

Before the
Federal Communications Commission

Washington, D.C. 20554

#S"%&' " ()%% '*"+,

K'Nl<"G+P P '\$" 7)%' 0""U@ST 7ML : "M-FHK">J WX#GMF#E 3 "#3" -H7HKMX"KH / #: FHKY

W<"%&"G&.' ,R">;Ql.9":), '%<)"\$6"Z+P 'l)\$6": '9;*.%"<"W;*');

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Z')6.\$[

>)*[*]N&"\

#? #3 FKE 7 JGF#E 3 "M3 7 "WMG] / KE J 3 7 @
##? #3 I J #KL A
M? >+%' 9%.\$ ["G+\$. ,6 '\$%.)1. %<R"#S%" [*.%<R")\$6"M8).1)Q.1.%< V
@? M;%' \$%.9)%.+\$ @
S? H\$9*<N%.+\$ @S
C? >&<2.9)1": '9;*.%"< @A
^? 7 '8.9": '9;*.%"< @V
D? >+%' 9%.\$ ["D / " 3 '% 4+*52",*+P" 7 +: ")\$6" 7 7 +: "M%" 952 ST
A? >)"9&" ()\$) [' P '\$%" SS
_? K.25": ' [P '\$%)%.+\$"" SA
W? M66%.+\$)l D / "G+\$2.6'*)%.+\$2 CS
@? E8 '8. ' 4 CS
S? K+l' 2)"\$6"K' 2N+\$2.Q.1.%. ' 2 C_
C? E%&' *G+\$2.6'*)%.+\$2 ^T
^? W '\$',.%)\$6"G+2%2 ^@
G? D / "#PNl.9)%.+\$2, +* >;Ql.9":), '%< ^C
###? >KEGH7 J KMX" (MFFHK : ^D
M? Ex Parte K;1' 2 ^D
W? G+P P '\$">' *.+6")\$6">+9' 6; *' 2 ^A
G? M99' 22.Ql'" - +*P)%2 ^_
7? - ;*%&' *#S, +*P)%%.+\$ ^`
#a?' EK 7 HK#3 / "GXM J : H: ^V

\$' 4'.22; '2*)'.2'6"Q<"D / '2'9; *%< .\$.+*6'***+ ,+2%'*6.)l+ [; 'Q'%'4 ' '\$*'1'8)\$%'2%)\$6)*62"Q+6. '2')\$6"
N*+2N'9%.8'"D / "N*+8.6' *2"+\$%'&' "Q'2" P'%'&+62",+*' '\$2; *.\$["%'&)"\$' %4+*52)\$6"6'8.9'2")* '2'9; *' ,+P'%'&' "
Q' [.\$.\$. \$[?D

^? 0 '")* ' "\$+%'9+\$6;9%.\$["%'&.2'3 E#".\$.")8)9; ; P?' 0 '".\$%'6"%'&.2'.d; *%<"9+PNI' P' '\$% %&' "
.PN+*)\$%' 4+*5"+\$'9<Q' *2'9; *%<%"&)"%2.)I' *)6<%"5.\$["NI)9'"4. %&.\$%'&' "[+8'*\$P' '\$%)\$6"N*.8)"%'2'9+*?A"
F&' "G+P P.22.+\$R%'&' 2' "+%'&' *' [*+;N2R")\$6"%'&' "4. *'1'22".\$6;2%*<")11'&)'8'"2. [\$. ,.9)\$%' .\$.%' *2' ".\$. '\$2; *.\$ ["
%'&)"%'&' 2' "\$' 4'\$' %4+*52'9+\$2.6' *2'9; *%< *25)\$6" P. (%) .+%'9&\$.d; '2' ,+P'%'&' "+; %2'%"?'F&.2'3 E#")\$6"
%'&' *'9+*6' "%2' '52%" +6'8' l+NR"4.11&'&' IN' .\$.%'&)"% ' ,+*%?"

D? 0 '""9+[\$.j' "%&)"%+; *' .\$.d; *%<R",+9;2.\$["+'9<Q' *2'9; *%<"+*D / R*)'.2'2" ; \$6) P' '\$%)I"
d; '2%'+\$2* '1).8' "%"+29+N'")\$6"*2N+\$2.Q.1.%' .2?'" : '9; *%<"+, '\$' %4+*5' .\$.)2%* ;9% ; *' R2; 9&')2'N*+%'9%.\$ ["

D #\$. .22; .\$.["%'&.2'3 E#"> : Z: W'&)'2'9+*6.\$%)%'6'4. %&%'&' E.,.9' "+, 'HS[. '\$' *.\$["]\$6" F'9&\$+1+ [<)]\$6 %&' "0. *'1'22"
F'1'9+P P; \$.9)%.+\$2'W; *') ;?' See id.)%"`@TAR'N)?)'SAD?"

