

Sonoma N12



Sonoma N12

Preface

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About EndRun Technologies

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Limitation of Liability

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CDMA Timing -
How It Works

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" jwr<lly y 0gpftwpvgejppnq i kgu0eq o lrvr/uncxg0jv o

Vjku"rcig"kpvgpvkqpcnn{"nghv"dncpm0

kh{qwt"pgvyqtm" "wug"FER"ht"jquv"eqpLiwtcvkqp."cpf"{qw"ctg"kp"cjwtt{"vq"igv"{qwt"Uqpqoc"wr"cpf"twppki."{qw"oc{"rtqeggf"vq"*Xgthkpi"Pgvyqtm"EqpLiwtcvkqp*"vq"ocmg"uwtg"vjcv"vjg"pgvyqtm"rctcogvgtu"ygtg"ugv"wr"eqttgevn{0""Qvjgtykug."kv"ku"tgeqoogpfgf"vjcv"{qw"tgc"vjg"hqmqykp"i"ugevkqpu"qp"vjg"wug"qh"vjg"TU/454"ugtkc"KIQ"rqtv"pqy."ukpeg"vjg{"ykn"jgnr"{qw"kp"fgdwi"ikpi"cp{"rtqdn"ou"vjcv"{qw"oc{"gpeqwpvgt"ykvj"vjg"cwvqocvke"eqpLiwtcvkqp"xkc"FER}

kh{qwt"pgvyqtm" "wug"FER"{qw"ykn"pggf"vq"eqpLiwtg"{qwt"Gvjgtpgv"kpvgthcegu"wukpi"vjg"TU/454"ugtkc"KIQ"rqtv"Vjg"hqmqykp"i"ugevkq"eqpvckpu"cdtkgh"fguetkrvkqp"qp"jqy"vq"fq"vjcv}

Configuring Ethernet with the Serial Port

Vq"eqpLiwtg"{qwt"Gvjgtpgv"kpvgthcegu"ykvj"vjg"ugtkc"rqtv."chvgt"nqi"ikpi"kp"cu"vjg" "wugt."{qw"owuv"twp"cu"ok"oring"uetkrv"ecmgf" 0""Vjku"uetkrv"ykn"rtqorv"{qw"ht"vjg"pggf"kpht"ocvkqp"cpf"rghqt"o"uq"og"u{pvcz"ejgemkpi"qp"{qwt"kprrvu"Vjgp"kv"ykn"etgcvg"qt"oqfkh{"vjg"crtrqtrtkcv"Lngu"pggf"vq"eqpLiwtg"vjg"Gvjgtpgv"kpvgthcegu"Vjg"hqmqykp"i"ugevkqpu"ykn"i"wkfg"{qw"kp"ugvki"wr"eqo"/owpkcvkqpu"ykvj"vjg"Uqpqoc"wukpi"kvu"TU/454"ugtkc"KIQ"rqtv}

Connect the RS-232 Serial I/O Port

Vq"vguv"ugtkc"eqo"owpkcvkqpu"ykvj"vjg"Uqpqoc"{qw"ykn"pggf"gvjgt"XV322"eqorcvkdn"vgtokpcn"qt"cvgtokpcn"gowncvkqp"rtqitc"o"twppki"qp"{qwt"eqorwvgtl"Yg"ykn"tghgt"vq"gvjgt"qh"vjgug"cu"dvgtok/pcn"ht"vjg"tg"ockpfgt"qh"vjku"kpvtwevkqp}

30" Fkueqppgev"rqygt"htqo"vjg"Uqpqoc}

40" Eqppgev"qpg"gpf"qh"vjg"FD;H/vq/FD;H"pwn"oqfgo"cfcrvgt"ecdng"vq"vjg"ugtkc"KIQ"lcem"qp"vjg"Uqpqoc}

50" Eqppgev"vjg"qvjgt"gpf"qh"vjg"FD;H/vq/FD;H"pwn"oqfgo"cfcrvgt"ecdng"vq"vjg"vgtokpcn"Kh"vjg"ugtkc"KIQ"rqtv"qp"{qwt"vgtokpcn"fqgu"pqv"jcxg"FD;O"eqppgevqt."{qw"oc{"pggf"vq"wug"cp"cfcrvgtl" Tghgt"vq"*Crrgpfkz"J"/"Urgekhekckqpu*

É" Dcwf"TCvg<"3;422
É" Fcvc"Dkvu<" :
É" Rctkv{<"Pqpg
É" Uvqr"Dkvu<"3
É"


```
kh {qw"fq"pqv"ugg"ejctcevgtu"fkurnc {gf"d { {qwt"vgtokpcn"rtqitc o "ykvj"kp"52"ugeqpfu"chvgt"vjg"wpkv"ku"
r qygtgf"wr." {qw"owuv"vtqwdngu"jqv" {qwt"ugvwr"0""Cp"kpqettgevn { "yktgf"ecdng"qt"kpqettge"rqtv"ugvvpki"kp"
{qwt"vgtokpcn"g"owncvkqp"rtqitc o "ctg"vjg"o quv"eq o o qp"rtqdn g o u0""Tghgt"vq"Crngpfkz"J//Urgekheec/
vkqpu"ht"vjg"uki"pcn"eqppgevkqpu"ht"vjg"Uqpq o c0
```

```
Qpeg {qw"jcxg"uweeguuhwnn { "guvcdnkujgf"eq o o wpkecvkqpu"ykvj"vjg"Uqpq o c." {qw"oc { "rtqeggf"vq"
eqpLiwtg"vjg"pgvyqtm"rctc o gvgtu"wukpi" " *ugg"dgnqy +0""Vjgp" {qw"ecp"eq o o wpkecvg"ykvj"
vjg"Uqpq o c"qxgt"vjg"pgvyqtm"wukpi" "qt" "cpf"u {pej tqpk | g" {qwt"pgvyqtm"eq o rwwgtu"vq"WVE"
wukpi" PVR0
```

Using netconfig to Set Up Your IP

```
Vjg"uetkrv"Lng" "ykn"eqpLiwtg"vjg"VERIKR"pgvyqtm"rctc o gvgtu"ht" {qwt"Uqpq o c0""
```

NOTE

When setting up the IP addresses on both network port 0 (eth0) and 1 (eth1):

1. Be sure that they are NOT on the same subnet.
2. Configure the default gateway on either port 0 (eth0) or port 1 (eth1), BUT NOT BOTH.

NOTE

If you want to use the HTTPS Interface, then be sure to configure the name server IP address during the process. The HTTPS Interface will not operate properly if this is configured incorrectly. Only one name server is required, but two gives some redundancy.

```
Vjg"hqmqy kpi"ujqyu"vjg"dgi kppki"qh"vjg" "kpvgtcevkxg"uetkrv<
```

Chvgt"eqpLiwtkpi" {qwt"Gvjgtpgv"kpvgthcegu." {qw"ujqwnf"ujwvfqyp"vjg"Uqpqoc"cpf"tgdqqv"kv"d {"kuuwkpi"
vjku"eqoocpf"cv"vjg"rtqorv<

Verify Network Configuration

kh" {qw"ctg"wukpi"vjg"TU/454"ugtkcn"klQ"rqtv"vq"eqoowpkcevgykvj"vjg"Uqpqoc." {qw"ykn"dg"cdng"vq"ugg"

kh{qw"ctg"pqv"wukpi" F J ER."v jg"KR"cf ftguu"ujqyp"ujqwnf" ovej"v jg"uvcvke"KR"cf ftguu"y jkej" {qw"
gpvgtgf"fwtkpi"v jg" "rtqegfwtg0""kh"uq."nqi"kp"cu"ōtqqvō"cv"v jg"nqikp"rtq o rv"cpf"ejgem"v jg"
qvjgt"eqpŁiwtcvkqp"rctc o gvtu"wukpi" <

Rc{"rctvkewnct"cvwgpvkqp"vq"v jg"ugvwpki u"ujqyp"hqt" "cpf" ."kp"rctvkewnct"v jg" <"ugvwpki."
y jkej"ujqwnf" ovej"v jcv"y jkej"ku"cr rtqr tkcvg"hqt" {qwt"pgvy qtm0""Pqy"ejgem"v jg"tgo pi."

Y jkej "fkurnc {u"vjg"eqpvppvu"qh"vjg "Łng"eqpvckpki "vjg"fq o ckp"pc o g" {qw"gpvgtgf"rtgkx/
qwun { "wukpi" . "cpf"vjg"pc o gugtugt"KR"cf ffguu*gu+"vq"wug"hqt"vjcv"fq o ckp0

Check Network Operation

Y kvj { "qwt"Uppq o c"pgvy qtm"rctc o gygtu"rtqr gtn { "eqpŁi wtgf." {qw"ctg"tgc f { "vq"vguv"vjg"ugvwr" wukpi "
"htq o "c"ugtugt"qt" y qtmuvckqp"vjcv"ku"cdng"vq"ceeguu"vjg"pgvy qtm"eqppgevgf"vq"vjg"Uppq o c0""Cn/
vgtpcvkxgn { . {qw"eqwnf" "qpg"qh" {qwt"ugtugt"qt" y qtmuvckqpu"htq o "vjg"Uppq o c"rtq o rv"vq"vguv"vjg"
ugvwr0

Qpeg {qw"jcxg"uweeguuhwnn { "guvcdnku jgf"pgvy qtm"eq o o wpkecvkqpu" y kvj"vjg"Uppq o c." {qw" o c { "rgthqt o "
cnn" o ckpvGPCpeg"cpf" o qpkvqtkpi "cevkxkvku" xkc" "cpf" 0""Vjg"Uppq o c"rtqkfgu"dqvj"enkpv"cpf"
ugtugt"qrgtcvkqp" wukpi " 0""Hqt"ugewtkv { "tgcuaqu." qpn { "enkpv"qrgtcvkqp"ku"uw r rqtvgf" wukpi 0""

Vjku"rcig"kpvgpvkqpcnn{"nghv"dncpm0

.....
.....Pgvyqtm"Vko g"Rtqvqeqn"EqpŁiwtcvkqp.....
.....

Configuring the Sonoma as a Stratum 2 Server

Qrgtcvkpi "vjg"Uqpqoc"cu"Uvtcvw "3"Ugtxgt"ku"vjg"tgeqo o gpfgf"o qfgl""J qygxgt."vjgtg"ctg"vk o gu" O

Setting Up NTP Clients on Unix-like Platforms

```
Vq"eqpŁiwtg"{qwt"Wpkz/nkmg"eq o r wvgt"vq" wug" {qwt"Uqpq o c"Vko g"Ugtxgt." {qw" o wuv"jcxg"uweegu/
hwmm{"eq o r ngvfg"vjg"PVR"Ugtxgt"dcuke"kpucnncvkqp"rtqegfwtg"fguetkdgf"cdqxdg0""Kv"ku"gzrgevfg"vjcv" {qw"
ctg."qt"jcxg"ceeguu"vq."c"ecrcdng"Wpkzlnkpwz"u{uvgo"cf o kpkuvtcvt"cpf"mpqy" o qtg"vjcp"cnkvnng"cdqww"
kpucnncvpi"fkuvtkdwwkqpu"htqo"uqwteg"eqfg0""Kpucnncvkqp" o wuv"dg"rgthqto g f"d{"c" wugt"ykvj"tqqv"rtkxk/
ngfi gu"qp"vjg"u{uvgo0"
```

```
kh{qw"jcxg"ceeguu"vq"c" wugpgv"pgyu"ugtxgt." o c p {"rtqdn go u" o c {"dg"uqnxgf"d{"vjg"jgnrhwn"rgqrng"y j q"
rctvkekr cvg"kp"vjg"Kpvgtpgv"pgyu"i tqwr"fgxqvgf"vq"PVR"cv" 0
```

```
Vjtggo"gvjqfu"qh"wukpi"vjg"Uqpq o c"ykvj"PVR"enkpvu"qp"Wpkz/nkmg"rncvhtqo u"ykm"dg"fguetkdgf<
```

```
Dcuke<"Vjku"ku"vjg"uk o r nguv."cpf"ykm"qrgtcvg"ykvjqwv"OF7"cwjgpkvckvqp0""PVR"dgikppgtu"ujqwnf"
cny c {u"rgthqto"vjku"ugvwr"Łtu0
```

```
OF7<"Vjku" o gvjqf"ku"vtkenkgt"qpn{"dgecwug"OF7"mg{u" o wuv"dg"ugv"wr"cpf"fkuvtkdwwg"ceewtcvgn{"vq"
vjg"PVR"enkpvu"kp"cu"gewtg"yc{"0""Vjg"Uqpq o c"ku"ncevt{"eqpŁiwtgf"vq"cwjgpkvckvq"ku"tgrnkgu"vq"PVR"
OF7"enkpvu"wukpi"kvu"fgbcwv"ugv"qh"mg{u0
```

```
DtqcfecuvlOwvkecuv<"Vjku" o gvjqf"uk o r nkŁgu"eqpŁiwtcvkqp"qh"vjg"enkpvu"qp"nctig"pgv y qtmu"ukpeg"
urgekŁe"ugtxgt"cf ftguugu"pggf"pqv"dg"eqpŁiwtgf"kp"gej"enkpvu0" "Łng0""Kv"ecp"dg"eqpŁi/
wtgf"gvjgt"ykvj"qt"ykvjqwv"OF7"cwjgpkvckvqp0"Jqy gxtg."kv"ku"jki jn{"tgeq o o gpf gf"vjcv"cwjgpkvckv/
vkqp"dg"eqpŁiwtgf"y jgp"wukpi"dtqcfecuvl o wvkecuv" o qfg"fwg"vq"vjg"tgncvkg"gcug"ykvj"y jkej"c"hcmg"
PVR"ugtxgt"ecp"vcmg"qxgt"vjg"enqem"ugvvpki"qh"vjg"dtqcfecuvl o wvkecuv"enkpvu"qp"vjg"pgv y qtm0
```

Unix-like Platforms: Basic NTP Client Setup

```
Dcuke"ugvwr"ku"tgnvcvkg"n{"uk o r ng."kh<
```

```
É" [qw"jcxg"dggp"cdng"vq"uweeguuhwmm{"eq o o wpkcvg"ykvj"vjg"Uqpq o c"qp"{qwt"pgv y qtm0
```

```
É" [qw"jcxg"kpucnngf"PVR"qp"{qwt"enkpv"eq o r wvgt0
```

Configure NTP

```
[qw" o wuv"gfkv"vjg" "Łng"y jkej" ".vjg"PVR"fcgo qp."nqqmu"htd{"fghcwmv"kp"vjg"vjg" "
fktgevqt{0""Cff"vjku"nkpg"vq"vjg"pvr0eqph"Łng<
```

```
Vjku"nkpg"vgmmu" "vq" wug"vjg"PVR"ugtxgt"cv"cf ftguu"3;4038:030342"kp"cf fkvkqp"vq"cp{"qvjgt"ugtxgtu"
y jkej" o ki jv"cnuq"dg"eqpŁiwtgf"kp"vjg"enkpvu0" "Łng0
```

```
Tgucvtv" "vq"jcxg"kv"dgikp"wukpi"vjg"Uqpq o c""ugtxgt0""Wug"vjg"PVR"wkkv{" "vq"ejgem"vjcv" "
ku"cdng"vq"eq o o wpkcvg"ykvj"vjg"Uqpq o c0""Chvgt"kuwvki"vjg"eq o o cpf
```

```
{qw"ykm"ugg"vjg" "eq o o cpf"rtqo r v<
```


Configure NTP

```
[qw"o wuv"gfkv"vjg" "Łng"y jkej" .vjg"PVR"fcg o qp."nqqmu"hqt"d{" fghcwnv"kp"vjg" " fktgevq/
t{0"Cuuw okpi"vjcv" {qw"jcxg"etgcvgf"vyq"vtwuvf"mg{u"cu"ujqy p"kp"Eqphkiwtkpi"vjg"PVR"Ugtxgt"Wukpi"
vjg"Pgvyqtm"Kpvgthceg"qt"Ugtken"Rqtv"cdqxg."c f f"vjgug"nkpgu"vq"vjg"gp f"qh"vjg" "Łng<
```

```
Oqfkh{"vjg"nkpg"cf f gf"rtgxkqwun{"kp"Wpkz/nkmg"Rncvhtq o u"Đcuke"PVR"Enkppv"Ugywr""uq"vjcv"cwvj gpvk/
ecvkqp"y knn"dg"wugf"y kvj"vjg"Uppq o c"ugtxgt"wukpi"qpg"qh"vjg"vtwuvf"mg{u."kp"vjku"gzc o rng."mg{"%"3<
```

```
Tguctv" "vq"jcxg"kv"dgikp"wukpi"vjg"Uppq o c"ugtxgt"y kvj"OF7"cwvj gpvkecvkqp0""Wug"vjg"PVR"wkknv{"
"vq"ejgem"vjcv" "ku"cdng"vq"eq o o wpkecvg"y kvj"vjg"Uppq o c0""Chvgt"kuuwkpi"vjg"eq o o cpf
```

```
{qw"y knn"ugg"vjg" "eq o o cpf"rtq o rv<
```

