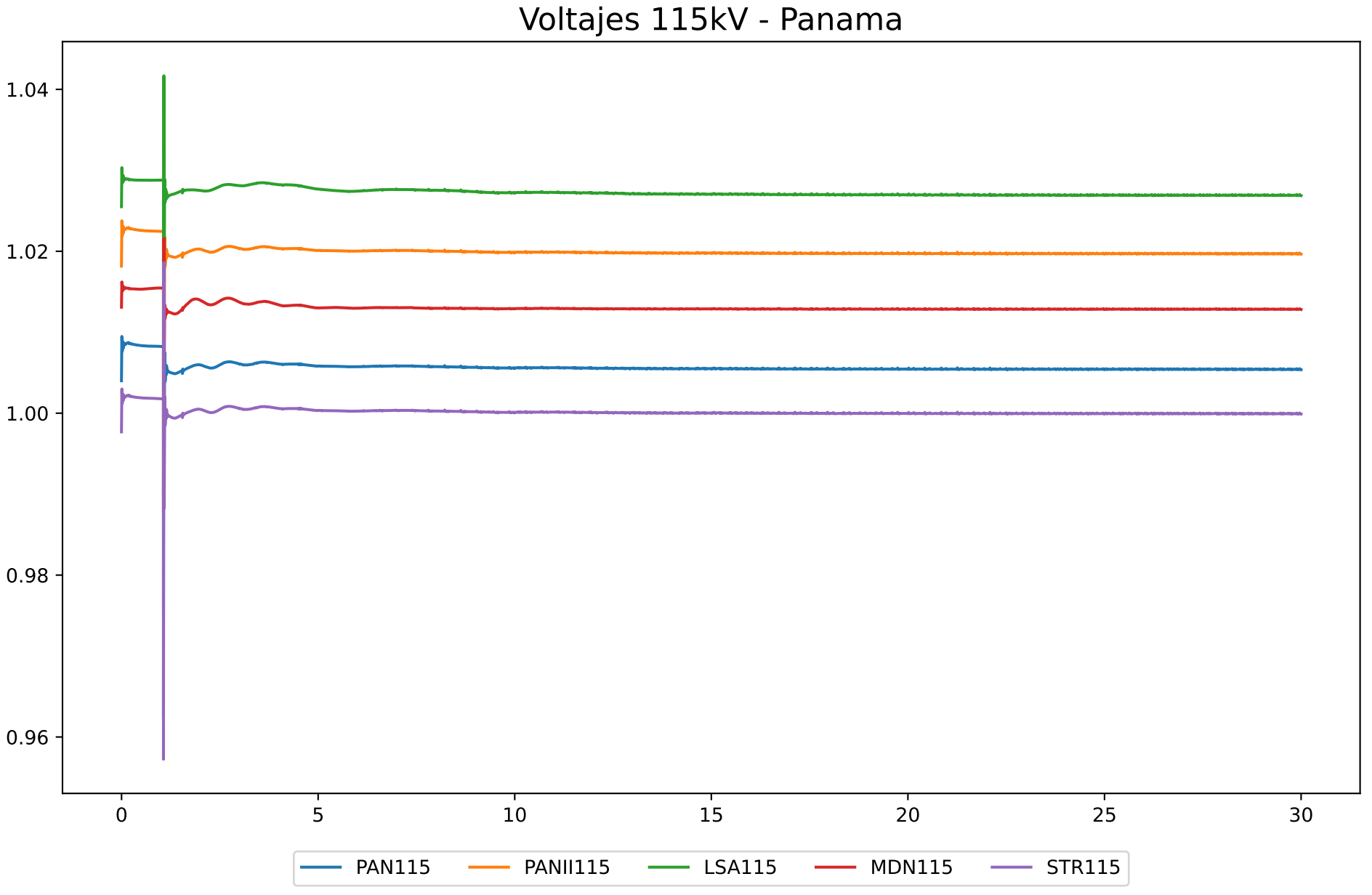
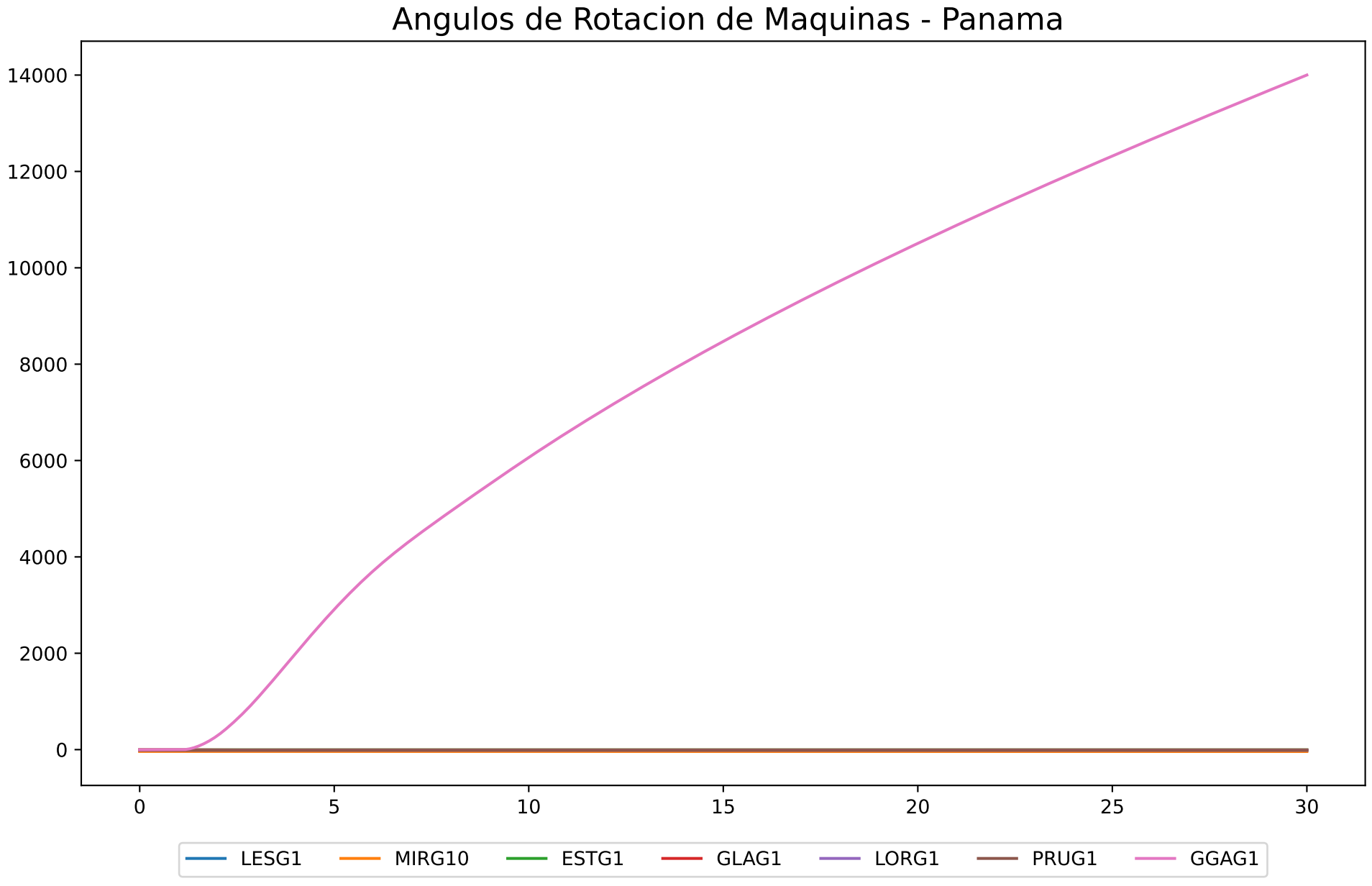
PANII115
LSA115
MDN115
STR115

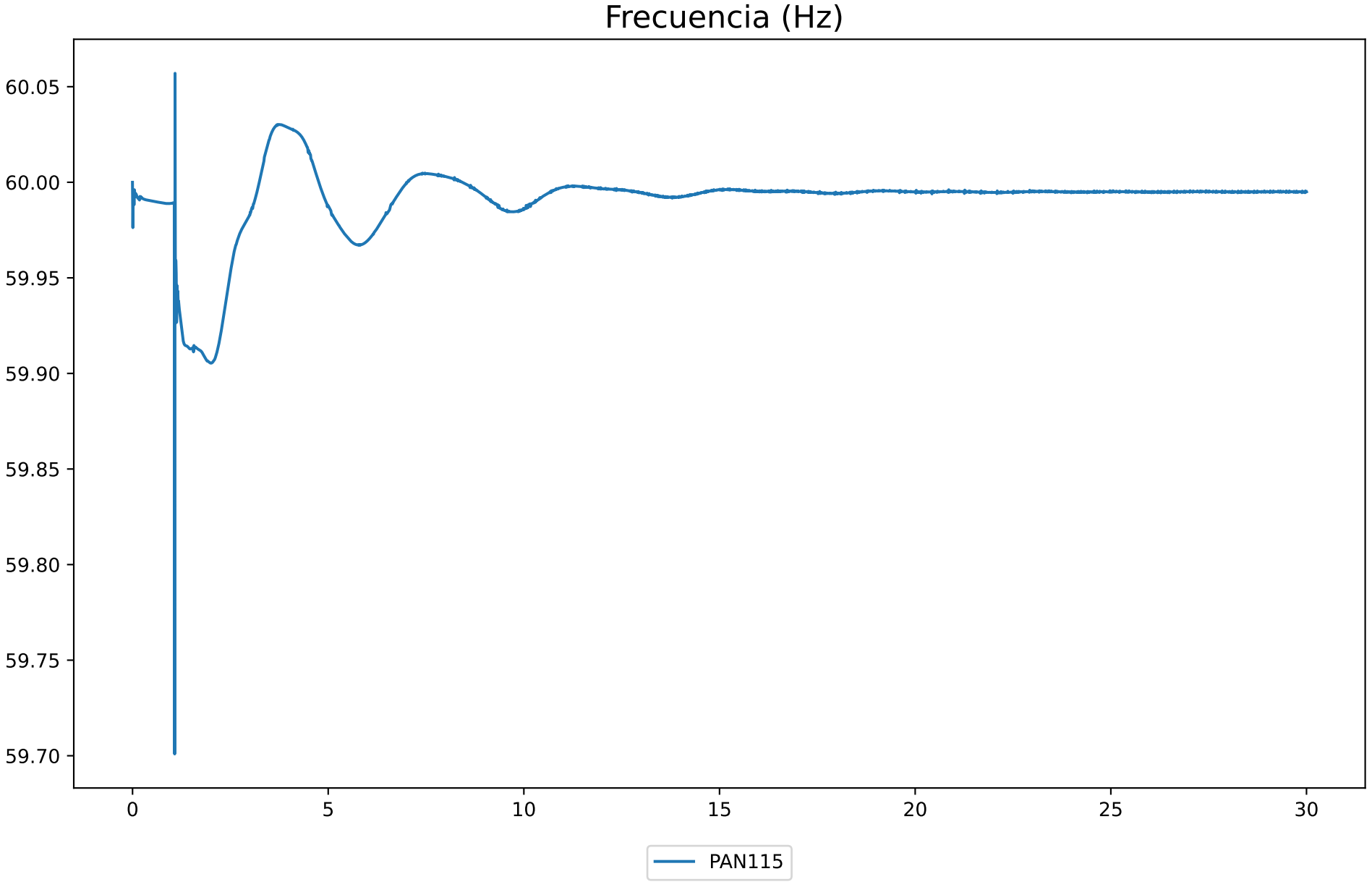

Angulos de Rotacion de Maquinas - Panama
0
−5
−10