A 0 ' "+Q2' *8' "%&)"%'&' " J? : ?'7' N)%" P' '\$%"+, "G+P P' *9' I2'3)%.+)\$ I"#2% %; %' "+, : %) \$6)*62)\$6" F'9&\$+1+ [. '2'b3# : F=" 3# : F'" *9' '\$%I<' .22; '6' [; .6'1. '\$'2'+\$'9<Q' *2'9; *%<"+*#'\$%' \$' %B9+\$ \$'9%'6'6'8.9'2R'2%*22.\$[")\$' '\$' [\$. '\$' [BQ)2'6")NN*+)9&%"&)"%Q; .162'2'9; *%<2<2% 'P2'6. *'9%I<".\$.%"+#F'%'9&\$+1+ [<?" See 3# : FR" : <2% 'P2' : '9; *%<HS[. '\$' *.\$[0" G+\$2.6' *)%.+\$2' ,+*") (; 1%.6.29.NI.\$) *%<MNN*+)9&".\$%'&' "HS[. '\$' *.\$["+, 'F* ; 2%4+*%&< : '9; *' " : <2% 'P, 3# : F" : N'9.)I" > ; Q'" TTB@AT"b3+8)"ST@A=R'&%"N20hh6+.?+*[h@T'ATS`h3# : F? : >? TTB@AT?"F&' "7' N)%" P' '\$%"+, "Z+P'1)\$6" : '9; *%< " b7Z : =)I2+* *'9' '\$%I<' *'1')2'6. %2'+4\$'9<Q' *2'9; *%<N+1.9<"+*#F'%'6'8.9'2R'6'1.\$')%.\$["2.c'2%*)% [.9'N*.\$9.NI'2%&)"%". %' Q'1.'8'2'4.11'&' IN'2%)5' +&16' *2'2%+N; \$) ; %&+* .j' '6' .\$.% ; 6' *2' ,+P'%) PN' *.\$["4. %&'9+\$ \$'9%'6'6'8.9'2? See J? : ?'7' N%?" +, "Z+P'1)\$6" : '9; *%<R" : %)%" [.9"> *.\$9.NI'2' ,+* : '9; *.\$["%'&'#\$%' *'\$%"+, 'F&.\$[2'b#F=R" a' *2'+\$@?T"b3+8)"@DR"ST@A=R' &%"N20hh444?6&2? [+8h2'9; *.\$["%'&' #F?" 3# : F")\$6"%'&' "3)%.+)\$ I'F'1'9+P P; \$.9)%.+\$2)\$6"#\$,+*P)%.+)\$M6P. \$.2%*)%.+)\$ b3F#M=6'8'1+N'6")*.25'P)\$[" P' '\$%"+, "P' 4+*5",+*)66*22.\$["9<Q' *2'9; *%<.22; '2? See 3# : FR" - *) P' 4+*5",+* #PN*+8.\$["G% .9)I'#\$,*)2%* ;9% ; *' "G<Q' *2'9; *%<bST@A=R' &%"N20hh444?\$.2%? [+8h2.%'2h6' ,) ; 1%h.,1'2h6+9; P' '\$%2h9<Q' *2'9; *%<B,*) P' 4+*5BTS@S@^?N6,?"F&' " G+P P; \$.9)%.+\$2' : '9; *%<R'K'1.)Q.1.%<R")\$6"#\$%' *+N'*)Q.1.%<G+; \$9.1"#a12"bG : K#G"#a12="G<Q' *2'9; *%<K.25" ()\$[" P' '\$%")\$6" W'2%>*)9%.9'2' 0 +*5.\$[" / *+; N" ^"6'8'1+N'6')2' [P' '\$%B2N'9.,.9')\$)I<2.2"+, "%&' ")NN1.9)%.+)\$+ , "%&' " G<Q' *2'9; *%< *) P' 4+*5R")2'4'11')2' *'9+P P' \$6)%.+\$2' ,+*8+1; \$%)< *' ,+*2%+")66*22'9<Q' *2'9; *%<9+\$9' *2? See G : K#G"#aR' 0 +*5.\$[" / *+; N" ^R" G<Q' *2'9; *%<K.25" ()\$[" P' '\$%")\$6" W'2%>*)9%.9'2R' -.)\$)I'K'N+*"bST@D=R' &%"N20hh%*)\$2.%.+\$?,99? [+8h2%2h)96+92h* 'N+*%2hST@Dh -GGBFMGBG<Q' *B#F&B)N' *BK'1@?@BST@D?N6,?" See also -FG"K'N+*%+\$'#\$%' *'\$%"+, 'F&.\$[2'J' *'2'G+PN)\$. '2%"+M6+N%W'2%>*)9%.9'2%"+M66*22'G+\$2; P' *'>*.8)9<)"\$6" : '9; *%<K.252 bg)\$'S_R"ST@D=R' &%"N20hh444? ,%9? [+8h2<2% 'Ph.,1'2h6+9; P' '\$%2h* 'N+*%2h, '6' *)IB%*)6' B9+P P.22.+ \$B2) , , B *'N+*%B\$+8' P Q' *BST@CB4+*52&+NB' %%.1'6B. \$%' *'\$' %B%&.\$[2BN*.8)9<h@DT@S_+*%N'N6, "bN*+N+2. \$["N*.8)9<)"\$6" 9<Q' *2'9; *%<Q'2%N*)9%.9'2')22+9.)%'6'4. %&' #F=i" J? : ?'7' N%?" +, "Z')I%&)"\$6"Z ; P)\$: *8.9'2R' K)6.+ - *'d ; '\$9< " 0. *'1'22'F'9&\$+1+ [<'. \$ ('6.9)1'7'8.9'20' / ; .6)\$9' ,+*#%\$6; 2%*<)"\$6" - ++6)\$6"7* ; ["M6P. \$.2%*)%.+)\$: %) , , bM ; [?" @^R"ST@C=R' &%"N0hh444? ,6)? [+8h6+4\$1+)62h ('6.9)17'8.9'2h7'8.9'K' [; 1)%.+)\$ \$6 / ; .6)\$9' h / ; .6)\$9'7+9; P' '\$%2h; 9PT__S_S?N 6, "b [; .6)\$9' "%&'&' " .\$.6; 2%*<"+\$9+\$2.6' *)%.+\$2' ,+*%&'&'2) , ")\$6" , , '9%.8'1'6'8'1+N'P' '\$%")\$6" ; 2' "+, "K- %'9&\$+1+ [<'. \$' P'6.9)1'6'8.9'2=?

2+,%4)*")\$6&)*64)*'%)*)*'22'\$%)1%+2.[(\$)1.\$[")\$6"9+\$%+1+",K)6.+M99'22"3 '%4+*52)\$6%+'\$2;*'"
 %&'N*+N*'*)%.\$+%,%&'\$%4+*5R'9*')%'2"+\$'N'*2N'9%.8'?"MS+%&'*N'*2N'9%.8'R"&+4'8'*R'n;2%)2"
 '1'8)\$%"+%&'9+\$2;P'R".2"%&'"\$6B%+B'\$6'2'9;.%<+,"Q+%&"\$%4+*5)\$6%&'6'8.9'2"%&)"9+\$9%"+
 9+PP'9.)1"\$%4+*5'2'*8.9'2?""7'8.9'2)\$6"+%&'*\$%4+*5"'1'P'\$%2'P)<"Q'",;*.2&'6"Q<"%&'2'*8.9'"
 N*+8.6'*R%&.*6"N)*. '2R")\$6"9+\$2;P'*2"%&'P2'18'2?-"0&+"2&+;16"Q"'*2N+\$2.Q1'",+*9<Q'*N*+%9%+\$2,+*"
)"6'8.9'R"+*2&+;16"*2N+\$2.Q.1.%<"Q'"2&)*'6".\$2+P'"*9+[\$.j)Q1"")P)\$9*+22"%&'D/"'9+2<2%Po"0'"
)12+)"NN*'9.)%""%&)"D/"'.2"\$+%)N%"+Q""2'N)*%"\$%4+*5R"Q;%"*)%&'*4.11"Q".\$.%['*]'6"4.%&'c.2%.\$["
 N*'8.+;2["'\$*)%.\$%4+*52R'N'*)&N2".\$6',.\$.%1<?"7+"d;'2%.\$2")Q+;%%&'9<Q'*N*+%9%+\$2+",D/"
 '\$%4+*52".\$&'*\$%1<".PN1.9)%""%&'"+%&'*\$%4+*52")22+9.)%'6"4.%&"%&'Po"0&'*2&+;16"%&'1.\$'2'Q'4' '\$"
 '\$%4+*52"Q'"6*)4\$%"1)%8"%+*"2N+\$2.Q.1.%<,+*D/"9<Q'*2'9;*.%<o"0'".\$.%'"9+PP'\$%+\$%&'2'")\$6"+%&'*

\$'4+*52',*
'c91;2.8"1.

@@?
 1.P.%.(\$")99...\$6"6")"6'N'\$62"+\$"
 P;%;)lR");%...\$'4+*52"+6)<")\$6"4&'%&'*"
 'c.2%.(\$");%...Nl.9)Ql'"%+%&'D / "'\$8.*+\$P'\$%?" 0 "2' '5"9+P P '\$%"+\$ %&' "
 ', '9%.8" ; 2...)\$R'\$. \$N)*%9; 1)*R ,+*N*+% '9%.\$ [D / "\$'4+*52) ().\$2% ; \$) ; %&+* .j '6"
)99'22)\$6" '\$6B; 2' *6'8.9'2") ().\$2%) %) 9&.\$ ["+" P) 1.9. + ; 2"\$'4+*5"9+PN+\$ '\$%2R")2'4 '11")2%&'N' *9' .8'6"
 1.P.%)%+\$2")\$6"6*)4Q)952"+, %&+2' " ; 2'2?"M* ' "%&' * '2N'9.,.9"9+\$2.6'*)%.\$2%&)"4+; 16")NNl<"+D / "
 6'8.9'2o" J\$6' *4&)"9.*9; P2%)\$9'2"4+; 16 P ; % ;)1") ; %&' \$%.9)%.\$ Q' 9+\$2.6' *6"22' \$%.)1%+" '\$2; *' +*
 Q+12% '*2'9; *.%<o" "M* ' "%&' * ")\$<"9.*9; P2%)\$9'2"4&' * " P ; % ;)1") ; %&' \$%.9)%.\$ 4+; 16"\$+%Q" "Q' \$' ,.9.)lo"#,") "
 9+P P ; \$%.9)%.\$2"N*+8.6' *6.6"\$+\$%."\$8'2%."\$P ; % ;)1") ; %&' \$%.9)%.\$R"&+4"4+; 16"%&)"1.5'1<"), , '9% .%2* '1)%8' "
 +8'*)11"2'9; *.%<"*.25o" "0 &)"%+%&' * ") ; %&' \$%.9)%.\$2"P' %&+6+1+ [. '2" P . [&"Q' ' ' , '9%.8" , +*D / "2'9; *.%<o" "
 0 + ; 16"%&' P)22"6'Nl+<P '\$% +, "& . [&B8+1; P 'R'1+4B9+2"D / "6'8.9'2". \$#+F"\$'4+*52"N* '2' \$%"N)*%9; 1)*"
) ; %&' \$%.9)%.\$9&)11' \$ ['2o" "Z+4"9)\$"N*+8.6' *2' , , '9%.8'1<") ; %&' \$%.9)%' "%&' "9+P P ; \$%.9)%.\$2+ , "& . [&B

2' '5'9+P P '\$% +\$N&<2.9)1'2'9;*.%<" +Qn'9%.8'2")\$6'\$ '62'\$.%&' 'D / "'\$8.*+\$P '\$%R")\$6"+\$) \$<"+%&' *"
9+\$2.6'*)%.\$2%'&' "G+P P.22.+\$'2&+;16"%5' ".%+"99+; '\$%."\$.%2' c) P.\$%.\$+" ,N&<2.9)1'2'9;*.%<"+, "D / "
\$' %4+*52")\$6'6'8.9'2'?"