Wug"vjg"eq o o cpf

```
vq"fkurnc{"vjg"PVR"rggtu"y jkej" {qwt"eq o rwwgt"ku"wukpi 0""Qpg"qh"vjg o "ujqwnf"dg"vjg"Uppq o c"ugtxgt"
y jkej" {qw"jcxg"lwuv"eqpŁiwtgf0"" [qw"ujqwnf"xtgkh{"vjcv"ku"dgkpi"÷tgcejgf0""* [qw"o c{"jcxg"vq"eqp/
vkpwg"kuuwkpi"vjg"rggtu"eq o o cpf"ht" c" okpwwg"qt"vyq"dgthgt" {qw"y knn"ugg"vjg"÷tgcejgf0"eqwv"kpvtg o gpv0+
[qw"ecp"xtgkh{"vjcv"cwvj gpvkecvkqp"ku"dgkpi" wugf"d{"kuuwkpi"vjg"eq o o cpf
```

```
vq"fkurnc{"vjg"ejctcevgtku"ku"qh"vjg"enkppv"ugtxgt"cuuqekcvkqp0""Kp"vjg"öcwj ö"eqnw o p"qh"vjg"fkurnc{"
{qw"ujqwnf"ugg"öQMö"ht"vjg"tqy"eqttgurqp fki"vq"vjg"Uppq o c"ugtxgt0""Kk" {qw"ugg"ödcfö." {qw"ujqwnf"
yckv" c"hg y" okpwwg"vq"dg"uwtg"vjcv"vjgtg"ku" c"rtqdn g o "ukpeg"ödcfö"ku"vjg"kpkvkc"uvcvg"qh"vjku"ugvvpki 0""Kk"
vjg"ödcfö"pfkecvkqp"rgtukuv"vjgp" {qw"o wuv"ejgem" {qwt"eqpŁiwtcvkqp"ht"gttqtu0""V{ rkecm{"vjku"ku"fwg"
vq" c"v{ rkp i"gttqt"kp"etgcvkpi"vjg" "Łng"qp"vjg"enkppv"vjcv"ecwugu" c" oku o cvej"dgvyggp"vjg"
mg{u"dgkpi" wugf"d{"vjg"ugtxgt"cpf"enkppv0""*Kk" {qw"vtcpuhgt"vjg"Łng"d{" "qt" .vjku"ujqwnf"pö"dg" c"
rtqdn g o 0+""Kv"ku"cnuq"rquukdn g"vq"jcxg" c"v{ rkp i"gttqt"kp"vjg" "Łng"vjcv"ecwugu"vjg"pggfgf"mg{"
vq"pqv"dg"kpewfgf"kp"vjg"övtwuvfmg{ö"nkuv0
```

Unix-like Platforms: Broadcast / Multicast NTP Client Setup

```
Dtqc fecuv| o wnvkecuv"enkppv"ugvwr"ku"tgncvkgxn{"uk o rng."kh<
```

```
É" [qw"jcxg"dgpp"cdng"vq"uweeguuhwnn{"eq o o wpkecvg"y kvj"vjg"Uppq o c"qp" {qwt"pgvyqtm0
```

```
É" [qwt"Uppq o c"jcu"dgpp"eqpŁiwtgf"vq"rgthqt o "dtqc fecuvu"qt" o wnvkecuvu"d{"twppkpi"vjg" "
ujgmn"uetkrv0""*Vjku"ku"pqv"vjg"hcqvqt{" fghcwnv"eqpŁiwtcvkqp."uq"dg"uwtg"vq"twp" 0+""Kk" {qw"ctg"
iqkpi"vq" wug"OF7"cwvj gpvkecvkqp." {qwt"Uppq o c" o wuv"jcxg"dgpp"eqpŁiwtgf"vq"qrgtvcg"y kvj"cwvj gpvk/
```

ecvkqp"kp"vjg"dtqcfecuvl o wnvkecu" o qfg."cpf" {qw" o wuv"mpqy" y jkej"qh"vjg"vtwuvgf"mg {u"kv"ku"wukpi "hqt"
dtqcfecuvl o wnvkecu"qrgtcvkqp0""Vjg"gzco rng"Uppq o c"eqpŁi wtcvkqp"ujqyp"kp"**Eqphkiwtkpi"vjg"PVR"**
Ugtxgt"cdqyg" y kmn"dg"cuuw o gf"kp"vjg"gzco rng"eqpŁi wtcvkqp"eq o o cpfu"ujqyp"jgtg0

É" [qw"jcxg"kpucnngf" PVR"qp" {qwt"enkgpv"eq o r wvgt0

É" [qw"jcxg"uweeguuhwnn {"r gthqt o gf"vjg"**Wpkz/nkmg"Rncvht o u<"OF7"Cwvjgpvkecvgf" PVR"Enkgpv"Ugvwr"**
qp" {qwt"enkgpv"eq o r wvgt."kh" {qw"rncp"vq" wug"OF7"cwvjgpvkecvkp0

Configure NTP Client for Broadcast

[qw" o wuv"gfkv"vjg" "Łng" y jkej" ".vjg" PVR"fcg o qp."nqqmu"hqt"d {"fghcwnv"kp"vjg" " fktge/
vqt {0""Cuuw o kpi"vjcv" {qwt"Uppq o c"ugtxgt"jcu"dggp"eqpŁi wtf"vq" wug"mg {"4"hqt"dtqcfecuv"cwvjgpvkec/
vkqp"cu"ujqyp"kp"vjg"gzco rng"kp"**Eqphkiwtkpi"vjg" PVR"Ugtxgt**"cdqyg." o cmg"uwtg"vjcv"mg {"4"ku"kpenwfgf"
kp"vjg" "nkpg."cpf"cff"vjkun"kp"vjg"gpf"qh"vjg" "Łng<

kh" {qw"ctg"pqv"wukpi"OF7"cwvjgpvkecvkp." {qw"y qwnf"cff"vjgug"nkpgu<

[qw" o c {"tg o qxg"vjg"nkpg"cffgf"rtgxkqwun {"kp"**Wpkz/nkmg"Rncvht o u<"Dcuke" PVR"Enkgpv"Ugvwr<**

[qw"oc{"tgoqxg"vjg"nkp"cffgf"rtgkqwun{"kp"Wpkz/nkmg"Rncvhtou<"Dcuke"PVR"Enkgpv"Ugvwr<

qt"vjg"cwvjgpvkecvgf"xgtukqp"cffgf"kp"Wpkz/nkmg"Rncvhtou<"OF7"Cwvjgpvkecvgf"PVR"Enkgpv"Ugvwr<

Test Broadcast / Multicast

Tguctv" "vq"jcxg"kv"dgi"kp"wukpi"vjg"Uqpqoc"cu"cdtqcfecuv"qt"onvkecuv"ugtugt0"Wug"vjg"PVR"wkkn/
kv{" "vq"ejgem"vjcv "ku"cdng"vq"eqoo"wpkecvgy"kvj"vjg"Uqpqoc0"Chvgt"kuwkp"vjg"eqoo"cp_ fecr

Setting Up NTP Clients on Windows

Vq"eqpŁiwtg"{qwt"Ykpfqyu"eqo rrwgt"vq"wug" {qwt"Uqpqoc"Vko g"Ugtxgt." {qw"o wuv"jcxg"uweeguuhwn{ "eqo rrvgtf"vjg"rtqegfwtgu"kp"**Eqphkiwtkpi**"vjg"**PVR**"Ugtxgt"cdqxo0""Enkpv"kpucnncvkqp"o wuv"dg"rgt/hqto gf"d{"c"wugt"ykvj"cf o kpkvtecvkxg"rtkxkngf i gu0"

kh{qw"jcxg"ceeguu"vq"c"wugpgv"pgyu"ugtxgt."ocp{"rtqdn go u"oc{"dg"uqnxgf"d{"vjg"jgnrhwn"rgqrng"yjq"rctvkekrcvg"kp"vjg"Kpvgtpgv"pgyu"itqwr"fgxqvgf"vq" **PVR**"cv" 0

Vjtggo gvjqfu"qh"wukpi"vjg"Uqpqoc"ykvj"**PVR**"enkpvu"qp"Ykpfqyu"rncvht o u"yknn"dg"fguetkdgf<

Dcuke<""Vjku"ku"vjg"uk o rrvuv."cpf"yknn"qrgtcvg"ykvjqwv"OF7"cwvjgpvkcvkqp0""**PVR**"**dgi kppgtu"ujqwnf"**cnyc{u"rgthqt o "vjkugvwr"**Łtu**0

OF7<""Vjku"o gvjqf"ku"vtekmg"qpn{"dgecwug"OF7"mg{u"o wuv"dg"ugv"wr"cpf"fkvtdwvgf"ceewtcvgn{"vq"vjg" **PVR**"enkpvu"kp"c"ugewtg"yc{0""Vjg"Uqpqoc"ku"hcvt{"eqpŁiwtgf"vq"cwvjgpvkcvk"kvu"tgrnku"vq" **PVR**"OF7"enkpvu"wukpi"kvu"fghcwv"ugv"qh"mg{u0

Dt q wr p tkdwg "qh"mg{u0

{qw"yknn"ugg"vjg" "eqo o cpf"rtqo r v<

Wug"vjg"eqo o cpf

vq"fkurnc{ "vjg"PVR"rggtu"y jkej" {qwt"eqo r wvgt"ku"wukpi 0""Qpg"qh"vjg o"ujqwnf"dg"vjg"Uppq o c"ugtxgt" y jkej" {qw"jcxg"lwuv"eqpŁi wtgf0"" [qw"ujqwnf"xgtxh{ "vjcv"kv"ku'dgkpi ":-tgcejgf0""* [qw" o c{ "jcxg"vq'eqp/ vkpwg"kuuwkpi "vjg"rggtu"eqo o cpf"ht" c" o kpwvg"qt"v y q" dghqtg" {qw" yknn"ugg"vjg" :-tgcejg'ø'eqwv" kpetg o gpv0+ [qw"ecp"xgtxh{ "vjcv"cwvjgpvkcvkqp"ku'dgkpi "wugf"d{ "kuuwkpi"vjg"eqo o cpf

vq"fkurnc{ "vjg"ejctcevgtkvkeu"qh"vjg"enkpv"ugtxgt"cuuqekcvkppu0""Kp"vjg"øcwvj ö"eqnw o p"qh"vjg"fkurnc{." {qw"ujqwnf"ugg"øQMö"ht"vjg"tqy"eqttgurqpfkpi"vq"vjg"Uppq o c"ugtxgt0""Kh" {qw"ugg"ødcfö." {qw"ujqwnf" yckv"chgy" o kpwvgu"vq"dg"uwtg"vjcv"vjgtg"ku" c" r tqdng o "ukpeg"ødcfö"ku"vjg"kpkvkcn"uvcvg"qh"vjku"ugvvpki 0""Kh" vjg"ødcfö"kpfkcvkqp"rgtukuv"vjgp" {qw" o wuv"ejgem" {qwt"eqpŁi wtcvkqp"ht"gttqtu0""V{ rkecm{ "vjku"ku"fwg" vq" c"v{ r kpi "gttqt"kp"etgcvkpi "vjg" "Łng"qp"vjg"enkpv"vjcv"ecwugu" c" o ku o cvej "dgvyggp"vjg"mg{u" dgkpi "wugf"d{ "vjg"ugtxgt"cpf"enkpv0""*Kh" {qw"vtcpuhgt"vjg"Łng"d{ " qt" . "vjku"ujqwnf"pøv"dg" c" r tqd/ ng o 0+""Kv"ku"cuuq" rquukdng"vq"jcxg" c"v{ r kpi "gttqt"kp"vjg" "Łng"vjcv"ecwugu"vjg"pggfgf"mg{ "vq"pqv"dg" kpenwfgf"kp"vjg"øvtwvvgfmg{ ö"nkuv0

Windows: Broadcast / Multicast NTP Client Setup

Dtqc fecuvl o wnvkecuv"enkpv"ugvwr"ku"tgncvkggn{ "uk o rng."kh<

É" [qw"jcxg"dggp"cdng"vq"uweeguuhwnn{ "eqo o wpkcvg"ykvj"vjg"Uppq o c"qp" {qwt"pgv y qtm0

É" [qwt"Uppq o c"jcu"dggp"eqpŁi wtgf"vq"rgthqt o "dtqc fecuvu"qt" o wnvkecuvu"d{ "twppkpi "vjg" " u j gnm"uetkrv0""*Vjku"ku"pqv"vjg"hcvtq{ " fghcwnv"eqpŁi wtcvkqp."uq"dg"uwtg"vq"twp 0+""Kh" {qw"ctg" i qkpi"vq" wug"OF7"cwvjgpvkcvkqp." {qwt"Uppq o c" o wuv"jcxg"dggp"eqpŁi wtgf"vq"qrgtcvg"ykvj"cwvjgpvk/ ecvkqp"kp"vjg"dtqc fecuvl o wnvkecuv" o qfg."cpf" {qw" o wuv"mpqy" y jkej"qh"vjg"vtwvvgf"mg{u"kv"ku"wukpi"ht" dtqc fecuvl o wnvkecuv"qrgtcvkqp0""Vjg"gzc o rng"Uppq o c"eqpŁi wtcvkqp"ujqy p"kp"Eqphki wtkpi"vjg"PVR" Ugtxgt"cdqyg" yknn"dg"cuuw o gf"kp"vjg"gzc o rng"eqpŁi wtcvkqp"eqo o cpfu"t # O i

Vjku"rcig"kpvgpvkqpcnn{"nghv"dncpm0

Two Gigabit Ports

WVEX" ku"vjg"RVR"wve"qhhugv"xcnkf."gkvjgt"VTWG"qt"HCNUG0

EC" ku"vjg"RVR"enqem"ceewtce{"qpg"qh"47pu."322pu."472pu."3wu."407wu."32wu."47wu."322wu."
" " "472wu."3ou."407ou."32ou."qt"Wmpqyp0

N7;" ku"vjg"RVR"ngcr"7;"ugeqpf"kpfkcevqt."gkvjgt"VTWG"qt"HCNUG0

N83" ku"vjg"RVR"ngcr"83"ugeqpf"kpfkcevqt."gkvjgt"VTWG"qt"HCNUG0

VV" ku"vjg"RVR"vkog"vtcegcdng"kpfkcevqt."gkvjgt"VTWG"qt"HCNUG0

HV" ku"vjg"RVR"htgswgpe{"vtcegcdng"kpfkcevqt."gkvjgt"VTWG"qt"HCNUG0

VO" ku"vjg"RVR"vtcpuokukqp"oqfg."gkvjgt"OWNVKECUV"qt"J [DTKF0

PTP Operation

Vjg"Uppqoc"ku"eqpLiwtgf"cu"cp"KGGG/37: : "Itcpfo cvgt"Enqem*fghcwnv"rtqLng+0""Xgtkh{"vjcv"vjg"
pgvyqtm"ugvwpkiu"jcxg"dggp"eqpLiwtgf"cpf"vguvgf"wukpi" 0""Qpeg"vjg"pgvyqtm"jcu"dggp"
eqpLiwtgf"vjg"Uppqoc"ykn"dgikp"vq"vtcpuokv"RVR"U{pe"o guuci gu"chvgt"kv"ku"nqemgf0"

Vjg"RVR"U{pe"kpvtxcn"ku"wugt"eqpLiwtgf0""3."4."6." : ."38."54."86."qt"34: ."rcemgvu"rgt"ugeqpf"ctg"vtcpu/
okwgf"cu"co"wnvkecu0"Vjg"rcemgvu"ctg"qpn{"vtcpuokwgf"y jgp"vjg"enqem"ku"hwmm{"u{"pej tqpk|gf"qt"kp"
jqnfqxt"ykvj"cm"mpqyp"enqem"ceewtce{0

Vjg"RVR"Cppqwppeg"kpvtxcn"ku"wugt"eqpLiwtgf0""Rcemgvu"ctg"vtcpuokwgf"gxgt{"3."4."6." : ."qt"38"ugeqpfu"
cu"co"wnvkecu0"Vjg"rcemgvu"ctg"qpn{"vtcpuokwgf"y jgp"vjg"enqem"ku"hwmm{"u{"pej tqpk|gf"qt"kp"
jqnfqxt"ykvj"cm"mpqyp"enqem"ceewtce{0

Vjg"fgnc{"Tgswguv"kpvtxcn"ku"pqv"wugt/eqpLiwtcdng0""kv"ku"ugv"vq"54"ugeqpfu0

Vjg"RVR"Rtkqtkv{"3"ku"wugt"eqpLiwtgf"kp"ctcpig"htqo"2"vq"4770

Vjg"RVR"Rtkqtkv{"4"ku"wugt"eqpLiwtgf"kp"ctcpig"htqo"2"vq"4770

NOTE

If using a single Grandmaster, keep the default setting of 128 for Priority 1 and Priority 2. If using two redundant Grandmasters, then you can configure the preferred clock by setting Priority 1 to 127 and Priority 2 to 128.