−15
−20
−25
−30
−35
−40
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1

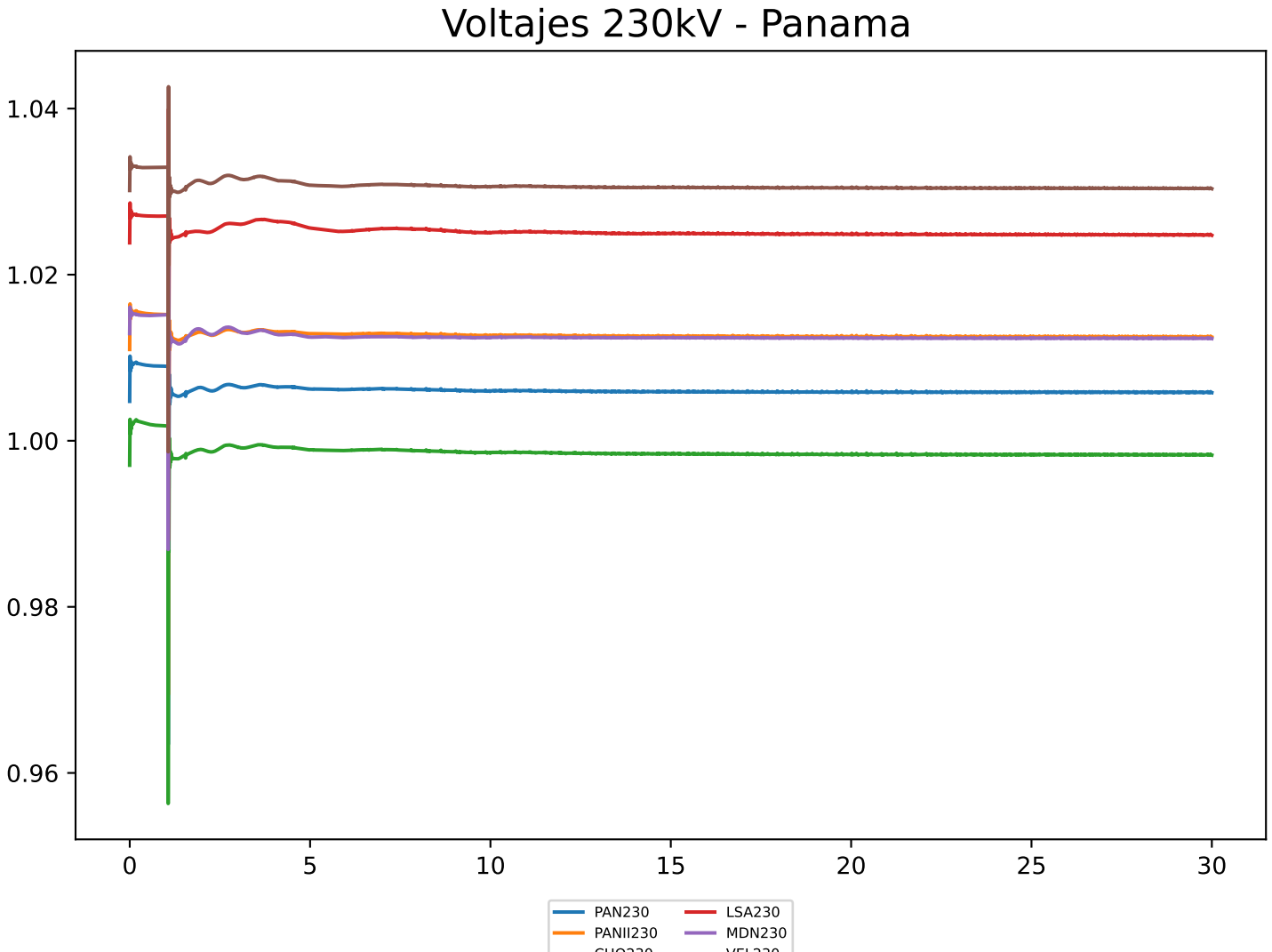

Frecuencia (Hz)
60.05
60.00
59.95
59.90
59.85
59.80
59.75
59.70