@_? 0 &)%'6'8.9'B)\$6'\$ %4+*5BQ)2'6 N&<2.9)1'2'9;*.%<" P '%&+62"4+;16"Q'"P+2%"', , '9%.8' ". "
)NNI. '6"%+D / "6'8.9'2o""F+4&)%' 'c%' '\$%6+'2'1)95"+, "N&<2.9)1'2'9;*.%<"N+2'")"%&'*)"%%+R"+*".%\$%+6;9' "*25"
, *+P"; \$2; N' *8.2'6'D / "6'8.9'2o""F+4&)%' 'c%' '\$%6+'2'1)95 +, "N&<2.9)1'2'9;*.%<"N+2'")"%&'*)"%%+R"+*"
. \$%+6;9' "*25", *+P ; \$2; N' *8.2'6'D / "6'8.9'2o"" 0 .11"%&' 'D / "'\$8.*+\$P '\$%N' *2' '\$%")\$<' '\$4"+*"; \$, d; "
9&)11' \$['2o"" 0 &)%' +%&' *'.22; '2')\$6' ,)9%+*2'2&+;16"%&' "G+P P.22.+\$'9+\$2.6' *'\$%&' 'd; '2%.\$+" ,N' *2' *8.\$["
9+\$, .6' '\$%.)1.%<R'\$.% [*%<')\$6')8).1)Q.1.%< %&' +; [&'N&<2.9)1'2'9;*.%<o

@^? 0 &)%'2N'9%2'+*';2'2'+, "D / "\$' %4+*52'2&+;16"Q'"9+\$2.6' *'6'eP.22.+\$'9*.%9)1f bi.e.R"*'1)'6'
%+2), '%<=")\$6R")2'2;9&R'6+%&' '<'4)**)\$%2N'9'.1)9+\$2.6'*)%.\$+4.%&' *2N'9"%%+N&<2.9)1'2'9;*.%<o"" 0 &)%"
eP.22.+\$'9*.%9)1f")9%.8%. '2'6.2%.\$[;.2%&'&'2' "\$' %4+*52')\$6'&+4'9)\$%&' '<'Q'"N&<2.9)11<'2'9; *'6'\$.%&' 'D / "
'\$8.*+\$P '\$%o" : &+;16'9' *%).'D / "\$' %4+*52'Q'"N&<2.9)11<'6.8' *2'")%&'&' '\$' %4+*5'1'8'1'2'")' *2; 1%+ , "%&' "
eP.22.+\$B9*.%9)1f")2N'9%2%'&' '<2; NN+*%'+*')\$Q'l'o #, "2+R'&+4'2&+;16"%&' %6.8' *2.%<'Q'"9&' .8'6o""

4. Device Security

@V? H\$2; *.\$["%&' 'N*+8.2+\$+, "9+\$, .6' '\$%.)1.%<R'\$.% [*%<R')\$6")8).1)Q.1.%< *'d; *'2%'&)%'6'8.9'2'
) *'2'9; *'1)\$6'9)N)Q1' "+,); %&' '\$%9).%.\$[+\$%&' '\$' %4+*5'?" 0 &)%' P '%&+6+1+[. '2'4.11'Q'"; 2'6'+N*+%'9%'&' "
8)*. '%<"+, '6'8.9'2'9+\$'9%'6'+D / "\$' %4+*52o""-+*')c) PNI'R'2+P '6'8.9'2%'&)%'4.11'9+\$'9%'&' +D / "
\$' %4+*52'4.11'\$.9+*N+*%)'2+P' ,+*P' +, : ; Q29*.Q' *'#6' '\$%.%< (+6;1' "b : # (= %'9&\$+1+[<?@V #29; *'\$% : # ("
% '9&\$+1+[< *+Q; 2% '\$+; [&'%+ " \$2; *'2'9; *.%<'4.%&+; %'N+2.\$["%&'*)%2%+9+\$2; P' *2R'2' *8.9'N*+8.6' *2R' +*"
&'"; \$6' *1<.\$[".%,\$)2%*; 9%; *'o"" 0 .11' : # ("%'9&\$+1+[<'Q'"1'8'*) ['6', +*D / o""7+2%)\$6')62', +*'\$'c%"
['\$'*)%.\$' : # ("9)'62 be.g.R' PQ'66'6' : # (2'b : # (2== ', , '9%.8'1<')66' *22'2'9; *.%<)"\$6'\$.% [*%<'9+\$9'*\$2o"
0 &)%' '\$'4'2'9; *.%<'Q' '\$, %2'+*9&)11' \$['2') *'9*)' %'6'Q<'&'"; 2' "+, " : # (2o""M' *'%&' *'\$+B : # ("P' %&+62"
&)%'2&+;16"Q'"9+\$2.6' *'6', +*%&.[&B8+1; P' R'1+4B9+2%'6'8.9'2R')\$6'., "2+R') *'2%\$6')62'Q+6. '2'9; *'\$%1<
6'8'1+N.\$['2%\$6')62', +*2; 9&'P' %&+62o"" 0 &)%' +%&' *'.22; '2')\$6' ,)9%+*2'2&+;16"%&' "G+P P.22.+\$'9+\$2.6' *'
+\$%&' 'd; '2%.\$+" ,N' *2' *8.\$["G#M"%&' +; [&'6'8.9'2'9; *.%<o

5. Protecting 5G Networks from DoS and DDoS Attacks

ST? M'2'9; *.%<'cN1+.%&)%'*) ['%2'\$' %4+*5' *2+; *9'2R'2;9&")2'")7'\$.)1B+, B : *8.9' b7+ : ="+*"
7.2%*.Q; %'6'7'\$.)1"+, " : *8.9' b77+ : =")%95R'9+;16'&)'8'")\$.PN)9%+\$)8).1)Q.1.%<"+, "2' *8.9'Q<'9); 2.\$[")
%+%)1'+*N)%'.)1'6.2*; N%.\$+" ,2' *8.9' ?ST"" 0 '2' '5'9+P P '\$%")\$6'2; NN+*%.\$['(6)%'+\$%&' 'P'9&)\$2P'2'P+2%"

@V : ; Q29*.Q' *'#6' '\$%.%< (+6;1'2'b : # (2=) *' *' P+8)Q1' '9+PN+\$' \$%2'+, "P+Q.1' "N&+\$'2')\$6'6'8.9'2%'&)%' '\$)Q1' "%&' '9'11"
N&+\$' "%+)"99'22'2; Q29*.Q'6'2' *8.9'2'Q<"); %&' '\$%9).%.\$['%&' ; 2' *'+, "%&' '9'11"N&+\$' "%+%&' '\$' %4+*5'?" : # (2')12+2%+*'
N' *2+\$)1'\$.+*P)%+R\$. \$91; 6.\$["%'c%P'22) ['2R'9+\$)9%('1.2'2')\$6'2' *8.9' B* '1)'6'\$.+*P)%+R'?"See 0)<' \$'g)\$2' \$'k"
K.95"M<' *2R'Forensic Software Tools for Cell Phone Subscriber Identity ModulesR'3)%.\$)1'#\$2%.% ; '+, " : %)6')62"
)\$6'F'9&\$+1+[<'R'&%"Noh92*9?\$.2%? [+8h [+; N2h : 3 : hP+Q.1' m2'9; *.%<h6+9; P' \$'2hP+Q.1' m, +* '\$2.92hNNB : # (B%+12B
..\$)1'N6, "b1)2%"8.2.%'6'3+8'Vh"ST@A=