Vjg"RVR"fgnc{"Ogejcpkuo"ku"wugt"eqpLiwtgf"vq"gvjgt"G4G"qt"R4R0""G4G"wugu"vjg"fgnc{"tgsuwguv/tg/
urqpug"o gejcpkuo"cpf"R4R"wugu"vjg"rggt"fgnc{"o gejcpkuo0

Vjg"RVR"fqockp"ku"wugt"eqpLiwtgf"kp"ctcpig"htqo"2"vq"4770

Vjg"RVR"Vkog"Oqfg"ku"wugt"eqpLiwtgf"vq"gvjgt"WVE"qt"RVR0""Yjgp"WVE"Vkog"oqfg"ku"eqpLiwtgf"
vjg"enqem"vtcpuokvu"vjg"WVE"grqej"cpf"ugvu"vjg"RVR"Uecng"vq"CTD0""Yjgp"vjg"Vkog"oqfg"ku"RVR"vjg"
dnqem"vtcpuokvu"vjg"RVR"grqej"*VCK+""cpf"ugvu"vjg"RVR"Uecng"vq"RVR0""Ugg"Cdqwn"vjg"RVR"Ugeqf"Ocpf" yqtPN
WVE"Vkog"cv"vjg"gpf"qh"vjku"ejcrvgt"hqt"oqtg"kphqto"cvkqp0

Vjg"RVR"Owvkecu"VVN"ku"wugt"eqpLiwtgf"kp"c"tcpig"htqo"3"vq"4770""Hqt"c"nqecn"ctgc"pgvyqtm"vjg"VVN"
ujqwnf"dg"eqpLiwtgf"vq"30

RVR"Enqem"Encuu"qpg"qh"U[PEJTQPK\GF."JQNFQXGT."qt"WPNQEMGF0""Vjg"Enqem"Encuu"ku"
dUg"PEJTQPK\GF"y

```
Vjg"RVR"Htgswgpe{"Vtcegcdng"kp fkecvqt"ku"gvjgt"VTWG"qt"HCNUG0""Vjg"Htgswgpe{"Vtcegcdng"ku"
VTWG"kh"vjg"Vko g"Vtcegcdng"ku"VTWG."qvjgt ykug"kv"ku"HCNUG0
```

```
Vjg"RVR"Vtcpu o kuukqp"Oqfg"ku"gvjgt"Owvkecuv"qt"J {dtkf0"Owvkecuv"Oqfg"ku"vjg"fg hcnv"cpf"ku"fg/
Łpgf"kp"vjg"KGGG/37 : : "uvpcfctf0"Cnn"rcemgvu"ugpv"htq o "vjg" I tcpf o cuvgt"ctg"Owvkecuv0"J {dtkf"Oqfg
wugu"Owvkecuv"cpf"Wpkcev0"kp"vjku" o qfg."fgnc{"tgu rqpug" o guuc i gu"ctg"ugpv"Wpkcev"kp"tgu rqpug"vq"vjg"
uncxg"fgnc{"tgs wguv0"PQVG<"Wpkcev" o guuc i gu"ctg"qpn{"ugpv" y jgp"vjg" Fgnc{"Oge jcpku o "ku"eqpŁ i wtgf
vq"G4G0
```

About the PTP Second and UTC Time

```
Vjg"RVR"Vko g"Oqfg"ugngevkpu"ctg"RVR"cpf"WVE0""Vjg"KGGG/37 : : "uvpcfctf"fgŁpgu"vjg"RVR"grqej"
dgi kppkpi "cv"2"j qwtu"qp"3"Łcpwct{"3;920""Vjg"vko g" o gcuwtgf"ukpeg"vjku"grqej"ku"fguk i pcvfg"kp"vjg"
uvpcfctf"cu"RVR"ugeqp fu0""Vjg"RVR"ugeqp f"ku" o qpqvqpk"uq"fqgu"pqv"kpewfng"ngcr"ugeqp fu0"
"
```

```
Wpnmkg"RVR"vjg"WVE"ugeqp f"ku"pqv" o qpqvqpk."vjcv"ku."htq o "vko g/vq/vko g"vjgtg" y knn"dg"ngcr"ugeqp f"
kpugt vkpu0""Vjg"ncuv"ugeqp f"qh"cngr"kpugt vkqp"fc{"ku"45<7 ; <82" o cmkpi "vjg"fc{"qpg"ugeqp f"nqpi gt"vjcp"
c"pqt o cn"fc{"gpfkpi "cv"45<7 ; <7 ; 0"
```

PTP Second

```
Y jgp"vjg"RVR"Vko g"Oqfg"ku"ugv"vq"RVR"vjg"uncxg"enqemu" o wuv"wknl | g"vjg"ewttgpv"ngcr"ugeqp f"cpf"ngcr"
ugeqp f"rgpfkpi "Łci u"*ngcra7 ; "qt"ngcra83+"vq"eqpxgtv"vjg"RVR"ugeqp f"vq"WVE0
```

UTC Time

```
Y jgp"vjg"RVR"Vko g"Oqfg"ku"ugv"vq"WVE."vjgp"vjgtg" y knn"dg" c"qpg"ugeqp f"lw o r"kp"vko g" y jgp" c"ngcr"
ugeqp f"kpugt vkqp"qeewtu0""Kh"vjg"RVR"uncxg"fqgu"pqv"ceeqp v"htq"vjku."kv" y knn"cnuq"lw o r0""Cqxkf"vjku"d{"
wukpi "RVR"Vko g"Oqfg0
```

Multiport PTP

```
Y jgp"qpn{"qpg"RVR"qr vkqp"ku"gpdcngf"kv" y knn"dg"eqpŁ i wtgf"htq" "RVR" Fq o ckp"20""Kh" c"ugeqp f"RVR"
qr vkqp"ku"gpdcngf"vjgp"kv" y knn"dg"eqpŁ i wtgf"htq" "RVR" Fq o ckp"30""Vjku"eqpŁ i wtcvkqp" y knn"cnny"
RVR"vq"twp"cu" o cuvgt"qp"dqvj" rqtvu0
```

```
Kh"vjg"RVR" Fq o ckp"ku"eqpŁ i wtgf"cu"vjg"uc o g"xcnwg"htq"dqvj" rqtvu"*htq"gzc o rng."RVR" Fq o ckp"2"qp"
"cpf"RVR" Fq o ckp"2"qp" + "vjgp" "Rqtv"Uvcvg" y knn"dg" o cuvgt"cpf" "Rqtv"Uvcvg" y knn"dg"
nkuvgpkpi0
```

Disable the PTP Protocol

```
Vjg"kpuvtwevkpu" dgnqy"cuuwo g"vjcv"vjg"RVR"Qrvkqp"jcu"dggp"kpucnngf"qp"Rqtv"2"* + "qh" {qwt"Uq/
pq o c0""Vq"ejgem."ugg"vjg"ugevkqp"vkngf" Qrvkqp"cv"vjg"dg i kppkpi "qh"vjku"ejcrgvt0
```

```
Vq"fkucdng"vjg"Rtgekukqp"Vko g"Rtqvqeqn"qp"Rqtv"2"kuuwg"vjg"hqmq ykpi "eq o o cpf<
```

```
Eqr{"vjg" "Łng""vq"vjg"pqp/xqncvkng"HNCUJ"ctgc"nkmg"vjku<
```

```
Vjgp<
```

```
"
```

```
Qpeg"RVR"jcu"dggp"fkucdngf."vjg"wugt"kpvgthceg"yknn"pq"nqpi gt"ujqy"vjg"gzkuvgpeg"qh"RVR""
```

Re-Enable PTP

```
Vq"tg/gpcdng"RVR"qp"Rqtv"2."tg o qxg"vjg" "Łng"htq o "vjg" "fktgevqt{"cu"ujqyp"dgnqy<
```

```
Vjgp<
```

```
"
```

```
""
```

NOTE

If PTP is also installed on Port 1, then follow the instructions above using qb-osoc0.


```

Fktgev"      "nqikpu"ctg"qpn{"rgt okwgf"qp"vjg"nqecn"TU/454"eqpuqng"qt"xkc"UUJ0

Vjg"ugewtg"eqr{"wknkv{."      ".gnk okpvcgu"vjg"pggf"vq"wug"vjg"kpugewtg"HVR"rtqvqeqn"hqt"vtcpuhtgtpki"
rtqitico"wr fvcgu"vq"vjg"Uppq o c0

VVR"ceeguu"hqt"u{uvgo" o qpkvqtkpi"qpn{."ku"cmqy ygf"qpn{"xkc"UUN."uq"rcuuy qtfu"cpf"uguukqp"fcvc"
ctg"gpct{rvgf"qp"vjg"yktg0""Ceeguu"xkc"JVVRU"oc{"dg"tguvtkevgf"qt"eqo rngvgn{"fkucdngf0""Ugg"Tguvtkev"
Ceeguu"/JVVRU"cpf"Fkucdng"UPOR"UUJ"cpf"JVVRU"dgnqy0

UPOR"ceeguu"hqt"u{uvgo" o qpkvqtkpi"qpn{."ku"eqpLiwtdcng"vq"rtqxfkg"vjg"ugewtkv{"qh"vjg"ncvguv"xgt/
ukqp"5"kpvgtpgv"uvpcfctf"y jkej"uwr rqtvu"dqvj"xkg y/dcugf"ceeguu"eqpvtqn"cpf"wugt/dcugf"ugewtkv{"wukpi"
o qfgtp"gpct{rvkqp"vgejpkswgu0""Rtgxkqwu"xgtukapu"x3"cpf"x4e"uwr rqtvgf"ceeguu"eqpvtqn"guugpvkcm{"
xkc"rcuuy qtfu"vtcpo kwgf"qxgt"vjg"pgv y qtm"kp"rnckp"vgzv0""Tghgt"vq"Ejcrvgt"8"/UPOR"cpf"Tguvtkev"
Ceeguu"/Vgnpgv."UUJ"cpf"UPOR"*dgnqy+"hqt"fgvcknu0""UPOR"oc{"cnuq"dg"eqo rngvgn{"fkucdngf0""Ugg"
Fkucdng"UPOR"UUJ"cpf"JVVRU"dgnqy0

Kpfxkfwcn"jqv"ceeguu"vq"rtqvqeqn"ugtxgt"fcgo qpu"      "qt"      "ctg"eqpvtqmgf"d{"
fktgevixgu"eqpvckpgf"kp"vjg"Lngu"      "cpf"      . y jkej"ctg"eqpLiwtgf"wukpi"vjg"
kpvgtcevxg"uetkrv      Ugg"Tguvtkev"Ceeguu"/Vgnpgv."UUJ"cpf"UPOR"dgnqy0

Kpugewtg"rtqvqeqnu"nkmng"Vko g."Fc{vko g"cpf"Vgnpgv"oc{"dg"eqo rngvgn{"fkucdngf"d{"eqpLiwcvkqp"qh"
vjg"      "uwr gt/ugtxgt"fcgo qp"wukpi"vjg"kpvtcevxg"uetkrv"      0""Ugg"Fkucdng"Vgnpgv."Vko g"
cpf"Fc{vko g"dgnqy0""

```

Restrict Access

```

Vjg"hqmqykpi"rctictcrju"fguetkdg"jqy"vq"tguvtkev"UPOR."UUJ."Vgnpgv"cpf"JVVRU"ceeguu"vq"urgekLe"
jqvu0""Cnuq"fguetkdg"ku"jqy"vq"tguvtkev"PVRSwtg{"ceeguu0

```

Restrict Access - Telnet, SSH and SNMP

```

D{"fghcwnv."vjg"Uppq o c"ku"eqpLiwtgf"vq"cmqy"ceeguu"d{"cm"wgutu"xkc"Vgnpgv."UUJ"cpf"UPOR""Vq"
gpuwtg"ugewtkv{"cpf"vq"rtqvgevc"ckpuv"fgpkcn/qh/ugtxkeg"cvvcemu."{qw"ujqwnf"tguvtkev"ceeguu"d{"wukpi"vjg"
"eqo o cpf0""

      "o qfkLgu"vyq"Lngu."      "cpf"      . y jkej"ctg"wugf"d{"      "cpf"
vjg"uvpcfncqpg"fcgo qpu.""      "cpf"      .vq"fgvgtokpg"y jgvjgt"qt"pqv"vq"itcpv"ceeguu"vq"ctgswguv/
kpi"jqvu0""Vjgug"vyq"Lngu"oc{"eqpvckp"eqpLiwcvkqp"kpht"ocvkqp"hqt"cpw"odgt"qh"rtqvqeqn"ugtxgtu."dvw"
kp"vjg"Uppq o c"qpn{"ceeguu"eqpvtqn"vq"vjg"rtqvqeqn"ugtxgt"fcgo qpu"      .      "cpf"      "ku"
eqpLiwtgf0

Cu"ujkr rgf"htqo"vjg"hcevtq{."vjgug"vyq"Lngu"ctg"gorv{0""Yjgp{"qw"twp"      .vjgug"nkpgu"
ctg"cf ffgf"vq"vjg"      "Lng<

```


Chvgt"o cmkpi"cpf"ucxkpi"{qwt"ejcpi gu."{qw"o wuv"eqr {"vjg"gfkvgf"Łng"vq"vjg"pqp/xqncvknng"HNCUJ"ctgc"
cpf"tgdqq"vjg"wpkv<

Restrict Query Access - NTP

Vjg"Pgvyqtm"Vkog"Rtqvqeqn"*PVR+"k o rng o gppvcvkqp"kp"vjg"Uqpp o c"ku"dwknv"htq o "vjg"tghgtgpeg"fkuvtk/
dwwkqp"htq o<

" jvr<ll y y0pvr0qti ""

D{"hcevqt{"fghcwnv."tgo qvg"eqpvtqn"cpf"swgt{"qh"vjg"PVR"fcg o qp" "ku"fkucdngf0""Swgt{/qp{"qr



Enterprise Management Information Base (MIB)

```
kp"cf fkvkqp"vq"rtqxfkfp i"vjg"UPOR"xctkcdngu"eqpvckpgf"kp"OKD/KK"cu"fguetkdgf"kp"THE/3435."GpfTwp"
Vgejppqjq ikgu"jcu"ko r ng o gpvgf"cp"gpvgt r tkug"OKD"wukp i"vjg"u{pvcz"qh"vjg"UOK"xgtukqp"4"*UOKx4+"cu"
fguetkdgf"kp"THE/479 : <
```

```
UQPQOC/OKD"
```

```
Y jkej"ku"nqecvgf"qp" {qwt"Uqpq o c"kp"vjku"CUEKK"Łng<
```

```
"
```

```
kp"cf fkvkqp"vq"ceq o r ngvg"ugv"qh"PVR"cpf"EF O C"Tgegkxgt"uvcvwu"qdlgevu."vjg"OKD"fgŁpgu"hqwt"UOKx4"
pqvŁecvkqp"qdlgevu<
```

```
PVR"Ngr"kpfkcevqt"Dkvu"uvcvwu"ejcpig
```

```
PVR"Uvtcvw o"ejcpig
```

```
Tgegkxgt"Hcwnv"Uvcvwu"ejcpig
```

```
Tgegkxgt"Vko g"Hkiwtg"qh"Ogtkv"ejcpig
```

Invocation of the SNMP daemon

```
Vjg"UPOR"fcg o qp."uporf"ku"uvctvgf"htq o"vjg" "u{uvgo"uvctv/wr"uetkrv0"D{"fghcwnv."kv"
ykm"nkuvgp"qp"rqt"383"htq"UPOR"swgtkgu"htq o"vjg"pgvy qtm" o cpcig o gpv"u{uvgo"0"Kh" {qw"yqwnf"nkmg"vq"
jcxg"kv"nkuvgp"qp"cpqvjgt"rqtv." {qw"eqwnf"gfkv"vjg"Łng"cpf"ejcpig"vjg"rqt"pw o dgt"kp"vjg"ctiwo gpv"nku"
dgkpi"rcuugf"vq" "y jgp"kv"ku"uvctvgf0"
```

IMPORTANT

After modifying `.dsb.qb-c.qb-rm l oc`, you must copy it to the `.anns.dsb.qb-c` directory and reboot the system. It is very important to retain the access mode for the file, so be sure to use `cp -p` when performing the copy. During the boot process, the files contained in the `.anns.dsb.qb-c` directory are copied to the working `.dsb.qb-c` directory on the system RAM disk. In this way the factory defaults are overwritten.