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN230
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
PAN115
PANII115
LSA115
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
14000
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1


Frecuencia (Hz)
60.05
60.00
59.95
59.90
59.85
59.80
59.75
59.70
0
5
10
15
20
25
30
PAN115


Voltajes 230kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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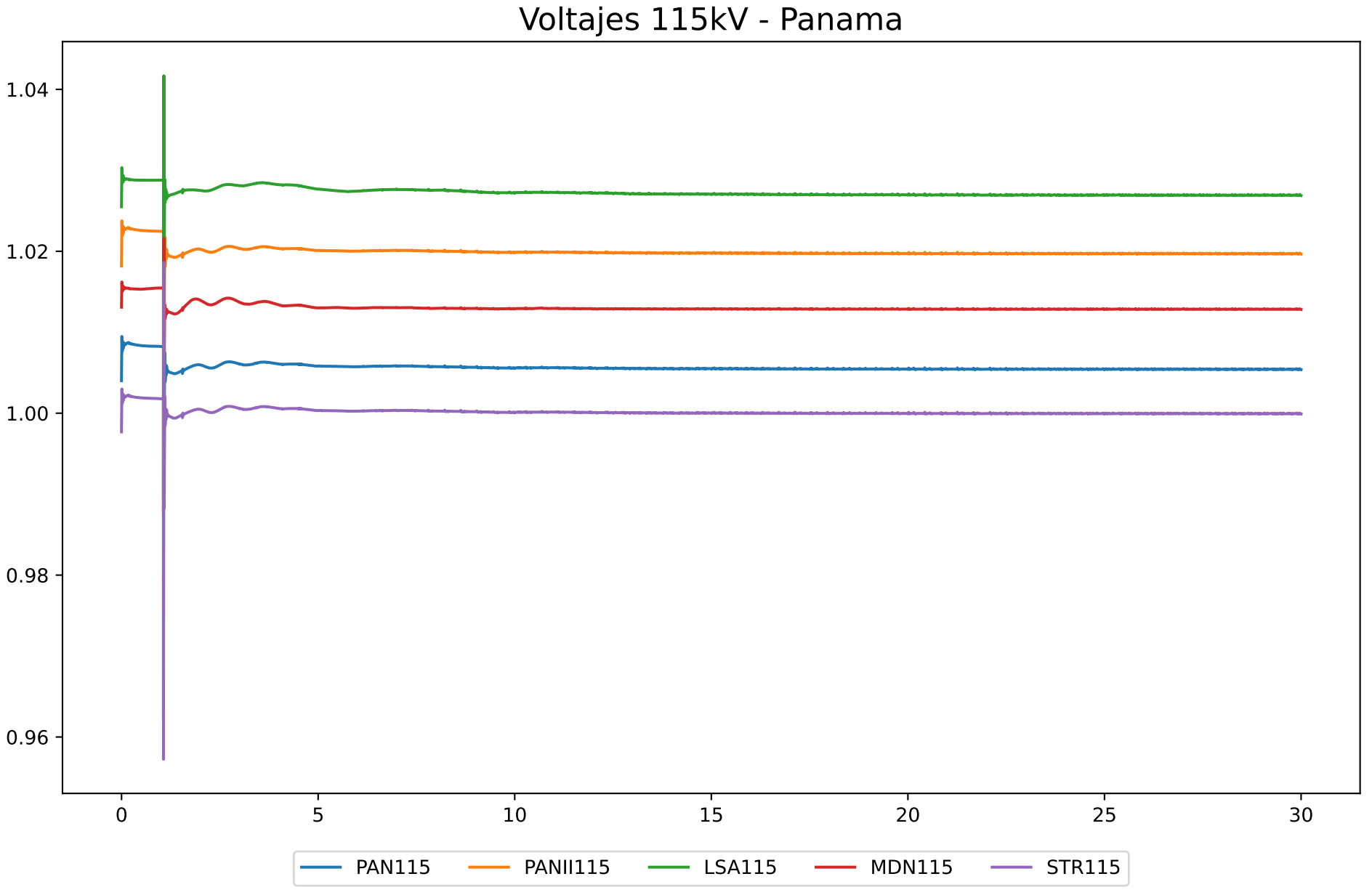
PANII230
LSA230
MDN230


Voltajes 115kV - Panama
1.04
1.02
1.00
0.98
0.96
0
5
10
15
20
25
30
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