ST #\$(%)6'\$.)1B+, B2' *8.9' b7+ : =")%95R'")\$)%%)95'*)%%' PN%2%+N' *8'\$%"; 2' *2', *+P)99'22.\$[".%,\$+*P)%+R'+"2' *8.9'2'
Q<'%) ['%.\$['9+PN; %' *2R'2N'9., .9'4' Q2. '%2'+*2' *8.9'2R'+*'\$' %4+*5'9+\$'9%.\$2?'F&' "P+2%9+P P+\$%<N' "+, "7+ : ")%95"
+99; *2'4&' '\$)%)%95' *'e, 1+62f")\$' %4+*5'4.%&'\$.%,\$+*P)%+R'+8' *1+)6.\$["%&' '2' *8' *4.%&' *'d; '2%2%+8. '4'")

(continued...)

1.5'1<"%+"Q"'', '9%.8'')%N*'2'*8.\$[9+\$.6'\$.%)1.%<R'\$.%[*.%<")\$6")8).1)Q.1.%< %&*+; [&"P.%.[]%.\$+"7+:")\$6'77+:"))%952?'"\$.%&'N1)\$6'D / "'\$8.*+P'\$%R'\$.91;6.\$["%'9&\$.d; '2'+*N*+%9%.\$["Q+%&'&' "\$'4+*5'9+\$%*+1')\$6'6)%N1)\$'2?S^e"" 0 &.9&"P'%'&+62"+,'6','\$2'")[]\$.2%7+ :)\$6'77+ :)%952?)*'%'&' " P+2%"9+2%B',, '9%.8'o

S@? 0 ' 2 ' 5'9+P P '\$%+"\$4%'&'*)66.%+\$)l"2%)\$6)*62)*'"\$' '6'6"+"22.2%\$.P.%.[]%.\$["7+ :)\$6'77+ : ")%952?'" ()\$<2;9&")%952 .\$.8+18'"%&'"+,*[.\$["+,"#>B2'\$6'*)66*'22'2'b2N++,\$[="2+"%&' ")%95.\$["P)9&.\$'2'9)\$+\$%+"Q"'')2.1<'.6'\$.%.. '6)\$6"+"11+4")PNI.,.9)%.\$+"+,"))%952?'" 0 &)%\$).B2N++,\$[" '%9&\$.+1+['.2')*'"P+2%"1.5'1<"%+"Q"'', '9%.8'").\$%&'D / "'\$8.*+P'\$%R'")\$6'4&)%)*'%'&'9&')11'["'2%"%&'.'* 6'NI+<P'\$%o

6. Patch Management

SS? -+*"P+*'%"&)\$")'6'9)6'R'9+P P ;\$.9)%.\$2'2'9;*.%<");%&+*%.'2")\$6' cN'%"Q+6.'2R'2;9&")2" %&'G+P P.22.+\$12- '6'*)1"M68.2+*<"G+P P.%% ' ', +*9+P P ;\$.9)%.\$2'2'9;*.%<"N+1.9<"6'8'1+NP '\$% b&' " G+P P ;\$.9)%.\$2' : '9;*.%<"K'1.)Q.1.%<")\$6"#%\$' *+N'*)Q.1.%<"G+;\$.9.1'bG: K#G=R'&)'8'2%*'22'6%'&' " .PN+%)\$9'"+,*' [;1)'2<2% 'P'N)%9&.\$[?SS ""MNN1<.\$["2'9;*.%<"N)%9&'2")\$6'*+;%. '\$' N)%9&'P)\$['P'\$%9)\$" *'6;9'5\$+4\$8;1\$')Q.1.%.'2'.'.6'8.9'2')\$6'2+,4)*'R^SC *'6;9.\$["%&'%.25'+,2;99'22; ;1'2'9;*.%<" cN1+.%2 %+

(Continued from previous page)

4'QN)['?'M2')*2;1%R%'&'2'2*8'*)4.11"Q'";)\$Q1'%"N+*9'22*'d; '2%2R'")\$6')1' ['.P)%'';2'*4.11"Q'";)\$Q1'%"N+*)99'22%'&' 2.%?' ""See J\$.%'6':%')2'G+PN;%'*"HP' *['\$9<"K'')6.\$'22'F')P'R'Security Tip: Understanding Denial of Service Attacksr"&%N20hh4 4 4?;2B9'%'? [+8h\$9)2hh.N2h: FT^BT@D^bl)2%8.2%'6'3+8"VR'ST@A=?""#\$")'6.2%*.Q;%'6'6'\$.)lB+,B2'*8.9' " b77+ : - :)%95R'")\$%95'*)P)<%)5'9+\$%*+1+",+%&'";2'21'9+PN;%'2%&*&+; [&'2'9;*.%<"8;1\$'*)Q.1.%.'2?""F&'")%95'*) 9)\$%&'\$.+*9'%'&'9+PN;%'2%&'2'\$6'1)*[' "]P+; \$k2'+,6%)%"+)4'Q2.%'+*+P'.1)66*'22?""F&'")%95'*)e6.2%*.Q;%'2F' %&'2'")%952?)"P+[\$'P;1%.NI'9+PN;%'2R'4&.9&'4+*5'\$.%)\$6'P'%"+"8'*)6%&'2'2*8'*)? ""See id.

S^ F&.2'P)<'.91;6'%"&'";2'"+,P;1%.NI'1)<'2'+,'6','\$2'R'2%)*%.\$["4.%&',*+\$%B'\$6")NN1.9)%.\$2+*+&)*64)*'%"Q1+95" 9'*)\$.%<N'2'+,%)%,,.9i'5'<'9+PN1'%.+\$'.6.9)%+*2i'Q1)95&+1.\$["+*2.5&+1.\$[i'\$.%* ;2+\$.N*'8'\$.+\$.2<2% 'P2i' ,.*'4)112R'%"%;%'2R'")\$6'24.%9&'2i';N2%*)'P',.1%'\$.%[i'")\$6'7+:'6','\$2'2<2% 'P2?""See / '+*[' "] +;2+;*.2R'] '<' G+PN1'%.+\$"#6.9)%+*20' (.\$.P.j.\$["%&'H., '9%"+,7+ : M%952+\$'H1)2%.9'G1+;6BQ)2'6'MNN1.9)%.\$2'W)2'6+\$" MNN1.9)%.\$B1'8'1' ()5+8'G&).\$'G&'95N+.\$2R'ASSR'ASC^bST@^=R" &%N20hh,1'2?.,?; j&9&h2%.11'2%hGXE : HK t STST@^hGXE : HKhGXE : HKhGXE : HKhGXE ; 6 t STG+PN;%.%\$ [t STH\$)Q1.\$[t STF'9&\$.+ 1+ [<h: &+*% t ST>N'2hGXE : HKmST@^m@^mGK?N6,i' see also G&)*1)PN+2">)*.5)5.2'")1?)"Distributed Denial of Service Attacksr'_F&'")#%\$'%">+*+9+1'g+;*\$)l'^b7'9'ST@^=R'&%N0hh4 4 4?9.29+9+Ph9h'\$h;2h)Q+; %hN*'22h.\$%*\$%B N*+*+9+1Bn+;*\$)lhQ)95B.22; '2h%)Q1' B9+\$% '\$2BCTh6+2B))952?&% P li"" a)1%'>+N'25.9R'Z+4'%">*'8' '\$%+*+': %+N'7+ : " M%952o'bE9%?'@R'ST@S=R'&%N20hh&+46+'2.\$%*\$'4+*5'9+PhST@ShN*'8' '\$%B2%+NB6+2B)%952?"