Quick Start Configuration

```
-- SNMPv1 / v2c
```

```
[qw"ujqwnf"dg"cdng"vq"eq o r kng"vjg"OKD"Łng"qp" {qwt"UPOR" o cpcig o gpv"u{uvgo"cpf"ceegu"vjg"xctk/
cdngu"fgŁpgf"vjgtgkp0"Vjg"hcevqt{"fghcwnv"eq o o wpkv{"pc o gu"ctg"oUqpq o cö"htq"vjg"tgc f/qpn{"eq o /
o wpkv{"cpf"ögpftwpa3ö"htq"vjg"tgc f/y tkvg"eq o o wpkv{0"Vjku"ku"cm"vjcv"ku"tgs wktgf"htq"qr gtcvkqp"wpfgt"
x3"cpf"x4e"qh"UPOR"}"
```


YQO•đ• ` P O•0

0 P 0 YQO•đ• ` 0 f@

IMPORTANT

After editing `.dsb.rm | oc-bnme`, you must copy it to the `.anns.dsb` directory and reboot the system. It is very important to retain the access mode for the file (readable only by `qnnns`), so be sure to use `cp` when performing the copy. During the boot process, the files contained in the `.anns.dsb` directory are copied to the working `.dsb` directory on the system RAM disk. In this way the factory defaults are overwritten.

Configuration of SNMPv3

```
kh {qw"ctg"rncppkpi "vq"wug"UP ORx5." {qw"uj qwnf" fgŁpkvgn { " o cmg"wug"qh"vjg"v y q"tguqwtegu" o gpvkqpgf"
rtgxkqwun {"*PGV/UP OR" y gdukv g"cpf"
+ "cpf"uwwf { "vjg o "ectghwnn {0""Vjgtg"ctg"tcvjgt"
gncdqtcvg"eqpŁi wtcvkqp"qr vkqpu"cxckncdng" y jgp" {qw"ctg"wukpi "x50""Vjg"kp uvtwvkqp"rtgugpvgf" jgtg" y knn"
ikxg" {qw"vjg" Łcxqt"qh"vjg"eqpŁi wtcvkqp"dw" fgŁpkvgn { "pqv"vjg"hwmm"ueqrg"qh" rquukdknkvgu0""Vq"ceeguu"
{qwt"Uppq o c"xkc"x5"qh"UP OR." {qw" y knn" j cxg"vq"eqpŁi wtg"v y q"Łngu<
```

```
Vjg"Łtuv"Łng"eqpvckpu"uvcvke"eqpŁi wtcvkqp"rctc o gvgtu"vjcv"vjg"ci gpv"wugu"vq"eqpvtqn"ceeguu"cpf"vq" fg/
vgt o kpg" y jgtg"vq"ugpf"pqkŁecvkqpu"vtcru0""Qvjgt"curgevu"qh"vjg"ci gpv"u"qrgtcvkqp"ctg"cnuq"eqpŁi wtcndng"
kp"vjku"Łng."dw" {qw"uj qwnf"pqv"pggf"vq" o qfkh { "vjqug0""Vq"wug"vjg"UP ORx5"ecredknkvgu"qh"vjg"Uppq o c."
{qw" o wuv"Łtuv"ugv"wr" wugt" kphqt o cvkqp"cpf" ceeguu"nk o kvu" hqt"vjqug" wugtu"kp"
"Wpeq o /
o gpv"cpf" gfkv"vjgug"v y q"nkpgu"vq" fgŁpg" {qwt"x5" wugtu"cpf"vjgkt"ceeguu"rctc o gvgtu<
```

```
Vjg"Łtuv"nkpg" fgŁpgu" c"UP ORx5"tgc f/ y tkvg" wugt"
" y jqug" o kpk o w o "ugewtkv { "ngxgn" y knn"dg"cwvj gpvk/
ecvgf"cpf" gpet { rvvgf" hqt" rtkxce { "*ejqkegu"ctg"pqcwj."cwvj"cpf" rtkx+."cpf" y j q" y knn" j cxg"tgc f/ y tkvg"ce/
eguu"vq"vjg"gpvktg"
"dtcpej"qh"vjg"UOK"qdlgev"vtgg0""Vjg"ugeqpf"nkpg" fgŁpgu" c"UP ORx5"tgc f/ qpn { "
wugt"
" y jqug" o kpk o w o "ugewtkv { "ngxgn" y knn"dg"cwvj gpvkcev g f"dw"pq" gpet { rvvgf."cpf" y j q" y knn"
j cxg"tgc f/ qpn { "ceeguu"vq"vjg"gpvktg"
"dtcpej"qh"vjg"UOK"qdlgev"vtgg0""Chygt" c f f kpi "vjg" wugt"nkpgu"vq"
.eqr { "kv"vq"vjg
" fktgevqt { "wukpi"
0
```

```
Vjg"ugeqpf"Łng"ku"nqecvgf"qp"vjg"ppp/xqncvknng"HNCUJ "fkum"cpf"ku" wugf"d { "vjg"UP OR"ci gpv"vq"uvqtg"
ōrgtukuvgpv"fcvcö"vjcv" o c { "dg" f { pc o ke"kp"pcvwtg0""Vjku" o c { "kpenwfg"vjg"xcnwgu"qh"vjg"OKD/KK"xctkcdngu"
u { uNqecvkqp."u { uEqpvcev"cpf"u { uPc o g"cu" y gmm"cu"cp { "eqpŁi wtgf"UP ORx5" wugt"et { rvq"mg { u0""kp"qt fgt"
vq" wug"UP ORx5." {qw" o wuv"eqpŁi wtg" wugt"mg { "u"kp"vjku"Łng" hqt" gcej"UP ORx5" wugt"vjcv" {qw" j cxg"ugv"wr"
kp"
0""Vq" f q"vjku." {qw" o wuv" c f f "nkpgu"vq"
"nkmg"vjgug" hqt" gcej"
wugt<
```

```
Vjg"Łtuv"nkpg" y knn"ecwug"vjg"ci gpv."
"vq"etgcv g" c" wugt"
" y j q" o c { "dg"cwvj gpvkcev g f"xkc"Ogu/
ucig" Fki guv" Cni qtkvj o "7"*OF7+" ykvj"rcuuyqtf"
"cpf" o c { "wug"vjg" Fvcv" Gpet { rvkqp"Uvcpfctf"
*FGU+"vq" gpet { rv"vjg" uguukqp"fcvc" ykvj"rcuurjtcug"
0""Vjg"ugeqpf"nkpg" y knn"ecwug" c" wugt"
```


Vjku"rcig"kpvgpvkqpcnn{"nghv"dncpm0

Navigation

Vjg"ockp"ogpw"vdu"cetquu"vjg"vqr"qh"gej"ygdrcig"cmnqy"{qw"vq"pcxkicvg"vjtwij"vjg"uvcvwu"kpht/
ocvkqp"kp"vjg"Uqpqoc"yjkng"nkpmu"qp"vjg"ngh"ukfg"qh"gej"ygdrcig"rtqkfg"uwdecvgiqt{"pcxkicvkqp0

Hqt"gzcorng."kp"vjg"rcig"dgnqy"vjg"ockp"ogpw"vdu"ctg<"Jqog."Rnqv."Tgegkxgt."Enqem."KIQ."Hcwnvu."
Pgyqtm."PVR."RVR"cpf"Hktoyctg0""Vjg"uwdecvgiqt{"nkpmu"qp"vjku"rctvkewnct"rcig"ctg<"KRx6."KRx8."
FPU"cpf"OCE"Cfftguu0""KRx6"ku"ugngevgf0""Vjg"vdu"cetquu"vjg"vqr"cpf"vjg"ngh/ukfg"nkpmu"ctg"nqikecnn{"
cttcpigf"ht"gcu{"pcxkicvkqp0""



"

Page Descriptions

Home: Overall Status Page

Fcvc"Łgnfu"hqt"vjku"rcig"ctg"fguetkdgf"dgnqy0

Qxgtcnn"Uvcwuu

Oqfgn" " Uppqoc"P34

Ugtkcn"Pw o dgt" Ugtkcn"pw o dgt"qh"vjg"Uppqoc"P340"Vjku"Łgnf"yknn"pqv"dg"ujqyp"hqt"wpkvu"
" " " ujkrrgf"dghqtg"Cwiwuv"42370

WVE"Vko.g." Vjg"ewttgpn"WVE"fcvg"cpf"vko.g"ku"ujqyp0"Vjku"fcvg"yknn"ujqy" {gct"3; :2"kh
WVE"Fcvg" " vjg"vko.g"jcu"pqv" {gv"dggn"ceswktgft0

Tgegkxgt" " Vjku"ku"vjg"nqemgf"uvcwuu"qh"vjg"EFOC"Uwdu {uvgo lTgegkxgt"cu"hqnnqyu<
" " " YTO<" " Ycto wr"rgtkqf"hqt"wpkvu"ykvj"quekncvqt"wr itc fgu0
" " " CES<" " Ceswktkpi0"Ugcte jkpi" hqt"cu"uki pcn0
" " " NMI<" " Nqemkpi"vq"vjg"EFOC"Uki pcn0
" " " NMF<" " Nqemgf0"Hwnn{ "u {pej tqpk |gf"vq"uki pcn0

Uvtcw o" " Vjg"PVR"uvtcw o"Łgnf"jcu"vjgug"rquukdng"xcnwguc<
" " " Uvtcw o"3<" Vjg"ugtxgt"ku"hwnn{ "u {pej tqpk |gf"cpf"ceewtcvg0
" " " Uvtcw o"4<" Vjg"ugtxgt"ku"u {pej tqpk |gf"vq"cu"Uvtcw o"3"ugtxgt0
" " " Uvtcw o"z<" Vjg"ugtxgt"ku"u {pej tqpk |gf"vq"cu"Uvtcw o"z/3"ugtxgt0
" " " Uvtcw o"38<" Vjg"ugtxgt"ku"wpu {pej tqpk |gf0"PVR"enkgpvu"yknn"pqv"wug"cu
" " " " " Uvtcw o"38"ugtxgt0

U {uvgo"Uvcwuu" Vjku"Łgnf"kp fkecvgu"y jgvjgt"cu {uvgo "hcwnv"gzkuvu0"Rquukdng"xcnwguc"ctg"QM"cpf"
" " " HCWNV0"Kh"kv"ujqyu"HCWNV"vjgp"iq"vq"vjg"Hcwnvu"Rci g"vq"ugg"y jkej"rctvkewnct
" " " hcwnv"ku"vjg"rtqdn go 0

ERW"Uvcukvkeu

Plots Page

Kphqt o cvkqp"cxckncdng"qp"vjku"rcig"ctg"rgthqt o cpeg"uvcvkukou"tgncvgf"vq"PVR0"Nkpmu"qp"vjg"tkijv"ikxg"ceeguu"vq"vjg"fckn{"rnqv"Lngu"/"iqkpi"dcem"wr"vq"32"{gctu0"Nkpmu"qp"vjg"nghv"ikxg"ceeguu"vq"rgthqt o cpeg"uvcvkukou"htq"ERW"cpf"Quekncvqt0"C"uc o rng"fcvc"rnqv"ku"ujqyp"dgnqy <



Vjgtg"ctg"vjtg"v{rgu"qh"fcvc"rnqv"cxckncdng"htq"xlgykpi<"ERW."PVR"cpf"Quekncvqt0"Vjg"nctig"fcvc"rnqv"ujqyp"qp"cp{"qh"vjg"rnqv"rcigu"ku"vjg"ncuv"fcvc"rnqv"xlgygf0"Vjku"eqwnf"dg"htq o "cp{"qpg"qh"vjg"vjtg"fcvc"v{rgu*"ERW."PVR"Quekncvqt+0"

Cnn"rnqv"Lngu"ctg"mgrv"kp"fkgtgevtkgu0"Vjgtg"ku"qpg"fkgtgevt{"htq"gcej"yggm0"Vq"ejqqug"cpgy"rnqv"vq"xlgy."wug"vjg"ugngevkpu"qp"vjg"tkijv"ukfg"qh"vjg"rcig0"Hktuv."enkem"vq"ugngev"c"fkgtgevt{0"Vjgp{"qw"ecp"gvjgt"enkem"vq"ugngev"qpg"qh"vjg"nkuvgf"rnqv"Lngu."qt{"qw"ecp"wug"{qwt"oqwug"vq"jxgt"qxgt"qpg"qh"vjg"rnqv"Lngu0"Jxgtkpi"qxgt"c"rnqv"Lng"ykm"fkurnc{"cu"ocnn"rnqv"pgzv"vq"vjg"nctig"o ckp"rnqv0"Kp"vjku"yc{"qw"ecp"eq o rctg"rnqv"htq o "fkhtgtpv"v{rgu"vq"eqttgncvg"fcvc0"Hqt"gzc o rng."{qw"ecp"eq o rctg"cp"PVR"fcvc"rnqv"ykvj"c"ERW"fcvc"rnqv0"

Rnqv"Lngu"ecp"cnuq"dg"fqypnqcfgf"htq o "vjg"Uppq o c"cu"0RP I "Lngu0"Vjg{"ecp"dg"hqwpf"kp"vjg"fkgtge/vqt{" 0

Receiver: Oscillator Page

Vjku"rcig"ujqyu"EFOC"Uwdu{uvgo"quekmcvqt"eqpvtqn"kphto"cvkqp"uwej"cu<

Quekmcvqt"Uvcvwu

Quekmcvqt"V{rg"
" " "

Vjku"Łgnf"ujqyu"vjg"u{uvgo"quekmcvqt"v{rg"vjcv"ku"kpucmngf"kp"vjg"Uqpqoc0""Kv
ykm"dg"gvjgt"VEZQ"*uvcpfctf+."QEZQ"*qrvkqp+"qt"Twdkfkw o"*qrvkqp+0

FCE" "
" " "

Vjg"u{uvgo"quekmcvqt"eqpvtqn" FCE"xcnwg"kpflkecvgu"vjg"htgswgpe{"eqpvtqn"ugvki0"

Rtko ct{"cpf"
 Ugeqpfct{"Rqygt"
 Hcwnv"Cnctou" Vjgug"Łgnfu"yknn"fkurnc{"QPN["kh"{qwt"Uqpqoc"jcu"vjg"Fwcn"Rqygt"Uwr rn{"
 qr vkqp"kpucnngf0""Ugg"*Ejcrvgt*"32"/"*Qrvkqpu*."*Ocumkpi*"*Fwcn*"*Rqygt*"*Uwr rn*"}"
Hcwnv"*Cnctou*"hqt"oqtg"kpht o cvkqp0

Network: IPv4 Page

Vjku"rcig"ujqyu"vjg"KRx6"pgvy qtm"eqpŁi wtcvkqp0""Hkgnfu"ctg<

KRx6"Pgvy qtm"Uvcvwu

FJER" " D{"fghcwnv."vjg"Uqpqoc"yknn"eqpŁi wtg"kvugh"wkupi"vjg"F{pcoke"Jquv"
 " " " EqpŁi wtcvkqp"Rtqvqeqn"*FJER+0""Kh" {qw"pggf"vq"ugv"wr"uvcvke"KR"eqpŁi wtcvkqp.
 " " " {qw"owuv"wug"vjg" "eqo o cpf"xkc"vjg"eqpuqng"rqtv0""Vjg"Łgnf"yknn"
 " " " ujqy"yjgvjgt"FJER"ku"gpdcngf"qt"fkucdngf0

Cfftguu."Icvgyc{" Vjgug"Łgnfu"ujqy"vjg"ugvvpku"vht"vjg"KR"cfftguu."icvgyc{"cpf"pgv o cmu0
 Pgv o cum" " Vq"ejcpig"vjgug"guvvpku"vht"vjg" "eqo o cpf"xkc"vjg"eqpuqng"rqtv0

Network: IPv6 Page

Vjku"rcig"ujqyu"vht o cvkqp"tgncvgf"vq"vjg"KRx8"pgvy qtm"rctc o gvgtu0""Hqt"oqtg"kpht o cvkqp"qp"KRx8"
 ugg"*Ejcrvgt*":"*KRx8*"*kpht o cvkqp*0

Network: DNS Page

Vjku"rcig"ujqyu"vjg"KR"cfftgug"qh"vjg"rtk o ct{"cpf"ugeqpfct{"fq o ckp"pc o g"ugtxgtu0

Network: MAC Address Page

Vjku"rcig"ujqyu"vjg"ogfk/ceeguu/eqpvtq"*OCE+"cfftguu"vht"dqvj"Vjgtpgv"rqtvu"* "cpf" +0

NTP Page

Vjg"PVR"Uvcvwu"rcig"ujqyu"cmn"kpht o cvkqp"tgncvgf"vq"PVR"qrgtcvkqp0""Hkgnfu"ctg<