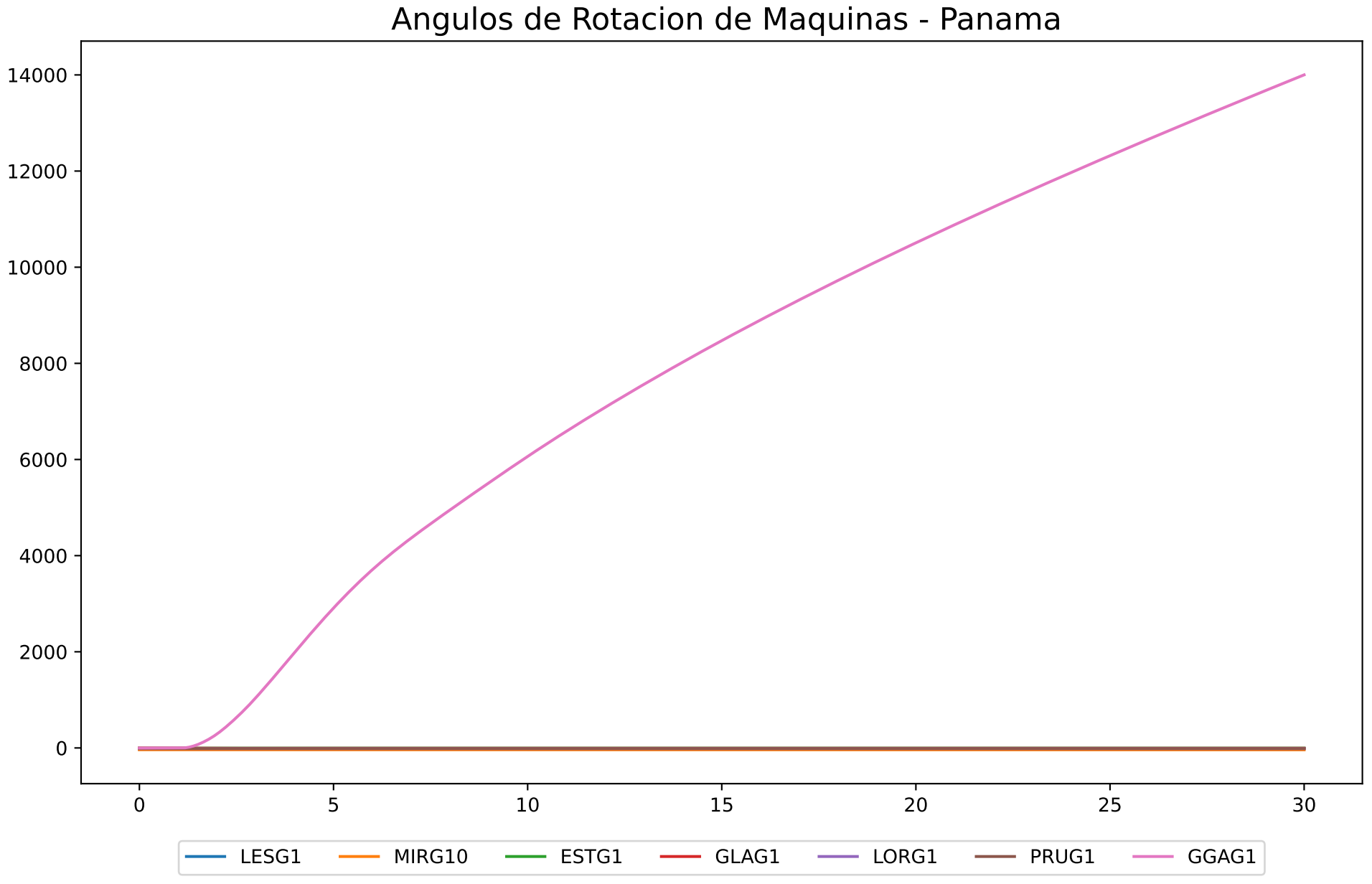
MDN115
STR115


Angulos de Rotacion de Maquinas - Panama
14000
12000
10000
8000
6000
4000
2000
0
0
5
10
15
20
25
30
LESG1
MIRG10
ESTG1
GLAG1
LORG1
PRUG1
GGAG1