SS See G+P P ;\$.9)%.\$2' : '9;*.%<"K'1.)Q.1.%<R'")\$6"#%\$' *+N'*)Q.1.%<"G+;\$.9.1'bG: K#G=R' 0 +*5.\$[" / *+;N'S@0'G<Q' " : '9;*.%<"W'2%>)*9.9'2'-.)1)K'N+*%)"CD'bST@^=R'&%N20hh*)\$2.%.+\$.99? [+8hN2&2h6+92h92*.9h 0 / SMBG<Q' *B: '9;*.%<B W'2%B>)*9.9'2B-.)lBK'N+*%?N6,?

SC See e.g.R'Protect Myself from Cyber Attacksr'7'N'*)%P'\$%"+, "Z+P'1)\$6": '9;*.%<"bM; [?'^R'ST@A=R" &%N20hh4 4 4?6&2? [+8h&+4B6+B.hN*+% '9%B P<2'1.B9<Q'*)B))952?be] ' 'N<+; *+N'*)\$.["2<2% 'P'R'Q*+42'*)R'")\$.B8.*;2'")\$6' +%&'9%')1'2+,4)*'";N%"+6%)?' : '9;*.%<N6)%'2')\$6'N)%9&'2'*)'8).1)Q1' ",+*,' ' ',*+P'P)n+*9+PN)\$.'2?f=i -*+\$.%.'*G+P P ;\$.9)%.\$2R'Frontier Communications Encourages Hyper Vigilance When It Comes to Anything Cyber bE9%?'Cr'ST@C=R'&%N0hh.\$8'2%+*?,*+\$.%'9+Ph'1'')2'6'").1?9.PoK'1'')2'#7q_V^__S?be] ' 'N<+; *+N'*)%.\$[" 2<2% 'P'R'Q*+42'*)R'")\$.B8.*;2'")\$6'&%'9%.'9)1'2+,4)*'";N%"+6%)?' : '9;*.%<N6)%'2')\$6'N)%9&'2'*)'8).1)Q1' ",+*,' ' ',*+P'P)n+*9+PN)\$.'2?f=i"Ten Steps to Smartphone Security, - '6'*)'l'G+P P ;\$.9)%.\$2'G+P P.22.+\$R" &%N20hh4 4 4?99? [+8h2.%'2h6'); 1%h.,1'2h2P'*)N&+\$'mP)2%*'m6+9; P '\$%?N6,"beM99'N%";N6)%'2')\$6'N)%9&'2'%">+;*" 2P'*)N&+\$'12'2+,4)*'?'f=i"&%N20hh4 4 4?99? [+8h2.%'2h6'); 1%h.,1'2h2P'*)N&+\$'mP)2%*'m6+9; P '\$%?N6,"bl)2%8.2.%'6'

(continued...)

6'8.9 Â 4787

+*2'*8.9'R"\$+1+[\$ '*Q' .[\$ "2+16")%*"%) .1R".2"2%.11"* '9' .8.[\$ "2'9; *%<B* '1)' '6"N)%9&'2")\$6"4&'%&'*" .%"2"2%.11" 2),'"%+";2'o

SD? -. \$)11<R"4 ' 2' '5"9+PP '\$%+\$"4&'%&'**'1'8)\$%2%)\$6)*62"&)8'"Q' '\$"N*+6;9'6"%&)"N*'2' '\$")"9+PP+\$)NN*+)9&R"+*6'29*.Q'"")Q'2%"N*)9%.9'R"%+,)9.1.%)"N)%9&"P)\$) [' P '\$%N*+9'6; *'2%&)"9)\$"Q' ")NNI.'6**' [)*6l'22"+,%&'"; \$6'*1<.\$ ["6'8.9'+N'*)%.\$ ["2<2% 'P'."\$)"D / "'9+2<2% 'P'?"#"\$%&'")Q2'\$9'+,)"\$<" 6'Nl+<'6"2%)\$6)*6R"2&+;16"%&.2"' ,+*%Q'" 'cNl+*'6R")\$6"., "2+R"4&.9&"2%)\$6)*62"Q+6<"+" ,+* ; P"4+;16"Q' %&' " Q'2%"9)\$6.6)%' "%+)"66*'22"%&.2".22; 'o"" 0 &)"%+%&'*.22; '2")\$6",)9%+*2"2&+;16"%&' "G+P P .22.+\$"9+\$2.6'*\$"+\$ " %&'d; '2%.+\$+",N*'2'*8.[\$ "G#M"%&*+; [&"N)%9&"P)\$) [' P '\$%o

7. Risk Segmentation

SA? K.25"2' [P '\$%)%.\$.S8+18'2"2Nl.%%.\$ ["\$ '%4+*5''1' P '\$%2'."\$%+2'N)*%" '9+PN+\$ '\$%2%"&' lN" .2+1)%'"2'9; *%<"Q*')9&'2")\$6"P.\$.P .j ' "+8'*)11"* .25?" - +*' 'c) PNI'R'\$ '%4+*52'9)\$ Q'"6.8.6'6".\$%+ ".2+1)%'6" 2;Q\$ '%4+*52%"Q++2%"N'*,+*P)\$9'")\$6". PN*+8'"2'9; *%<?S^"K.25"2' [P '\$%)%.\$ +*"\$ '%4+*5'21.9.\$ ["P . [&")11+4' [*')%*" *'2.1. '\$9<R" P +*' "' , '9%.8'"9<Q' *%&*)"P+\$.%+*.\$ ["")\$6")1<2.2")\$6"2%*+[\$ '*2'9; *%<" ,+*" \$ '%4+*5'2'*8.9'"2; NN+*%.\$ ["9*.%9)1".\$.*)2%*;9%; *'9+P P ;\$.9)%.\$2"b%+ ".9l;6'"#G:")\$6":GM7M=?"" 0 ' ' 2' '5"9+PP '\$%+\$%&'";2'"+,2' [P '\$%)%.\$."D / "\$ '%4+*52)\$6"&+4"2' [P '\$%)%.\$ +\$9)\$*" '6;9'"*.25".\$2;9&" \$ '%4+*52?"

S_? 0 '2' '5"9+PP '\$%)\$6"2; NN+*%.\$ ["6%) "+\$4)<2"%&)"2' [P '\$%)%.\$ +\$9+;16"Q'")9&. '8'6" %&*+; [&+; %&'&' "D / "'9+2<2% 'P"%+P"

C^? 0 ")12+2' '5"9+P P '\$%+\$4&'%'*)\$6"&+4 2'9;*.%<"\$ ' 62",+*D / "#+F"6'8.9'2"P.[&%"

CD? / .8'%"&'1.5'1<";\$N*'9'6'\$%'6"6.8'*2.%<"+,"9+\$9'6"6'8.9'2")\$6"&'.'*P)\$;,)9%;* *2R" 4 ")12+[" '\$'*)11<"2' '5"9+P P '\$%+\$4&'%'*)D / "2'9;*.%<"9+;16"Q'"9&)"11'\$["6"Q<"&)*64)*'" .22; '2R" .91;6.\$["%&'*)2",*+P")9+PN*+P .2'6"2;NN1<"9&).\$? Z+4")* '2'8.9'"N*+8.6'*2")\$6"'d; NP '\$% P)\$;,)9%;* *29;*' '\$1<")22'22.\$["2;NN1<"9&).\$*.252o""M*'%"&'<")22'22.\$["*.252"9+\$2.2%'\$%"4 .%&'3#: F" [; .6'1.\$'2o^{SV} 0 "2' '5"9+P P '\$%+\$4&'%'*)\$6".,2+R"&+4"D / "2'8.9'"N*+8.6'*2"2&+;16" '\$2;*' "%&" " N*+8'\$)9'"+,"%&'&)*64)*'R",*P 4)*'R'2+,%4)*'R')\$6")NN1.9%.\$2"+N'*)%.\$[".\$%"&'.'*" '\$8.*+P '\$%2? 0 &)" 2N'9.)1"9+\$2.6'*)%.\$2R",.)\$<R"2&+;16"Q'"NN1.'6"*'1).8'%"&"D / "2;NN1<"9&).\$*.252o""