PVR"Uvcvwu

Uvcvwu" " Vjg"uvtcvw o "Łgnf"jcu"ugxgtcn"rqukdng"xcnwguc
 " " " Uvtcvw o "3<" Vjg"ugtxgt"ku"hwmm{"u{pej tqpk |gf"cpf"ceewtcvg0
 " " " Uvtcvw o "4<" Vjg"ugtxgt"ku"u{pej tqpk |gf"vq"Uvtcvw o "3"ugtxgt0
 " " " Uvtcvw o "z<" Vjg"ugtxgt"ku"u{pej tqpk |gf"vq"Uvtcvw o "z/3"ugtxgt0
 " " " Uvtcvw o "38<" Vjg"ugtxgt"ku"wpu{pej tqpk |gf0""PVR"enkgpvu"yknn"pqv"wug"c"
 " " " " " Uvtcvw o "38"ugtxgt0

Uqwtg" " Vjku"Łgnf"yknn"ujqy"vjg"uqwtg"qh"vko g"y jkej"ku"wuwcmm{"EFOC0""Kh"vjg"Uqpqoc
 " " " ku"eqpŁi wtgf"cu"Uvtcvw o "4"ugtxgt"vjgp"kv"yknn"ujqy"vjg"KR"cfftguu"qh"v_ {pej tp

```

Ngr"kp fkecvqt" Vjku"Łgnf"ujqyu"y jgvjgt"c"ngcr"ugeqpf"ku"rgpfkpi0"
" " " Ngr"ugeqpfu"cdqvw"gxgt{"3 "vq"4" {gctu0"Rquukdng"kp fkecvqt"xcnwguc"tg<
" " "" 22<" " Pqt o cn."nqemgf"qrgtcvkqp0
" " "" 23<" " Ngr"ugeqpf"kpugtkqp"yknn"qeewt"chvgt"45<7;<7;"WVE0
" " " 32<" " Ngr"ugeqpf"f gngvkqp"yknn"qeewt"chvgt"45<7;<7;"WVE0
"""" " 33<" " Hcwnv0"Wpu {pej tqpk | gf"uvcv0

```

KIQ"Uvcvkuveu

```

Vko g"Ukpeg"TGugv." Vjgug"Łgnfu"ujqy"uvcvkuveu"ceew o wncvfg"ukpeg"vjg"ncuv"tgdqqv"qh"vjg"u {uvg o 0
Rcemgvu"Ugpv|Tgegkxgf."
Ugppv"Tvvg.
Rcemgvu" Ftqr r gf"

```

PTP: Status and Configuration Pages

```

Vjg"Łgnfu"qp"vjgug"rcigu"ujqy"vjg"uvcvwu"cpf"vjg"eqpŁi wtcvkqp"hqt"vjg"qrvkpcn"RVRlKGGG/37: : "rtq/
vqeqn0"kh" {qwt"Uqpq o c"fqgu"pq"jcxg"RVR"gpdcngf"vjgpg"vjggtg"yknn"dg"pq"Łgnfu"ujqy p0" "Hqt" o qtg"kpht/
o cvkqp"qp"RVR"cpf"cp"gz rncpcvkqp"qh"vjg"fcvc"Łgnfu"qp"vjku"rcig"ugg" Ej crvgt"6"/"RVRlKGGG/37: : 0

```

Firmware: Firmware Status Page

```

Vjg"Łt o yctg"uvcvwu"rcig"ujqyu"rctv"pw o dgtu"cpf"tgxkukqu"hqt"Uqpq o c"Łt o yctg0

```

Hkto yctg"Uvcvwu

```

Nkpwz"THU"RP." Vjgug"Łgnfu"ujqy"vjg"Nkpwz"tqqv"Łng"u {uvg o "rctv"pw o dgt."xgtukqp" ( "fcvg0
Nkpwz"THU"Xgtukqp

```

```

Nkpwz"Mgtpgn"RP." Vjgug"Łgnfu"ujqy"vjg"Nkpwz"mgtpgn"rctv"pw o dgt."xgtukqp" ( "fcvg0
Nkpwz"Mgtpgn"Xgtukqp

```

```

EFOC"Uwdu {uvg o " Vjku"Łgnf"ujqyu"vjg"EFOC"Uwdu {uvg o "Łt o yctg"xgtukqp0
Hkto yctg

```

```

EFOC"Uwdu {uvg o " Vjku"Łgnf"ujqyu"vjg"EFOC"Uwdu {uvg o "Hkgnf"Rtqitc o o cdng" I cvg"Cttc { "*HRIC+
HRIC" " xgtukqp0"

```

```

EFOC"Tgegkxgt" Vjku"Łgnf"ujqyu"vjg"EFOC"Tgegkxgt"Łt o yctg"xgtukqp0
Hkto yctg

```

```

EFOC"Tgegkxgt" Vjku"Łgnf"ujqyu"vjg"EFOC"Tgegkxgt"HRIC"xgtukqp0
HRIC

```

Firmware: Linux RFS Upgrade

Vjku"rcig"ku"wugf"hqt"wr itcfkpi"vjg"Nkpwz"THU"Łto yctg0" [qw"o wuv"dg"nqi igf"kp"cu"ōtqqvō"kp"qtfgt"vq" jcxg"ceeguu"vq"vjku"rcig0"Vjg"ncvuv"tgngcugf"xgtukqpu"qh"Uppqoc"Łto yctg"ctg"htggn{"cxckncdng"qp"vjg" GpfTwp"Vgejppnqikgu"y gdukvg0"Hqt"fgvckngf"kphtocvkap"qp"jqy"vq"rgthqt o"vjg"wr itcfg"gkvjgt"xkc"vjg" pgyqtm"rqtv."vjg"ugtkcn"rqtv."qt"vjg"JVVRU"kpvgthceg"ugg"Crngpfkz"D"/"Wr itcfkpi"Vjg"Hkto yctg0"

Firmware: Linux Kernel Upgrade

Vjku"rcig"ku"wugf"hqt"wr itcfkpi"vjg"Nkpwz"mgtpgn"Łto yctg0" [qw"o wuv"dg"nqi igf"kp"cu"ōtqqvō"kp"qtfgt" vq"jcxg"ceeguu"vq"vjku"rcig0"Vjg"ncvuv"tgngcugf"xgtukqpu"qh"Uppqoc"Łto yctg"ctg"htggn{"cxckncdng"qp" vjg"GpfTwp"Vgejppnqikgu"y gdukvg0"Hqt"fgvckngf"kphtocvkap"qp"jqy"vq"rgthqt o"vjg"wr itcfg"gkvjgt"xkc" vjg"pgv y qtm"rqtv."vjg"ugtkcn"rqtv."qt"vjg"JVVRU"kpvgthceg"ugg"Crngpfkz"D"/"Wr itcfkpi"Vjg"Hkto / yctg0"

Firmware: CDMA Subsystem Upgrade Page

Vjku"rcig"ku"wugf"hqt"wr itcfkpi"vjg"Łto yctg"htq"vjg"EF OC"Uwdu{uvgo0" [qw"o wuv"dg"nqi igf"kp"cu" ōtqqvō"kp"qtfgt"vq"jcxg"ceeguu"vq"vjgug"rcigu0"Vjg"ncvuv"tgngcugf"xgtukqpu"qh"Uppqoc"Łto yctg"ctg" htggn{"cxckncdng"qp"vjg"GpfTwp"Vgejppnqikgu"y gdukvg0"Hqt"fgvckngf"kphtocvkap"qp"jqy"vq"rgthqt o" vjg"wr itcfg"gkvjgt"xkc"vjg"pgv y qtm"rqtv."vjg"ugtkcn"rqtv."qt"vjg"JVVRU"kpvgthceg"ugg"Crngpfkz"D"/"Wr / itcfkpi"Vjg"Hkto yctg0"

Firmware: CDMA Receiver Upgrade Page

Vjku"rcig"ku"wugf"hqt"wr itcfkpi"vjg"Łto yctg"htq"vjg"EF OC"Uwdu{uvgo0" [qw"o wuv"dg"nqi igf"kp"cu" ōtqqvō"kp"qtfgt"vq"jcxg"ceeguu"vq"vjgug"rcigu0"Vjg"ncvuv"tgngcugf"xgtukqpu"qh"Uppqoc"Łto yctg"ctg" htggn{"cxckncdng"qp"vjg"GpfTwp"Vgejppnqikgu"y gdukvg0"Hqt"fgvckngf"kphtocvkap"qp"jqy"vq"rgthqt o" vjg"wr itcfg"gkvjgt"xkc"vjg"pgv y qtm"rqtv."vjg"ugtkcn"rqtv."qt"vjg"JVVRU"kpvgthceg"ugg"Crngpfkz"D"/"Wr / itcfkpi"Vjg"Hkto yctg0"

Firmware: Reboot Page

Vjku"rcig"ykm"cnmq"y" {qw"vq"rgthqt o"cuqhv yctg"tgdqq"qh"dqvj"vjg"Nkpwz"Uwdu{uvgo"cpf"vjg"EF OC" Uwdu{uvgo0"Vjku"ku"pqtocnm{"wugf"chvgt"c"Łto yctg"wr itcfg"dw"ecp"dg"fpqg"cp{vko g" {qw"ykuj"vq" tgvv"vjg"Uppqoc0

Disable or Restrict Access

Vq"fkucdng"JVVRU."ugg"Ejcrvgt"7"/"Ugewtkv{"Fkucdng"UPOR"UUJ"cpf"JVVRU0"Vq"tgvtkv"ceeguu"vq" urgekLe"jquvu"ugg"Ejcrvgt"7"/"Ugewtkv{"Tgvtkv"Ceeguu"/"JVVRU0

Vjku"rcig"kpvgpvkqpcnn{"nghv"dncpm0

NTP

D{"fghcwnv." "ku"ncevqt{/eqpŁiwtgf"vq"nkuvgp"qp"dqvj"KRx6"cpf"KRx8"cf f tguugu"qp"cn"kpvgthcegu0"
Vjku"oc{"dg"ejcpi g f"d{"gfkvkpi" "cpf"cf f kpi"vjg"fguktgf" "fktgevkxgu"vq"
cejkgxg"vjg"fguktgf"dgjcxkqt."cpf"vjgp"eqr {kpi"kv"vq" 0""Hqt"gzco rng."cf f kpi"vjku"nkp<

ykmn"ecwug"pvr f"vq"pqv"dkpf"vq"cp {"KRx8"cf f tguugu0""Tghgt"vq"vjg"PV R"fqew o gpvcvkqp"hqt"fgvcknu"qp"vjg"
"fktgevkxg0)

IPv4-Only Protocols

Vjgtg"ctg"ugxgtcn"rtqvceqnu"twppkpi"qp"vjg"Uqpqoc"y jkej"ctg"pqv"KRx8"ecrcdng< "enkgpv"cpf"
ugtxgt+." "cpf" 0""Fwg"vq"vjgkt"kpvtkpuke"kpugewtkv{." "cpf" "ctg"tcrkfn{"dgkpi"fg rtg/
ecvgf."cpf"rtqdcn{"jcxg"nkvnng"dwukpguu"twppkpi"qxgt"cp"KRx8"pgv y qtm0""Vjg"cf f tguu"cwvceqpŁi wtcvkqp"
ecrcdknkvgu"qh"KRx8"cnqp i" ykvj"vjg"Pgki j dqt"fkueqxt{"Rtqvceqn"*PFR+" o cmg"vjg"FER"rtqvceqn"nguu"
k o rqtvcpv"kp"KRx8"pgv y qtmu0""Vjg"qrvkqpcn"RV R|KGGG/37: : "rtqvceqn"ku"cnuq"pqv"cxckncdng"qp"KRx80)

Available User Commands

EQO OCPF	HWPEVKQP
ceeguueqpLi	Kpvtgcevkg"uetkrv"vjcv"i wkgu" {qw"kp"eqpLi wtkpi " . " "cpf" "ceegu"vq"vjg"Uqpq o c"vjcv"ku"nk o kvgf" vq"urgekLe" jquvu0""Vjg"tguwnkpi " "cpf" "Lngu"ctg"ucxgf"vq"vjg"pqp/xqncvkg"HNCU J " fkm0"" Hcevqt { " fghcwnv"eqpLi wtcvkqp"cmq yu"ceegu"d { "cmn" j quvu0
ecnf gnc {	Rtkpvu"vjg"ecnkdtcvkqp"fgnc {0""Ugg"vjg" "eq o o cpf0
ef o ce jcppgnugv	Rtkpvu"vjg"ewttgpn"EF O C"ejcppgnugv"dgkpi "wugf0""Kv"ecp"dg" qpg"qh" Pqtvj"C o gtkecp"Egnwnct."Uqvwj "Mqtgcp"Egnwnct." Pqtvj " C o gtkecp"REU."Kpfkcp"Egnwnct"qt"Lrcpgug"Egnwnct0""Ugg"vjg" "eq o o cpf0
ef o cngcreqpLi	I wkgu"vjg"wugt"kp"eqpLi wtkpi"vjg"yc { "kp"y jkej"WVE"ngcr"uge/ qpfu"ctg"jcpfngf<"gkvjgt"cwvq o cvkecn { "xk"EF O C"dcuguvckqp" vtcpu o kuukqpu"qt"d { "wugt/gpvtgfg"ewttgpn"cpf"hwvwtg"ngcr"ugeqpf" rctc o gvgtu0""Ugg"vjg" "eq o o cpf0
ef o cngcr o qfg	Rtkpvu"vjg"ewttgpn"EF O C"ngcr"ugeqpf" o qfg"qh"qrgtcvkqp."gkvjgt" cwvq o cvke"qt"wugt/gpvtgfg0""Kh"wugt/gpvtgfg." rtkpvu"vjg"ewttgpn" cpf"hwvwtg"ngcr"ugeqpf"xcnwgu0""Ugg"vjg" " eq o o cpf0
ef o cuv	Rtkpvu"vjg"ewttgpn"EF O C"U "Ø " "U "# " "

Detailed Command
Descriptions

accessconfig

Vjku"eq o o cpf"uvctvu"cp"kpvgtcvkg"uetkrv"j cv" y knn"cmq y "v j g"tqqv"wugt"vq"eqpL i wtg"ceegu"nk o kvckqp"
xkc" . "cpf"

Vjg"Uppqoc"tgurqpug"ujqyp"dgnqy"ku"cp"gzcorng"vjcv"ujqyu"VHQO?8."vjg"vko"g"cpf"fcvg."vjg"ewt/
 tgpv"cpf"hwwtg"ngcr"ugeqpfu"ctg"3:".vjg"uki"pcn"rtqeguut"ku"nqemgf."vjg"EFOC"ejcppgn"ku"PCRa23aC."
 vjg"RPQ"ku"58;."vjg"CI E"ku"3;9."vjg"XEFC E"ku"4:455."vjg"GHEFC E"ku"5687;5."vjg"uki"pcn/vq/pqkug"
 tcvkq"ku"504"cpf"vjg"htcog"gttqt"tcvg"ku"2026;0

" Eqoocpf<"
 " Uppqoc"tgrn{<"

cdmaversion

Vjku"eqoocpf"fkurnc{u"vjg"Łto"yctg"cpf"jctfyctg"xgtukqpu"qh"vjg"EFOC"Uwdu{uvg0

" Eqoocpf<"
 " Uppqoc"tgrn{<"

cpuio (Optional)

Ugg"Ejcrvgt"32"/"Qrvkqpu."ERW"Oqfwng"Qrvkqpu"hqt"kphqtocvkqp"qp"vjku"eqoocpf0

cpuioconfig (Optional)

Ugg"Ejcrvgt"32"/"Qrvkqpu."ERW"Oqfwng"Qrvkqpu"hqt"kphqtocvkqp"qp"vjku"eqoocpf0

cpustat

Vjku"eqoocpf"ujqyu"ci"tqwr"qh"mg{"xcnwgu"hqt"o"qpkvqtkpi"vjg"jgcuvj"qh"vjg"Nkpwz"ERW"cpf"qrgtcv/
 kpi"u{uvg0"uvcvwu0""Vjg"hqtocv"ku<

Yjgtg<

[[[[" ku"vjg"{gct"qh"vjg"WVE"vko"guvc"or"qh"vjg"o"quv"tgegpv"wr"fcvg0

O O F F " ku"vjg"o"qpvj"cpf"fc{/qh/o"qpvj"qh"vjg"WVE"vko"guvc"or"qh"vjg"o"quv"tgegpv"wr"fcvg0

J J < O O < U U "ku"vjg"jqwt."okpwwg"cpf"ugeqpf"qh"vjg"WVE"vko"guvc"or"qh"vjg"o"quv"tgegpv"wr"fcvg0

NNN ' " ku"vjg"rgtegpvcig"qh"oczko"wo"nqcf"cu"tgwtpgf"wukpi"vjg"Nkpwz" "eqoocpf0

HTGGmD" ku"vjg"cxckncdng"htgg"og"oqt{"kp"mknqd{vgu"cu"tgwtpgf"wukpi"vjg"Nkpwz" "eqoocpf0