CA? 0 " , ; %&' *2' '5"9+P P '\$%+\$Q'\$',.2")\$6"9+2%2")22+9.)%'6"4 .%&' , , '9%.8'")&)*64)*'R" ,.*P 4)*'R'2+,%4)*'R')\$6")NN1.9%.\$2'9;*.%<"+*D / ?"" 0 &)"*)*'%"&'9+2%2")22+9.)%'6"4 .%&";N6)%. \$["'c.2%.\$[" &)*64)*'R",.*P 4)*'R'2+,%4)*'R')\$6")NN1.9%.\$2'8'*2;2%"&'9+2%2"+,")66.\$[" '\$%.'1<"\$'4"'1' P '\$%2',+*") "%+%)11<"\$'4"2'9;*.%<"N+2%;* 'o""#2%"&' *'")*+1",+*D / B2N'9.,.9%&.*6"N)*%<"2'9;*.%<" '\$%.' '2o""7+Q'\$',.2")\$6" 9+2%2"8)*<"6'N' \$6.\$["+\$%"&'";2'"+, +N' \$B2+; *9'"2+,%4)*'9+PN)*'6'"+"N*+N*.'%)*<"2+,%4)*'o"" 0 &)"*)*' "%&' " 9+2%2"+,")66.\$["2'9;*.%<B2N'9.,.9' ,')%;* '2%"&"D / "\$'4+*5'&)*64)*'R",*P 4)*'R'2+,%4)*'")\$6")NN1.9%.\$2o"" M*'%"&' *'"29)1'"'9+\$+P . '2+Q2'*8'6")9*+22"1+9)R"*' [.+\$)R")\$6"\$).+\$4.6'"D / "\$'4+*52o" - .\$.)11<R"4&)" +%&' *'.22; '2"+* ,)9%+*2"2&+;16%"&' "G+P P .22.+\$9+\$2.6' *4 .%&' *2N'9%"&%"N* '2' *8).+\$+, "9+\$, .6'\$%.).1.%<R" .\$.%[' *.%<)\$6")8).1)Q.1.%< .\$.%"&' "D / "'\$8.*+P '\$%o

2. Roles and Responsibilities

C_? W'9);2'"+,%"&'")\$%.9.N)%'6"N*+1., '*).+\$+, "D / "\$'4+*52")\$6"&' "6'8.9'2%&)"4.11"Q'" 6'N1+<'6"+\$%"&' P R'"&' *'" .2")"9&)\$9'%"&)"%&' "9<Q'*. \$%[' *.%<"+, "%&' "\$'4+*5")2")4&+1'"9+;16"Q'" +8'*1+5'6"+\$%"&'")22; PN%.\$+"%&)"\$+%&' *'\$'4+*5"N)*%.9.N)\$%4+;16"Q'" *2N+\$2.Q1'?'#2%"&.2")8)1.6" 9+\$9'*\$o"" 0 '2'9;9+T'*)11<+PN)\$%"'9;4&'%"&'2'2N9+2'*. \$);*.%<" '\$%+22"1+7"

P) \$) [' 6" 4. %&.\$"9+PN)\$. ' 2?" Z+4"2&+; 16"N*+8.6' *2' 4 +*5"%+ [' %& ' *")9*+22%&' "D / "' 9+2<2% ' P"%+)9&. ' 8" 6' 2.*)QI' "' +; %9+P ' 2' .\$"9<Q' *"* .25" P) \$) [' P ' \$%o""

C`? K' 1) %' 6|<R" 4 "' 2' ' 5". \$, +*P) %.\$ +\$ +\$&+4 "%&' "D / "' 9+2<2% ' P" 4. 11" 2&)* "' . \$, +*P) %.\$ +\$) Q+; %' 9<Q' *"%&* ')%2")\$6"9+\$9' *\$2?"" - +*" c) PNI ' R"# \$, +*P) %.\$ +\$: &)*. \$ [")\$6" M\$) l<2. 2" E* []\$. j) %.\$ +2" b# : ME=" 2%) \$6)*62") * "' 2%. 11" 1)* [' l<")" 4 +*5". \$" N*+ [*' 22R))\$6"%&' . *2; 99' 22" 6' N' \$62"+\$ "%&' ' 1' 8' 1'+, ". \$6; 2%*<" N)*% . 9.N) %.\$ +\$?"" 0 ' ' 2' ' 5" 9+P P ' \$%+\$" 4 &' %&' *")\$# : ME" 9+\$2%*; 9%" 9+; 16" Q' " +*2&+; 16" Q' ") NNl. ' 6"%+ "%&' "D / "' 9+2<2% ' P' ?"" 0 +; 16. %" Q' ") NN*+N*.) %' "%+ "6' 8' 1+N") "D / B2N' 9.. 9"# : MEo"" : &+; 16" D / " \$ ' % 4 +*52" Q' " . \$2%* ; P ' \$ ' 6"%+2; NN+*%) ; %+P) %' 6" 9<Q' *2' 9; *%<" %&* ')%". \$6. 9) %+*2") \$6" \$ ' % 4 +*5") \$+P) l<" . \$, +*P) %.\$ +\$ 2&)*. \$ [")\$6") \$) l<2. 2o"#2") \$# : ME" +*P ; 1%. Nl' "# : ME2"%&' "*" . [&%", +9) 1" N+. \$%, +*"); %+P) %' 6" 9<Q' *" . \$, +*P) %.\$ +\$ 2&)*. \$ [")\$6") \$) l<2. 2o"" : &+; 16. %) 66* ' 22"#+F" 9+\$9' *\$2" P+*" Q*+) 6l<" +*", +9; 2"+\$ " \$ ' % 4 +*5B Q) 2' 6" 9+\$2. 6' *)% . +\$2o"" 0 &+" 2&+; 16" Q' ". \$8+18' 6o"" : &+; 16" 4 +*5"+, "# : ME2" 6') l. \$ [" 4. %&" *' 1) %' 6"%+N. 92" Q' " , +*P) l<" 9+ +*6. \$) %' 6o""#, "2+R" &+4o"" 0 &%) *' "%&' "N*+N' *"+1' 2"+, "2%) \$6)*62" Q+6. ' 2R") 68. 2+*<" 9+P P. %%" ' 2" 2; 9&") 2 %&' ' 3 +*%&" MP ' * . 9) \$' 3 ; P Q' * . \$ [" G+; \$9. 1" b 3 M 3 G=R. \$6; 2%*<") ; %&+* . % . ' 2R" \$; P Q' * . \$ [")\$6" 6) %)" 2' *8. 9' 2") \$6"%&' " - GG0

CV? 0 ' "+Q2' *8' "%&)" %&' " 3# : F" - *) P' 4 +*5", +*# PN*+8. \$ [" G* . % . 9) 1"# \$, *) 2%*; 9% ; * " G<Q' *2' 9; *%<" - *) P' 4 +*5" b 3# : F" G : - =^{CT} 2~6") *.

)+6)<12"\$; PQ '*.\$["29&' P)2%+" '\$9+PN)22"D / o"" 0 &)"N*)9%.9)1'2% 'N2'2&+; 16"D / "NI)\$ \$ '*2%)5' ". \$+*6' *%+ '\$2; *'%&)"% %&' , ; \$9%.\$2'6.29; 22'6' ". \$%&.2'3 E#")(\$6")\$<+&%' *'1'8)\$% , ; \$9%.\$2R') *'N*+N' *1<'9+\$2.6' *'6')\$6". PNI' P '\$% '6'4. %&.\$%&' . *'1'2N'9%.8' "+*[]).j).%+\$2o"

4. Benefits and Costs

^@? 0 '2' '5'9+P P '\$%+\$%&'N; Q1.9') *P' 'cN'9%'6%+"*2; 1% , *+P' ,).1; *'%+ . \$% [' *)' " 9+\$. ,6'(\$% .)1.%<R' . \$% [' *%<")(\$6')8).1)Q.1.%<". \$%+"D / '\$ %4+*52%&*+; [&); %&' \$%.9)% .+\$R' '\$9*<N% .+\$R'N&<2.9)1')\$6'6'8.9' '2'9; *%<R'N*+%'9%.\$["]). \$2% 7+ : ")%%)952R'N)%9&'P)\$) [' P '\$%)\$6%*.25'2' [P '\$%)% .+\$%G+; 16' ,).1; *'%+ ". PNI' P '\$% %&'2' 'P')2; *'2'6'9*')2' "Q*+)6Q)\$6)6+N% .+\$%)\$6'6' (%*)9% , *+P . %2'N*+6; 9%.8' " '9+\$+P.9'; 2' o""G+; 16' .%* '6; 9' "%&' *'.25' +, "1+22+ , "9+PN' %%.8' 1<'2' \$2%.8' ". \$, +*P) % .+\$, +*Q; 2. \$'22'2o"" G+; 16' .%N* '8' \$% %&' "1+22+ , "9+\$2; P '*2I'N' *2+\$)11<' .6' \$% ., .)Q1' ". \$, +*P) % .+\$o""G+; 16' .%NI)<") *+1' ". \$ N* '8' \$%.\$["%&' ; \$ \$9'22)*<'1+22+ , "1. , " +*N*+N' *%<'Q<R' , +* 'c) PNI' R'N* '8' \$%.\$["P]1.9. +; 2' . \$% *; 2. +\$. \$% + 9* .%9)1' . \$, *)2% *; 9% ; *' o""Z+4'2&+; 16'4' "d;)\$% ., <%&'2' 'Q' '\$' , %2' . \$% * 'P2+ , "%&' . *' '9+\$+P.9' . PN)9%o"" 0 &)"% +&%' *Q' '\$' , %2'4+; 16'1.5'1<'2% 'P' , *+P')\$)NN*+N* .) %1<'2'9; *' "D / '\$ %4+*5o

^S? 0 '")12+'2' '5'9+P P '\$%+\$ %&'9+2%2")22+9.)% '6'4. %&%&' " . PNI' P '\$%)% .+\$+ , "%&' "P')2; *'2' 6.29; 22'6')Q+8')2' . \$8'2'P '\$%2') *1<' . \$% %&' '6'2. [\$) \$6'Q; .16'NI)\$2' +, "\$ %4+*52R")2'+NN+2'6'+ "eQ+1%B+\$f" 2'9; *%<") , %* '6'NI+<P '\$%?"M* "%&' *' " +NN+%; \$% . '2' , +* 'D / ". PNI' P '\$%)% .+\$%&)"% 4+; 16'+\$1<'Q' *'1).j'6' . , "\$ %4+*52") *'N' '9' .8'6%+"Q' '2'9; *' o""M* "%&' *' "2+P' '2'9; *%<'1' P '\$%2%&)"R'Q<'NI)\$R'2&+; 16'Q' "en; 2% . \$% .P' f'+*%*')9%.8' ". \$8'2'P '\$%2R'Q)2'6'+\$*')1.j'6%&' *')2R' , %* 'D / ". PNI' P '\$%)% .+\$o"" 0+; 16'%"&'2' '9+2%2' . \$91; 6' "%&+2' ")22+9.)% '6'4. %&"; N6)%. \$[" 'c.2%.\$ ["&)*64' *'R' , . *P4) *'R'2+ , %4) *'R')\$6')NN1.9)% .+\$2o""Z+4' 4+; 16'%"&' '9+2%2' +, "2<2% 'P'; N6)% '2'9+PN) *' "%+ %&' '9+2%2' +, ")66.\$[" '\$% *'1<' \$'4' '1' P '\$%2' , +*') "%&)"%11<' \$'4' 2'9; *%<'N+2% ; *' o" 7+'Q' '\$' , %2')\$6'9+2%2'8)*<'6'N' \$6.\$[" +\$%&' " ; 2' " +, "N' \$B2+ ; *'9'2+ , %4) *' '9+PN) *'6%+" N*+N* . '%)*<'2+ , %4) *' o""# , "2+R' "+4&)"% 'c' '\$%") *' " +N' \$B2+ ; *'9'2+1; % .+\$2")8).1)Q1' "%&)"%9+; 16'%"&'6; 9' '9+2%2o"" M* "%&' *' "29)1' " '9+\$+P. '2'+Q2' *8'6")9*+22'1+9)R' *' [.+\$)1')\$6'%)% .+\$4.6' "D / '\$ %4+*52o" 0 '2' '5' 9+P P '\$%+\$2N'9. , .9'9+2%2")22+9.)% '6'4. %&); %&' \$%.9)% .+\$R' '\$9*<N% .+\$R'N&<2.9)1')\$6'6'8.9' '2'9; *%<R' N*+%'9%.\$["]). \$2% 77+ : ")%%)952R'N)%9&'P)\$) [' P '\$%)\$6%*.25'2' [P '\$%)% .+\$% . \$%&' "D / '\$8. *+P '\$%?"

C. 5G Implications for Public Safety

^C? ()\$<'N; Q1.9'2), '%<'2' *8.9'2")\$6%'9&\$+1+[. '2') *'"; \$6' * [+.\$["*6.9)1'9&)\$[" '2" ; \$6' *1<.\$[" '\$ %4+*52%*)\$2% .+\$, *+P'1' []9<'%"+"#>BQ)2'6'P+6'2'""Hc) PNI'2' . \$91; 6' "%&' (%*)\$2% .+\$+ , "%&' " \$)%.+\$12'V@@'2<2% 'P' "+3' 'c% / '\$ *')% .+\$V@@'b3 / V@@-i'%" "8+1; % .+\$+ , , . *2% *' '2N+\$6' *'9+P P ; \$9)% .+\$2' , *+P'1)\$6'P+Q.1' *')6. +bX (K="+"XFHR' . \$91; 6.\$[" %&' '6'8'1+NP '\$%+ , - . *2'3' %i")\$6%&' " 'P' *[' \$9' "+, '\$&)\$9'6' "P' *[' \$9<")1' *%.\$["2' *8.9'2%&)"% *'1<'+"#>BQ)2'6' '9&\$+1+[. '2%' +9+P P ; \$9)% '1'4. %&%&' "N; Q1.9?"" 0 .11)\$<' \$'4'9)"% [' +* . '2+ , "N; Q1.9'2), '%<'2' \$2+*2 +*+%&' *'P)9&.\$'BQ)2'6' "+12'Q' '9+P' ")\$. \$91; 6'6'N)% *' +, " D / "N; Q1.9'2), '%<'9+P P ; \$9)% .+\$2")*9&.% '9% ; *' o"" 0' ")\$%.9.N)% "%&)"%&' "6'8'1+NP '\$%+ , "D / '\$ %4+*52'4.11' 9+\$%*.Q; % " '\$'4'9)N)Q.1. '2%' + "%&'2' "#>BQ)2'6'N; Q1.9'2), '%<'N1)% , +*P2'4&.1' ")12+'9*')%.\$[" '\$'4'9&)"%11' \$[" '2R' . \$91; 6.\$["2'9; *%<'9&)"%11' \$[" '2R' , +*N; Q1.9'2), '%<' '\$% . '2?""