-VWVE" ku"vjg"vgor"gtcvtg"kp"fgitgguegpki"tcfg"qh"vjg"Nkpwz"ERW"fk"vg"or"gtcvtg0

" Eqoocpf<"
 " Uppqoc"tgrn{<"

faultstat

Vjku"eq o o cpf"tgwtpu"vjg"uw o oct{"qh"cnn"u{uvgo"hcwnv"uvcvgu"kp"c"wugt/htkpgfn{"hqt o cv0"Kv"fgeqfgu"vjg"
v yq"hcwnv"uvcvwu"y qtfu"*HNVT"cpf"HNvU+"tgwtpgf"kp"vjg" "eq o o cpf"cpf"fkurnc{u"vjg"tguwnv"
kp"c"vcdwnc"htq o "ykvj"xgtdqg"fguetkrvkqpu0"Ugg"**Crrgpfkz" I"/U{uvgo"Hcwnv**"hqt"fgvcknu0

" Eq o o cpf<"

" Uppqoc"tgrn{<"

```
" Eqo o c p f <"
" U q p q o c " t g r n { < " k p v g t c e v k x g " u e t k r v " k u " u v c t v g f 0
```

kernelversion

```
V j k u " e q o o c p f " r t k p v u " v j g " e w t t g p v " N k p w z " q r g t c v k p i " u { u v g o " m g t p g n " L t o y c t g " x g t u k q p 0
```

```
" Eqo o c p f <"
" U q p q o c " t g r n { <
```

netconfig

```
V j k u " e q o o c p f " u v c t v u " c p " k p v g t c e v k x g " u e t k r v " v j c v " c m q y u " { q w " v q " e q p L i w t g " v j g " K R " p g v y q t m " u w d u { u v g o " q h "
v j g " U q p q o c 0 " " D { " f g h c w n v . " v j g " w p k v " k u " e q p L i w t g f " v q " e q p L i w t g " k v u g n h " w u k p i " v j g " F { p c o k e " J q u v " E q p L i w t c /
v k q p " R t q v e q n * F J E R + 0 " " K h " { q w " p g g f " v q " u g v " w r " u v c v k e " K R " e q p L i w t c v k q p . " { q w " o w u v " t w p " v j k u " u e t k r v " c u " "
h t q o " v j g " T U / 4 5 4 " u g t k c n " K I Q " r q t v " f w t k p i " v j g " k p u v c m c v k q p " r t q e g u u 0 " " T g h g t " v q " E j c r v g t " 4 " / " D c u k e " k p u v c m c /
v k q p . " W u k p i " p g v e q p h k i " v q " U g r " W r " [ q w t " K R " h q t " f g v c k n u " q p " v j g " w u g " q h " v j g " e q o o c p f 0
```

```
V j k u " u e t k r v " e t g c v u " q t " o q f k L g u " v j g u g " L n g u < " . " . "
c p f " 0 " " C m " q h " v j g u g " c t g " p q p / x q n c v k n g n { " u v q t g f " k p " v j g " H N C U J " f k u m " " f k t g e /
v q t { 0 " " [ q w " o w u v " t g d q q v " v j g " U q p q o c " c h v g t " t w p p k p i " v j k u " u e t k r v " h q t " v j g " e j c p i g u " v q " v c m g " g h h g e v 0
```

```
" Eqo o c p f <"
" U q p q o c " t g r n { < " k p v g t c e v k x g " u e t k r v " k u " u v c t v g f 0
```

ntpconfig

```
V j k u " e q o o c p f " u v c t v u " c p " k p v g t c e v k x g " u e t k r v " v j c v " c m q y u " { q w " v q " e q p L i w t g " v j g " P V R " U w d u { u v g o " q h " v j g "
U q p q o c 0 " " D { " f g h c w n v . " v j g " w p k v " k u " e q p L i w t g f " v q " c w v j g p v k e c v g " k v u " t g r n k g u " v q " e n k g p v u " w u k p i " k v u " f g h c w n v " O F 7 "
m g { u " k p " v j g " " L n g 0 " " K h " { q w " p g g f " v q " e t g c v g " { q w t " q y p " O F 7 " m g { u " * t g e q o o g p f g f + " q t " u g v " w r "
d t q c f e c u v l o w n v k e c u v " q r g t c v k q p . " { q w " o w u v " t w p " v j k u " u e t k r v " c u " t q q v 0 " " T g h g t " v q " E j c r v g t " 5 " / " E q p h k i w t g " v j g "
P V R " U g t x g t " h q t " f g v c k n u " q p " v j g " w u g " q h " v j k u " e q o o c p f 0
```

```
V j g " v y q " L n g u " v j c v " c t g " o q f k L g f " c t g " " c p f " 0 " " D q v j " q h " v j g u g " c t g " p q p / x q n c v k n g n { "
u v q t g f " k p " v j g " H N C U J " f k u m " " f k t g e v q t { 0 " " [ q w " o w u v " t g d q q v " v j g " U q p q o c " c h v g t " t w p p k p i " v j k u " u e t k r v "
h q t " v j g " e j c p i g u " v q " v c m g " g h h g e v 0
```

```
" Eqo o c p f <"
" U q p q o c " t g r n { < " k p v g t c e v k x g " u e t k r v " k u " u v c t v g f 0
```

ntpstat

```
V j k u " e q o o c p f " r t q x k f g u " u q o g " m g { " k p h q t o c v k q p " t g i c t f k p i " v j g " q r g t c v k q p " q h " v j g " P V R " f c g o q p 0 " " K v " u j q y u "
v j g " e w t t g p v " q h h u g v " d g v y g g p " v j g " P V R " u v g t g f " u { u v g o " e n q e m " c p f " v j g " E F O C " U w d u { u v g o . " v j g " e q w p v u " q h "
t g e g k x g f . " u g p v " c p f " f t q r r g f " r c e m g v u . " c p f " v j g " u g p v " r c e m g v " t c v g 0 " " V j g " h q t o c v " q h " v j g " t g u r q p q u " k u <
```



```
" Eqo o cpf<"
" Uqpq o c"tgrn{<"
```

setpwrfltmask (Optional)

```
Ugg"Ejcrvgt"32"/"Qrvkqpu."Ocumpi"FwcnRqygt"Uwrrn{"Hcwnv"Cncto u"hqt"kpht o cvkqp"qp"vjku"eqo /
o cpf0
```

setsigfltmask

```
Vjku"eqo o cpf"cnnyu"{qw"vq"gpdcng"qt"o cum"vjg"Uki pcn"Nquu"Hcwnv0""Rctc o gvt"hqt"vjku"eqo o cpf"ku"
gkvjgt"OCUMGF"qt"GPCDNGF0""Ugvkpi"vjku"eqo o cpf"vq"OCUMGF"yknn"rtxgp"v"uki pcn"nquu"hcwnv"
htqo"etgcvkpi"cp"cncto"eqp"fkvp0""Uq o g"kpucnncvkqpu"o c{"pggf"vq"o cum"vjku"hcwnv"y jgp"qrgtcvkpi"vjg"
PVR"ugtxgt"cu"c"Uvtcw o"4"ugtxgt0""Vjg"hcevt{"fghcwnv"ugvkpi"ku"GPCDNGF0
```

```
" Eqo o cpf<"
" Uqpq o c"tgrn{<"
```

sigfltmask

```
Vjku"eqo o cpf"fkurnc{u"vjg"ewttgpn"ugvkpi"hqt"vjg"Uki pcn"Nquu"Hcwnv"Ocun0"
```

```
" Eqo o cpf<"
" Uqpq o c"tgrn{<"
```

subsysreset

```
Vjku"eqo o cpf"rghqt o u"e"EFOC"Uwdu{uvgo"tgugv"y jkej"ku"uko knct"vq"e{enkpi"vjg"rqygt"qp"vjg"
EFOC"Uwdu{uvgo 0""kv"cnuq"tgugvu"vjg"EFOC"tgekgxt0""Chvgt"cdqww"32"ugeqpfu."vjg"dqqv"o guuci gu"
htqo"vjg"EFOC"Uwdu{uvgo"yknn"dg"fkurnc{gf0
```

```
" Eqo o cpf<"
" Uqpq o c"tgrn{<"
```

syskernel

```
Vjku"eqo o cpf"tgvwtpu"vjg"ewttgpn{"dqqvgf"Nkpwz"mgtpgn."gkvjgt"2"qt"3."y jgtg"2"ku"vjg"hcevt{/kp/
uvcnngf"mgtpgn"cpf"3"ku"vjg"wr i tcfgf"mgtpgn0
```

```
" Eqo o cpf<"
" Uqpq o c"tgrn{<"
```


[GCT" ku"vjg"{gct"qh"vjg"WVE"vk o guvc o r"qh"vjg" o quv"tgegpv"wr fcvg"tgegkxgf"htq o "vjg"EFOC"
" " Uwdu{uvgo0

FQ [" ku"vjg"fc{/qh/{gct"qh"vjg"WVE"vk o guvc o r"qh"vjg" o quv"tgegpv"wr fcvg"tgegkxgf"htq o "vjg"
" " EFOC"Uwdu{uvgo0

J J < O < U U "" ku"vjg"j qwt." o kpwvg"cpf"ugeqpf"qv"vjg"WVE"vk o guvc o r"qh"vjg" o quv"tgegpv"wr fcvg"tgegkxgf"
" " htq o "vjg"EFOC"Uwdu{uvgo0

NU" ku"vjg"ewttgpv"pw o dgt"qh"ngcr"ugeqpfu"fkhhgtgpeg"dgv y ggp"vjg"WVE"cpf" I RU"vk o guecngr
" " *3:"cv"vjg"vk o g"qh"vjku"y tkvki +0

Dgnqy"ku"cp"gzco rng"qh"cv{ rkecn"tgurqpug"vq"vjku"eq o o cpf<

" Eq o o cpf<"

" Uqpqoc"tgrn{<"

sysversion

```
Vjku"eqo o cpf"fkurnc{u"vjg"Łto yctg"xgtukqp"cpf"dwknf"fcvg"qh"vjg"Nkpwz"tqqv"Łng"u{uvgo0
```

```
" Eqo o cpf<"
" Uqpqoc"tgrn{<
```

updaterootflag

```
Vjku"eqo o cpf"cnmqyu"{qw"vq"wr fcvq"vjg"eqpŁi wtcvkqp"qh"vjg"Nkpwz"dqqvncfgt"chvgt"c"pgy"tqqv"Łng"
u{uvgo"ko cig"jcu"dggp"ytkwgp"vq"vjg"WR I TCFG"tqqv"Łng"u{uvgo"rctvkvqp"qh"vjg"Uqpqoc"HNCUJ"
fkum0"[qw"oc{"cnuq"wug"kv"vq"tgug"vjg"fgbcwnv"dcem"vq"vjg"HCEVQT["tqqv"Łng"u{uvgo"rctvkvqp0""Tghgt"
vq"Crrgpfkz"D"/Writefpi"vjg"Hkto yctg"hqt"fgvckngf"kpvtwevkqpu"hqt"rgthqto kpi"vjg"wr itcfg"
rtqegfwtg0""Qpg"ctiwogpv"ku"ceegrvgf.""yjqug"xcnwg"ku"gvjgt"2"qt"3."ykej"ecwugu"c"Łci"vq"dg"ug"vjcv"
kpfkecvgu"vq"vjg"dqqvncfgt"ykej"tqqv"Łng"u{uvgo"ko cig"ujqwnf"dg"ncfgf"d{"fgbcwnv0""Kh"cp"ctiwogpv"
xcnwg"qh"4"ku"ikxgp."vjgp"vjg"ewttgpn{"eqpŁi wtgf"fgbcwnv"tqqv"Łng"u{uvgo"ku"ujqyp0
```

```
" Eqo o cpf<"
" Uqpqoc"tgrn{<
```

```
" Eqo o cpf<"
" Uqpqoc"tgrn{<
```

updatekernelflag

```
Vjku"eqo o cpf"cnmqyu"{qw"vq"wr fcvq"vjg"eqpŁi wtcvkqp"qh"vjg"Nkpwz"dqqvncfgt"chvgt"c"pgy"mgtpgn"
ko cig"jcu"dggp"ytkwgp"vq"vjg"WR I TCFG"mgtpgn"rctvkvqp"qh"vjg"Uqpqoc"HNCUJ"fkum0"[qw"oc{"cnuq"
wug"kv"vq"tgug"vjg"fgbcwnv"dcem"vq"vjg"HCEVQT["mgtpgn"rctvkvqp0""Tghgt"vq"Crrgpfkz"D"/Writef/
pi"vjg"Hkto yctg"hqt"fgvckngf"kpvtwev"vjg"fgbcwnv"dcem_ _ _ o yctg
```

upgraderootfs

```
Vjku"wwknkv{"cnnqyu"{qw"vq"wr itcfv"vjg"Nkpwz"tqq"Lng"u{uvgo"0""Kv"ku"twp"chvgt"vjg"      "Lng"jcu"dggp"
eqrkf"vq"vjg"      "fktgevqt{"qp"vjg"u{uvgo"0""Kv"rgthqtou"cp"gtcug"qh"vjg"wr itcfv"tqq"Lng"u{uvgo"rctvk/
vkqp"cpf"vjgp"ytkvgu"vjg"      "Lng"vq"kv0""Tghgt"vq"Crrgpfkz"D"/"Writcfkpi"vjg"Hkto yctg."
Rgthqtokpi"vjg"Nkpwz"THU"Writcfv"hqt"fgvckngf"kphtocvkkp0
```

```
" Eqo ocpf<"
" Uppqoc"tgrn{<" Ujqyu"rtqitguu"kpfkcevqt0
```

upgradercvr

```
Vjku"wwknkv{"cnnqyu"{qw"vq"wr itcfv"vjg"EFOC"Tegekxgt"Łto yctg0""Rtkqt"vq"gzgewkpi"vjku"eqo ocpf."
{qw"owuv"eqr{"vjg"pgy"dkpct{"Łto yctg"Lng"vq"      0+
```

```
Kv"kuuwgu"vjg"eqo ocpfu"qxgt"vjg"ugtkcn"rqtv"vq"vjg"EFOC"Tegekxgt"vjcv"ctg"pggfgf"vq"uvctv"vjg"Z/
oqfgo"Lng"vtepuhgt."cpf"vjgp"fkurnc{u"rtqitguu"vq"vjg"eqpuqng0""Ugg"Rgthqtokpi"vjg"EFOC"Tegekxgt"
Writcfv"kp"Crrgpfkz"D"/"Writcfkpi"vjg"Hkto yctg""hqt"oqtg"kphtocvkkp0
```

```
" Eqo ocpf<"
" Uppqoc"tgrn{<" Writcfv"rtqitguu"ku"ujqyp0
```

upgradesubsys

```
Vjku"wwknkv{"cnnqyu"{qw"vq"wr itcfv"vjg"EFOC"Uwdu{uvgo"Łto yctg0""Rtkqt"vq"gzgewkpi"vjku"eqo /
ocpf."{qw"owuv"eqr{"vjg"pgy"dkpct{"Łto yctg"Lng"vq"      0+""
```

```
Kv"kuuwgu"vjg"eqo ocpfu"qxgt"vjg"ugtkcn"rqtv"vq"vjg"EFOC"Uwdu{uvgo"vjcv"ctg"pggfgf"vq"uvctv"vjg"Z/
oqfgo"Lng"vtepuhgt."cpf"vjgp"fkurnc{u"rtqitguu"vq"vjg"eqpuqng0""Ugg"Rgthqtokpi"vjg"EFOC"Uwdu{u/
vgo"Writcfv"kp"Crrgpfkz"D"/"Writcfkpi"vjg"Hkto yctg""hqt"oqtg"kphtocvkkp0
```

```
" Eqo ocpf<"
" Uppqoc"tgrn{<" Writcfv"rtqitguu"ku"ujqyp0
```

wrt_sw_opt

```
Ugg"Ejcrvgt"32"/"Qrvkqpu."Uqhvyctg"Qrvkqpu""hqt"kphtocvkkp"qp"vjku"eqo ocpf0
```


Software Option Bit Definitions

Dkvu"ctg"pwo dgtgf"htq o "2"vq'53."htq o "tki jv"vq"nghv0""Ewttgpn{."vjtg"ctg"qpn{"vyq"uqhv yctg"qrkqpu"
fgŁpgf"kp"vjg"Uqpq o cl""Vjgug"ctg"htq"RVRIKGGG/37: : "gpcdnf"qp"rqtv"2"*gvj2+"qt"rqtv"3"*gvj3+0""Vjg"
vcdng"dgnqy"ujqyu"vjg"ewttgpn{"fgŁpgf"dkvu0""
"

Programmable Pulse Output (PPO)

```
Vjg"RRQ"Qrvkqp"rtqxfkgu"wgugngvcdng."qp/vk o g" rwnug"tcvgu"htq o "3"RRU"vq"32" ORRU0""Qv jgt"ugnge/
vkqpu"ctg"3RR82U"*rwnug" rgt"82"ugeqpfu."qp"vjg" o kpwvg+."3RR4U"*rwnug" rgt"4"ugeqpfu."qp"vjg" gxp g"
ugeqpf+."cpf"Kpxgtvgf"3RRU"*hcnkpi"gf ig"qp/vk o g+0""Hqt"fgvcknu"qp"uki pcn"fgŁpkvkqp"ugg"Crrgpfkz"J
/Urgekhekckqpu)
```

View and Change the PPO Configuration

```
Wug"vjg" "eq o o cpf"vq"xkgy"vjg"qrvkqpcn"qwvrvwu"qp"vjg"ERW"Oqfwng0""Vjku"eq o o cpf"y knn"nkuv"
cp{"eqppgevqt"vjcv"jcu"cp"qrvkqpcn"KlQ"uki pcn0""Eqppgevqtu"ctg"kf gpvkŁgf"cu"C."D"qt"E0""Vq"ejcpi g"vjg"
RRQ"ugngvckqp"wug"vjg" "eq o o cpf0
```

```
" Eq o o cpf<"
" Uqpq o c"tgrn{<"
```

```
" Eq o o cpf<"
" Uqpq o c"tgrn{<" Kpvgtcevkxg"uetkrv"ku"uvctvgf"uq" {qw"ecp"ejcpi g"vjg" rwnug"tcvg0
```

1PPS Output

```
Vjku"qwvrvw"rtqxfkgu"3RRU"uki pcn0""Vjgtg"ctg"ugxgtcn"xctkcvkqpu"qh"vjg"3RRU"Qwvrvw"uki pcn"uwe j"cu<"
3RRU"VVN."3RRU"*TU/644+."cpf"Kpxgtvgf"3RRU0""Vjg"Rtqi tco o cdng"Rwnug"Qwvrvw"cuq"jcu"3RRU"
ugngvckqp0""
```

```
Vjg"3RRU"ku"cu"du {uvgo"uki pcn00""Vjku"ogcpu"vjcv"vjgtg"ku"qpg"3RRU"uki pcn"vjcv"chhgevu"vjg"y j qng"u {u/
vg o 0""Kp"qv jgt"y qt fu."kh" {qwt"Uqpq o c"jcu" o wnvkrng"3RRU"qwvrvwu"cpf" {qw"ejcpi g"vjg" rwnug"y kf vj."vjgp"
cnn"3RRU"qwvrvwu"y knn"dg"chhgevgf0
```

```
Vjg" rwnug"y kf vj "ku"pqt o cnn { "3" o knnkugeqpf"y kf g"y jgp"ujkr rgf"htq o "vjg" hcevqt { "dww"ecp" dg"ejcpi g"
*ugg" dngqy +0""Hqt"fgvcknu"qp"vjg"3RRU"uki pcn"fgŁpkvkqp"ugg"Crrgpfkz"J" /Urgekhekckqpu)
```

View and Change the 1PPS Configuration

```
Wug"vjg" "eq o o cpf"vq"xkgy"vjg"qrvkqpcn"qwvrvwu"qp"vjg"ERW"Oqfwng0""Vjku"eq o o cpf"y knn"nkuv"
cp{"eqppgevqt"vjcv"jcu"cp"qrvkqpcn"KlQ"uki pcn0""Eqppgevqtu"ctg"kf gpvkŁgf"cu"C."D"qt"E0""Wug"vjg"
"eq o o cpf"vq"xkgy"vjg"3RRU" rwnug"y kf vj "ugvvpki 0"
```

```
" Eq o o cpf<"
" Uqpq o c"tgrn{<"
```

```
" Eq o o cpf<"
" Uqpq o c"tgrn{<"
```

```
Wug"vjg" "eq o o cpf"vq"ejcpi g"vjg"3RRU" rwnug"y kf vj 0"" [qw"y knn"dg"cdng"vq"ejqqug"
htq o "c o qpi"vjgug"ugngvckqpu<"42" o ketqugeqpfu."3" o knnkugeqpf."322" o knnkugeqpfu"cpf"722" o knnkuge/
qpfu0
"
```

```
" Eqo o c p f < "
" U q p q o c " t g r n { < " k p v g t c e v k x g " u e t k r v " k u " u v c t v g f " u q " { q w " e c p " e j c p i g " v j g " r w n u g " y k f v j 0
```

Time Code Output

```
V j g " c t g " v y q " f k h h g t g p v " m k p f u " q h " V k o g " E q f g " q w v r w w u 0 " G k v j g t " c o r n k v w f g / o q f w n c v g f " * C O + " q t " F E / U j k h v 0 "
E q p p g e v q t u " y k m " d g " n c d g n g f " c u " g k v j g t " C O E Q F G " q t " F E E Q F G 0 "
```

```
V j g " V k o g " E q f g " k u " c " o u { u v g o " u k i p c n 0 " " V j k u " o g c p u " v j c v " v j g t g " k u " q p g " V k o g " E q f g " u k i p c n " v j c v " c h h g e v u " v j g "
y j q n g " u { u v g o 0 " " K p " q v j g t " y q t f u . " k h " { q w t " U q p q o c " j c u " o w n v k r n g " V k o g " E q f g " q w v r w w u " * C O " q t " F E + " c p f " { q w "
e j c p i g " v j g " V k o g " E q f g " h q t o c v . " v j g p " c m " V k o g " E q f g " q w v r w w u " y k m " d g " c h h g e v g f 0
```

```
V j g " V k o g " E q f g " q w v r w w " k u " p q t o c m { " K T K I / D 3 4 4 " * C O + " q t " D 2 2 4 " * F E + " y j g p " u j k r r g f " h t q o " v j g " h c e v q t { "
d w v " e c p " d g " e j c p i g f " * u g g " d g n q y + 0 " " H q t " f g v c k n u " q p " u k i p c n " f g L p k v k q p " u g g " C r r g p f k z " J " / " U r g e k h k e c v k q p u 0
```

View and Change the Time Code Configuration

```
W u g " v j g " " e q o o c p f " v q " x k g y " v j g " q r v k q p c n " q w v r w w u " q p " v j g " E R W " O q f w n g 0 " " V j k u " e q o o c p f " y k m " n k u v "
c p { " e q p p g e v q t " v j c v " j c u " c p " q r v k q p c n " K I Q " u k i p c n 0 " " E q p p g e v q t u " c t g " k f g p v k L g f " c u " C . " D " q t " E 0 " " W u g " v j g "
" e q o o c p f " v q " x k g y " v j g " e w t t g p v " u g v v k p i " h q t " v j g " V k o g " E q f g " h q t o c v 0 " "
```

```
" Eqo o c p f < "
" U q p q o c " t g r n { < "
```

```
" Eqo o c p f < "
" U q p q o c " t g r n { < "
```

```
W u g " v j g " e q o o c p f " v q " e j c p i g " v j g " V k o g " E q f g " h q t o c v 0 " [ q w " y k m " d g " c d n g " v q " e j q q u g "
```


Alarm Output

Vjg"Cncto"Qwrvw"rtqxfgu"cp"qrgp/eqngevqt"qwrwv"vjcv"kpfkcevgu"y jgp"vjg"EFOC"Uwdu{uvgo"jcu"nquv"nqem."qt"y jgp"ugtkquw"jctf yctg"hcwvnu"ctg"fgvgevfg0""Hqt"cf"fgvckngf"fguetkrvkqp"qh"vjg"hcwvnu"ugg"**Cr/rgpfkz" I"/"U{wgo" Hcwnvu0"**

Ectg"ujqwnf"dg"vcmgp"pqv"vq"fkgtgevn{ "eqppgev"vjku"qrgp/eqngevqt"qwrwv"vq"cxqncig"uqwtg0""C"ugtkgu"ewttgpn/nk o kvkpi "tgukuvqt"qh"cv"ngcuv"3M"qj o u"kp"xcnwg"ujqwnf"dg"wugf0""Vjg"rwnn/wr"xqncig"o wuv"pqv"gzeggf"62X0""Vjg"Cncto"Qwrvw"eqppgevqt"ecp"dg"gvkjgt"c"DPE"qt"cvgt o kpcn"dnqem0""Hqt"o qtg"fgvcknu"ugg"**Crrgpfkz" J"/"Urgekhecvkqpu0"**

View the Alarm Output Connector

Wug"vjg" "eqo o cpf"vq"xkgy"vjg"qrvkqpcn"qwrwv"qp"vjg"ERW"Oqfwng0""Vjku"eqo o cpf" y knn"nkuv"cp{ "eqppgevqt"vjcv"jcu"cp"qrvkqpcn"KlQ"uki pcn0""Eqppgevqtu"ctg"kf gpvkLgf"cu"C."D"qt"E0""

- " Eqo o cpf<"
- " Uqpqoc"tgrn{<"

Direct Digital Synthesizer (DDS)

Vjg"FFU"Qrvkqp"rtqxfgu"wugt/ugngevcdng"rwnug"tcvgu"htqo"3"J|"vq"32"OJ|."rtqitc o ocdng"kp"3"RRU"uvgru."kpenwfkpi"30766"ORRU"qt"4026:"ORRU0""Vjg"ugngevfg"rwnug"tcvg"ku"rjcug"nqemgf"vq"vjg"u{uvgo"quekn/nqvqt"cpf"ku"pqv"cnkipgf"ykvj"u{uvgo"vko g0"

Serial Time Output

Vjku"qr vkqp"ku"rtqxfgf"qp"cp"TU/454"*qt"TU/644+"ugtkcn"rqtv"ncdgnfg"öUgtkcn"Vko gö0""Kv"ku"cp"qwwrww"
vjcv"rtqxfgu"c"qpeg/rgt/ugeqpf"ugswgepeg"qh"CUEKK"ejctcevgtu"kp fkecvkpi "vjg"ewttgpp"vko g0""Vjg"öqp/
vko gö"ejctcevgt"uvctvu"vtcpu okvvpki "ykvjkp"vjg"Łtuv"42" o ketqugeqpfu"qh"gecj "ugeqpf0""Vjg"qwwrww"uvctvu"
cwwqocvkecm{"qp"rqygt/wr0""Ugg"**Crrgpfkz"J"/"Urgekkecvkqpu**"hqt"fgvcknu0

Vjg"Ugtkcn"Vko g"ku"c"öu{uvgo "ukipcnö0""Vjku"ogcpu"vjcv"vjgtg"ku"qpg"Ugtkcn"Vko g"ukipcn"vjcv"chhgevu"vjg"
yjqng"u{uvgo0""Kp"qvjgt"yqtfu."kh"{qwt"Uqpqoc"jcu"o wnvkrng"Ugtkcn"Vko g"qwwrwwu."cpf"{qw"ejcpi g"vjg"
ugwvkiu."vjgp"cnn"Ugtkcn"Vko g"qwwrwwu"yknn"dg"chhgevgf0

Vjgtg"ctg"ugxgtcn"fkhhgtgpp"hqtocvu"hqt"vjku"CUEKK"uvtkpi0""Vjg"hqtocv."dcwf"tcvg"cpf"rctkv{"ecp"cnn"dg"
ejcpi gf"xc"vjg"eqpuqng"rqtv0""Dcwf"tcvg"ugngevqpu"ctg"79822."3;422.";822."cpf"6:220""Rctkv{"ugnge/
vkqpu"ctg"qff."gxgp."cpf"pqp0""Hqtocv"ugngevqpu"ctg"U{urngz."Vtwgkog."GpfTwp."GpfTwpZ."PG

ct

ug

EndRunX (Extended) Format

Vjg"GpfTwpZ"hqt o cv"ku"kgpkeca"vq"vjg"GpfTwp"hqt o cv"ykvj"vjg"cf fkvkqp"qh"vyq"Łgnfu"/"vjg"ewt

NMEA Format

Vjg" Pcvkqpcn" Octkpg" Gngevtqpkcu" Ccuqekcvkqp" *POGC+" jcu" fgxgnqrgf" c" urgekŁecvkqp" vjcv" fgŁpgu" vjg" kpvgtceg" dgy y ggp" xctkqwu" rkgegu" qh" o ctkpg" gngevtqpkc" gswkr o gpv0" "Vjku" uvcpcfctf" fgŁpgu" ōugpvgeguö" vjcv" eqpvckp" IRU" rqukvkqp. "pcxki cvkqp. "vk o g. "cpf" qvjgt" kphqt o cvkqp0" "Ugpvgegu" vjcv" jcxg" dggp" k o rng/ o gpvgf" kp" vjg" Uqpq o c" eqphqt o "vq" P OGC/23 : 5" U rgekŁecvkqp" Xgtukqp" 5023" cpf" ctg" I I C. " I N N. " I U C. " T O E. " X V I " cpf" \ F C0" " J q y g x g t. " r q u k v k q p " c p f " p c x k i c v k q p " c t g " p q v " c x c k n c d n g " k p " c " E F O C / u { p e j t q p k | g f " r t q f w e v. " u q " v j g " q p n { " u g p v g e g " v j c v " j c u " d g g p " h w m { " k o r n g o g p v g f " k u " \ F C * v k o g " c p f " f c v g " k p h q t o c v k q p + 0

\FC*Vko g"cpf" Fcvg+

Vjg" \FC" ugpvgep" kfgpvkŁgu" vjg" vk o g" cuuqekcvgf" ykvj" vjg" ewttgpn" 3RRU" rwnug0" "Gcej" ugpvgep" ku" vtcpu o kvvgf" ykvj" kp" 722" o knnkugeqpfu" chvgt" vjg" 3RRU" rwnug" ku" qvvrwv" cpf" vgnnu" vjg" vk o g" qh" vjg" rwnug" vjcv" lwuv" qeewttgf0" "Kh" vjg" Uqpq o c" ku" wpu{pej tqp k | g f" vjg" vjku" ugpvgep" yknn" dg" eq o rqugf" qh" pwnm" Łgnfu0" " Gzc o rngu" ctg" dgnqy <

&IR\FC.....,6:>ET@>NH@

&IR\FC.39787:022.42.27.422:.29.22,8;>ET@>NH@

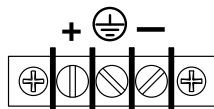
Oui"KF"	&IR\FC	
Hkgnf"3"	39787:022"	WVE"vk o g" cv" 3RRU" *jj o o uu0uu+"
Hkgnf"4"	42"	Fc{ "*23"vq"53+
Hkgnf"5"	27"	Oqpvj" "*23"vq"34+
Hkgnf"6"	422:"	[gct" *3; : 2"vq"429; +
Hkgnf"7"	29"	Nqecn"vk o g" qpg" j qwt. "qhugv"htq o "WVE"*/"hqt"gcuv"nqpi kvwfg+
Hkgnf"8"	22"	Nqecn"vk o g" qpg" o kpwwgu. "qhugv"htq o "WVE
Ejgemuw o"	,8;	
Oui"Gpf"	>ET@>NH@	

Power Supply Options

[qwt"Uqpq o c" ecp" dg" eqpŁi wgtf" ykvj" ugxgtcn" qrvkqpcn" rqygt" uwr rn{ "kprwvu" yjkej" ctg" nkuvgf" kp" *Crrgp/ fktz" J" / "UrgekŁecvkqp" 0* " Fwcn/ tgf w p f c p v" r q y g t" u w r r n k g u" c t g " c n u q " c x c k n c d n g 0 " " "

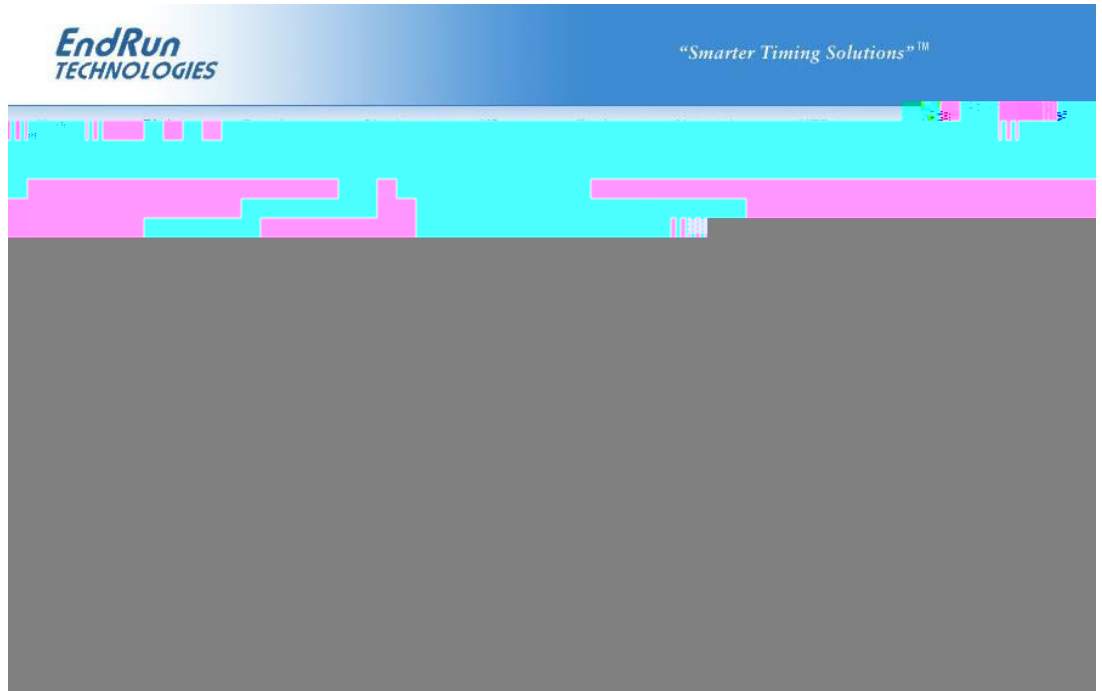
DC Power Input

Vjg" FE" r q y g t" k p r w w " w u g u " c " c " 5 / r q u k v k q p " v g t o k p c n " d n q e m " c p f " t g r n c e g u " v j g " u v c p f c t f " C E " r q y g t" k p r w w " l c e m 0