(Continued from previous page) _____

P).\$% .)2%&)"%#F'6'8.9'2'2&+; 16'2; NN+*%'9' '\$%Q'2'N*)9%.9'2' , +*#>")66* '22.\$[")\$6%&' " ; 2' " +, "%&' "7+P). \$'3) P' " : <2% 'P')\$6'2; NN+*%'&' "P+2%*'9' '\$%8' *2.+\$+ , "%&' "#\$% '\$% ">*%+9+R' "#>8A?""

^^? 0 '2' '5'9+P P '\$'+\$%'2'9; *%<'. PNI.9)%.\$2'+, "1.\$5.\$["+'\$.%' [*]%. \$["D / "\$'4+*52"4. %&" #>BQ)2'6"N; Q1.9'2), '%<'9+P P ;\$.9)%.\$2'NI), +*P2?"G+; 16"%&.2'9*')%'\$'4'2'9; *%<*.252"+*8; 1\$'*)Q.1%. '2' ,+*3 / V@R", . *2%"*2N+\$6' *9+P P ;\$.9)%.\$2R'+*P' P' [* '\$9<")1' *%.\$["o" 0 &)"*2N+\$2.Q.1.%<"2&+; 16"D / " 2' *8.9' "N*+8.6' *2'&)"8' ,+*P' .%["]. \$["]\$6'P)\$) [.\$["%&'2' ".252o" G+\$8' *2'1<R'9+; 16"D / "\$'4+*52"&'1N" reduce 2'9; *%<*.252"%&)"N; Q1.9'2), '%<,)9'2'."\$P' [*]%. \$[" ,+P'1' []9<"%+"#>BQ)2'6"%9&\$+1+ [. '2o" - +* "'c) PNI' R", . *2%"*2N+\$6' *2)"* 'NI)\$\$. \$["%+"P]5' " ; 2' "+, "#6' \$%<'G* '6' \$%.)R")\$6'M99'22' ()\$ [' P '\$" b#GM (=2' *8.9'2"%"+"\$)Q1' ,)2%)\$6' *'1.)Q1' ")99'22%"+"8)*. +; 2" ' P' [* '\$9<"\$'4+*52R")NNI.9)%.\$2R")\$6' 6)%Q)2'2'6; *.\$["%P'2"+, "9*.2.2?^C" H, , '9%.8' ". PNI' P '\$)%.\$+#+, #GM ("4.11"Q' "2N'9.)11<". PN+*)\$%" ,+* *'2N+\$6.\$["%+"1)* ['B29)1' " ' P' [* '\$9. '2"%&)"2N)\$n; * .26.9%.\$+)1'Q+; \$6)*. '2'Q'9; 2"4. %&+; %)"2'9; *'")99'22' P)\$) [' P '\$' N*+#+9+1R' . \$% *Bn; * .26.9%.\$+)1'9+P P ;\$.9)%.\$+) \$6")99'22%"+"9*. %9)1' . \$, +*P) %.\$+) \$6')NNI.9)%.\$2'P)<'Q' "9+PN*+P.2'6?"G+; 16"D / "2' *8.9'2'2; NN+*%#GM (". \$) 'P)\$ \$' *%&)"* '6; 9'2"%&'2' " 2'9; *%<*.252o" : &+; 16"N; Q1.9'2), '%<")\$%.9.N)%")'\$'6' ,+* ; \$P)\$ \$'6R"; \$)%\$'6'6'8.9' "#GM (o" M* " %&' *' "2N'9.)1'9+\$2.6' *')\$2' , +*2%)\$6)*62'6'8'1+N P '\$" ,+*N; Q1.9'2), '%<'2' *8.9'2')\$6%'9&\$+1+ [. '2' ,+*D / R')\$6' . ,2+R') *'2%)\$6)*62"Q+6. '2")66*22.\$["%&'2' ".22; '2o"#2"%&' *' ")\$'6' ,+*")66.%.\$+)1'2%)\$6)*62"Q+6< ". \$8+18' P '\$%o"

III. PROCEDURAL MATTERS

A. Ex Parte Rules

^D? F&.2"N*+9' '6.\$["2&)"1"Q' "%*')%'6'2)"eN' *P. %BQ; %B6.291+2' f"N*+9' '6.\$[".\$)99+*6)\$9' "4. %&" %&' "G+P P .22.+\$12'ex parte *; 1'2?^C" >' *2+\$2'P)5.\$["ex parte N* '2' \$%)%.\$2'P ; 2% ,.1' ")9+N<"+,)\$<"4* %\$' \$' N* '2' \$%)%.\$+*")'P' P+*)\$6; P'2; P P)*.j.\$["]\$<+*)1'N* '2' \$%)%.\$+4. %&.\$%4+Q; 2.\$'22"6)<2"), %' *%&' " N* '2' \$%)%.\$+*b; \$1'22")6., , *'\$%6')61.\$' ")NNI.9)Q1' "%+%&' " : ; \$2&.\$' "N* .+6")NNI. '2=?" >' *2+\$2'P)5.\$["+*")1" ex parte N* '2' \$%)%.\$2') *' *' P. \$6'6"%&)"P' P+*)\$6)2; P P)*.j.\$["%&'N* '2' \$%)%.\$+P' ; 2%"b@="1.2")11" N' *2+\$2')%\$6.\$["+*+%&' *4.2' "N)*% .9.N)\$\$. \$["%&'P' '\$. \$["]%"4&.9&"%&' "ex parte N* '2' \$%)%.\$+4)2'P)6' R')\$6'bS=2; P P)*.j' ")11"6)"N* '2' \$%'6')\$6)* [; P '\$2'P)6' "6; *.\$["%&'N* '2' \$%)%.\$+P' #, "%&'N* '2' \$%)%.\$+ \$' 9+\$2.2%'6' . \$'4&+1' "+*'. \$'N)*%+ , "%&'N* '2' \$%)%.\$+ , (6)"+*")* [; P '\$2')1' *)6<* ' ,1'9' '6' . \$%&'N* '2' \$%'12"

N*+9' '6.\$[2"[+8 '*\$'6"Q<*;1"@"^Vb,="+*"+*4&.9&"%&' "G+P P.22.+\$&)2" P)6'")8).1)Q1'")" P '%&+6"+," '1'9%*+\$9",.1.\$[R 4* .%% '\$"ex parte N* '2' \$%)%.\$2")\$6" P ' P+*)\$6)"2; P P)*.j.\$["+*)l"ex parte N* '2' \$%)%.\$2R")\$6"11")%%)9&P '\$%2"%&' *' %+R" P ;2%"Q'",.1'6"%&*+; [&"%&' "'1'9%*+\$9"9+P P '\$% ,.1.\$["2<2% ' P")8).1)Q1'", +*"%&)" N*+9' '6.\$(R)"\$6" P ;2%"Q'",.1'6".\$"%&' .*\$")%.8'", +*P)"be.g.R"?6+9R"?c P1R"?NN%R"2')*9&)Q1'"?N6,=?">)*%.9.N)\$%2'\$. \$ "%&.2"N*+9' '6.\$["2&+;16",)P.1.)*.j'"%&' P2'18'2"4. %&"%&' "G+P P.22.+\$12"ex parte *;1'2?

B. Comment Period and Procedures

^A? >;*2;)\$%%"+2'9%.\$2"@?^@D")\$6"@?^@V"+,"%&' "G+P P.22.+\$12"*;1'2R^_"G-K"pp"@?^@DR"@?^@VR" .*\$' *'2%'6"N)*%. '2" P)<,.1"9+P P '\$%2")\$6"*'Nl<9+P P '\$%2"+\$+*Q', +*'"%&'6)"%2".\$6.9)"%6"+\$"%&' ",*2" N)['+,"%&.2"6+9; P '\$%?"G+P P '\$%2" P)<"Q'",.1'6";2.\$["%&' "G+P P.22.+\$12"H1'9%*+\$9"G+P P '\$%"-.1.\$[" :<2% ' P"bHG- :=?""See Electronic Filing of Documents in Rulemaking Proceedingsr"AC"-K"S^@S@"b@VV`=?