Vjku"rcig"kpvgpvkqpcnn{"nghv"dncpm0

Vjku"rcig"kpvgpvkqpcnn{"nghv"dncpm0



" 40"Kh" { qwt"Uppq o c" fqu"pqv" jcxg" ceegu"vq"vjg"Kpvgtpgv." {qw" o wuv"Łtuv" fcy pñqcf"vjg" cr rrtq rtkcvg" Łng*u+htq o "vjg"GpfTwp"Vge j pñq i kgu" y gdukg"vq"vjg"eq o r wvgt"vjcv" {qw" y knn"dg" wukpi "ncvgt"vq"ceegu" vjg"Uppq o c"xkc"kvu" J VVRU"kpvgthceg" Wug"vjku"nkpm"vq" i gv"vjg"Łng*u+" {qw" y cpv<

" jwr<ll y y 0gpf t w p v g e j p ñ q i k g u 0 e q o l w r i t c f g u p p q o c E 0 j v o

Chvgt"ucxkpi"vjg"Łng*u+."wug"vjg"Uppq o c" J VVRU"kpvgthceg"vq"ugngev"qpg"qt" o qtg"hqt"wrñqcf"vq"vjg" Uppq o c 0" V j g p " h q n n q y " v j g " t g o c k p k p i " r t q o r v u " h t q o " v j g " J V V R U " k p v g t h c e g " v q " e q o r n g v g " v j g " w r i t c f g * u + 0 ""

Kh{qw"ctg"wukpi" .{qw"oc{"qrgp"ceqo"ocpf"ykpfaqy"qp"vjg"tgo"qvg"eqo"rwwgt"cpf"ugewtgn{"
vtcpuhgt"vjg"tqqv"Łng"u{uvgo"ko"ci"ghtqo"vjg"tgo"qvg"eqo"rwwgt"vq}{qwt"Uappq"oc"Ł"ceqo"ocpf"nkmg"vjku"
ujqwnf"dg"wugf<

Pqy"kuuwg"vjg"hqnnqy"kp"ieqo"ocpf"vq"vjg"Uappq"oc"eqpuqng"vq"kp"kv"cv"vjg"wrnqcf<

Pgzv."wrfcv"vjg"fghcwnv"Łng"u{uvgo"rctvkvkqp"d{"kuuwkpi"vjku"eqo"ocpf"vq}{qwt"Uappq"oc"eqpuqng<

[qw"ujqwnf"ugg"vjku"nkpg"fkurnc{gf<

Hkpcnn{.tgdaqv"vjg"u{uvgo"d{"kuuwkpi"vjku"eqo"ocpf"cv"vjg"ujgmn"rtq"orv<

Yckv"cdqww";2"ugeqpfu"ht"vjg"u{uvgo"vq"ujwvfqy"p"cpf"tgdaqv"Ł"Vjgp"nq"i"kp"vq"vjg"Uappq"oc"wukpi"
"qt" 0"Kh"cn"jcu"i"qpg"y"gm."{qw"ujqwnf"dg"cdng"vq"nq"i"kp"vjg"wuwn"yc{0"Chvgt}{qw"jcxg"
gpvgtf"{qwt"rcuuyqtf."vjg"u{uvgo"xgtukqp"o"guucig"y"km"dg"fkurnc{gf0"[qw"ujqwnf"pqvkeg"vjcv"kv"pqy"
kpfkecvgu"vjg"uqhv"yctg"xgtukqp"cpf"fcvg"qh"vjg"wr"itc"fg"vjcv"{qw"rtgkxkwun}{f"qy"pnqcf"gf0"[qw"ecp"cnuq"
ejgem"vjku"cv"cp{"vk"og"d{"kuuwkpi

yjkej"y"km"ecwug"vjg"u{uvgo"xgtukqp"o"guucig"vq"dg"tg/fkurnc{gf0

[qw"ecp"cnuq"ejgem"vq"ugg"yjkej"tqqv"Łng"u{uvgo"ko"ci"ghtqo"vjg"u{uvgo"ku"ewttgpvn{"dqav"gf"wpf"gt"d{"kuuw/
kpi"vjku"eqo"ocpf"cv"vjg"ujgmn"rtq"orv<

Yjkej"ujqwnf"ecwug"vjku"vq"dg"rtkpv"gf"vq"vjg"eqpuqng<

Kh"uq."cpf"{qwt"wpkv"ugg"ou"vq"dg"qrgtcvkpi"pqt"ocnn{.}{qw"jcxg"uweeguuhwmn{"eqo"rngv"gf"vjg"tqqv"Łng"
u{uvgo"wr"itc"fg0"Kh"{qwt"wpkv"fqgu"pqv"daqv"wr"uweeguuhwmn{.}cpf"{qw"ctg"pqv"cdng"vq" "qt" "
kp"vq"vjg"u{uvgo"chvgt";2"ugeqpfu."vjg"vjg"tg"jcu"dg"gp"uq"og"mkp"q"rtq"dn"o"y"kv"j"vjg"tqqv"Łng"u{uvgo"
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nqcf"Łng"o"q"fg"vq"dkpct{"y"jgp"fqy"pnqcf"kp"i"vjg"Łng//gkv"jgt"htq"o"vjg"Gp"p"Tw"Vge"j"pq"nq"i"kgu"y"gd"ukv"q"t"
y"jgp"vtcpuhgttkpi"kv"vq"vjg"Uappq"oc0

Recovering from a Failed RFS Upgrade

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vq"dkpct{"yjgp"fqypnqcfkpi"vjg"Ln//gkvjgt"htqo"vjg"GpfTwp"Vgejppnqikgu"y"gdvkg"qt"yjgp"vtcpuhgt/
tkpi"kv"vq"vjg"Uqppoc0

Recovering from a Failed Kernel Upgrade

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Problems with the CDMA Receiver Upgrade

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Vjg"tgngxcpv"cxckncdng" o cp"rc i gu"ctg"ujqyp<

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Change Password

Vjku"eq o o c p f"ku" w u g f"v q" e j c p i g"v j g"r c u u y q t f" h q t"v j g" w u g t"v j c v" {q w" c t g"n q i i g f" k p" c u 0"K v" c h h g e v u"v j g" u g t k c n"r q t v."U U J."V g n p g v" c p f" J V V R U 0"

"
"

List Active Processes

Vjku"eq o o c p f" f k u r n c { u" c n n" c e v k x g" r t q e g u u g u" t w p p k p i" k p"v j g"u { u v g o 0

"

NTP Monitoring and Troubleshooting

Vjg" h q m n q y k p i" e q o o c p f" f k u r n c { u" y j k e j" P V R" e n k g p v u" c t g" t g c e j k p i" v j g" P V R" f c g o q p" t w p p k p i" q p"v j g" U q p q o c 0"K v" y k n n" p q v" v t { "v q" n q q m" w r" j q u v" p c o g u <

"

C" w u g h w n" e q o o c p f" h q t" s w g t { k p i" P V R" u v c v w u" k u" v j g" h q m n q y k p i <

"

Vq" s w g t { " c" t g o q v g" v k o g" u g t x g t" * k h" v j g" t g o q v g" v k o g u g t x g t" y k n n" c e e g r v" v j g" s w g t { + " v { r g <

" @

C" v c d n g" q h" k p h q t o c v k q p" y k n n" d g" f k u r n c { g f 0" H q t" f g v c k n u" q p" y j c v" g c e j" q h" v j g" v c d n g" e q n w o p u" o g c p u" v { r g <

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"

Text Editors

```
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```

```
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kv"ku"Lituv"uvctvgf."cpf"{"qw"fkf"pqv"ixg"kv"c"Lng"pcog"vq"gfku"qp"vjg"eqo"ocpf"nkpg."kv"ujqyu"c"uvctv/wr"
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Change Log-In Banners

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vjg"nqi/kp"dcppgtu0""Rgthqto"vjg"hqmqy"kp"<
```

"

```
Ejcpig"vjg"dcppgtu"cu"cr rtrtkcvgl0""Chvgt"ucxkpi"vjg"Lng."eqr {"kv"vq" "nkmg"vjku<
```

"

```
Vjgp"tgdaq"v"hqt"{"qwt"ejcpi"gu"vq"vcmg"ghhge"v0
```

""

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PTP Software License

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U

Changing the Channelset

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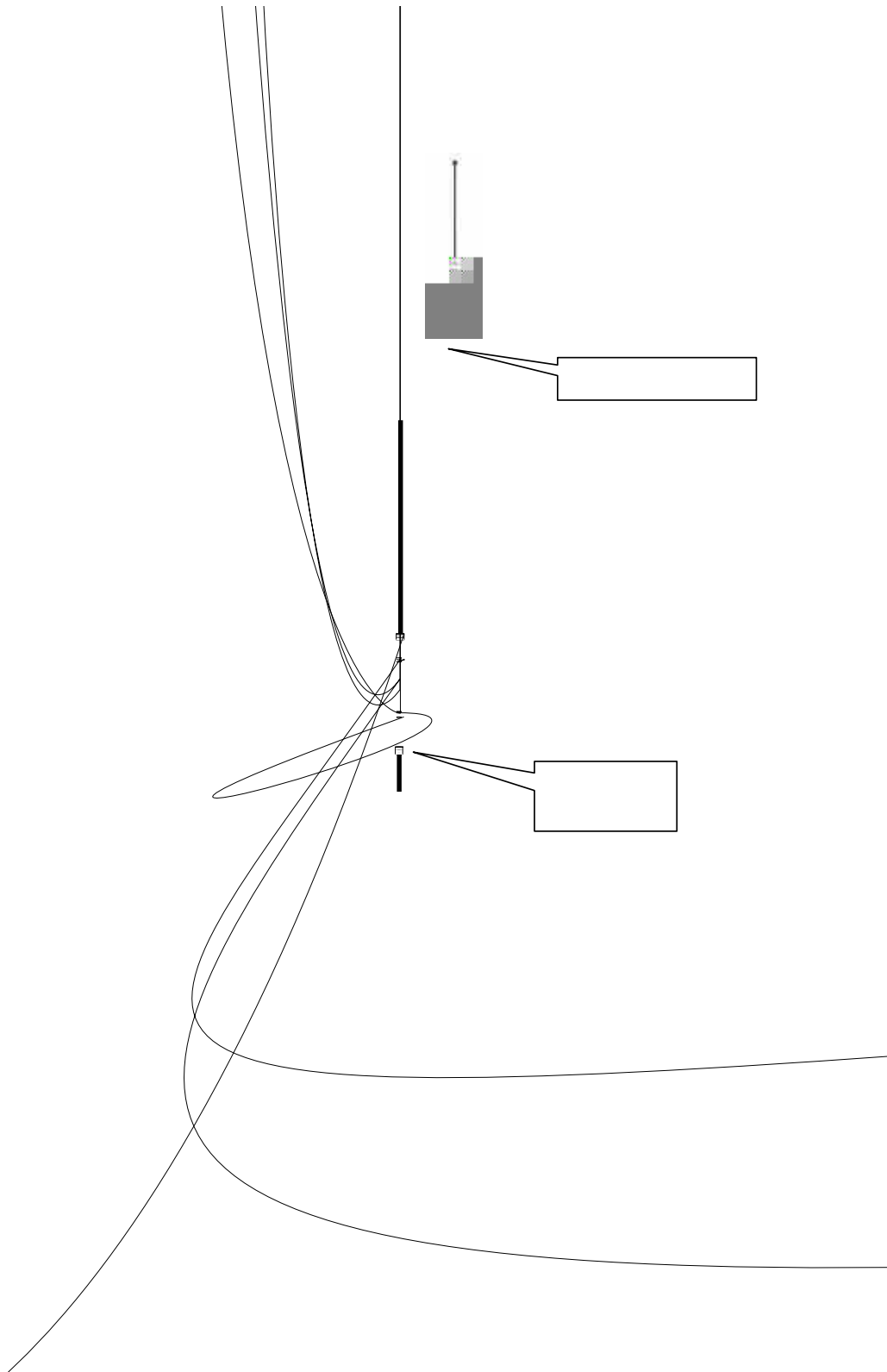
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Using a CDMA Preampfier

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CDMA A r



2 of 2

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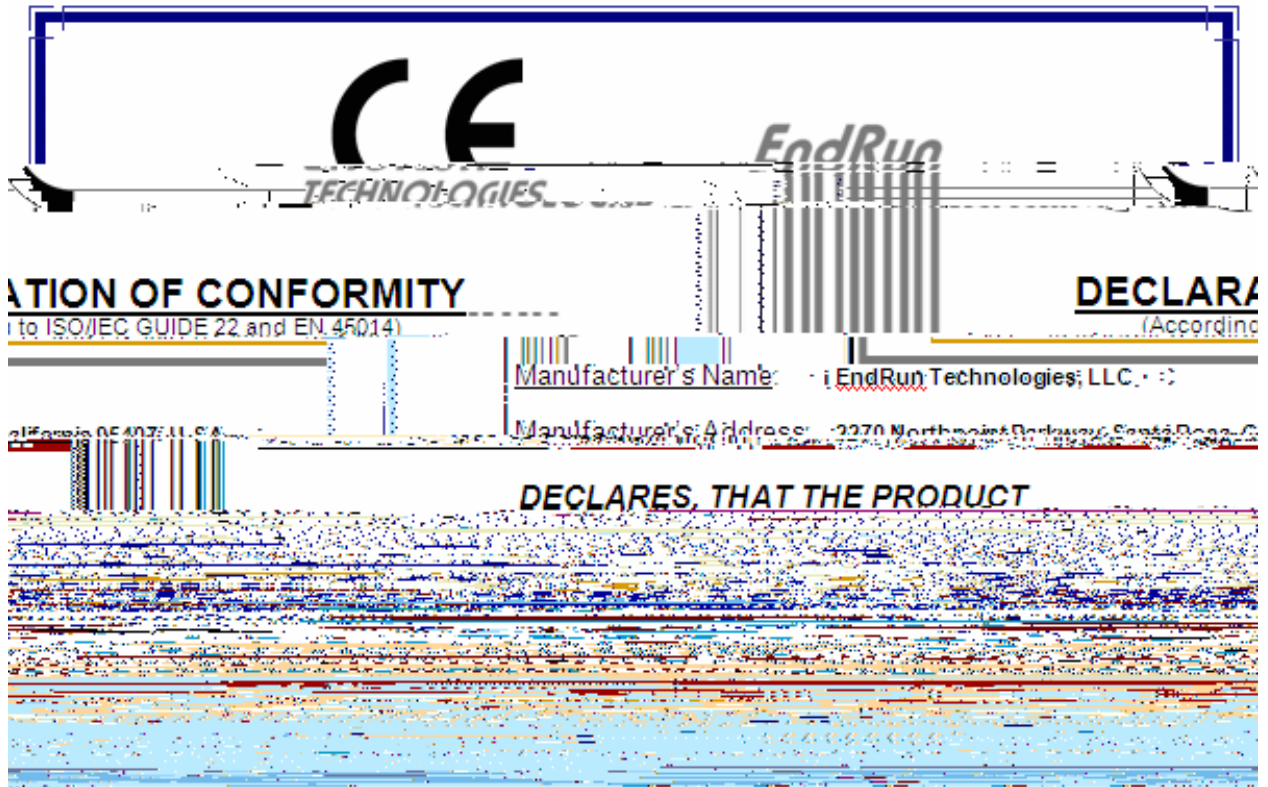
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 GOE<" " GP77244<4232."GP77246<4232
 " " " GP83222/5/4<4228"-C3"-C4."GP83222/5/5<422:
 " " " XEEK"*X514234026+
 " " " CUIP\U"EKURT"44"*422;+"-C3
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Vjku"rcig"kpvgpvkqpcm{"nghv"dncpm0

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