

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 '\$',.2)"\$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? - ;*%&' *#\$, +*P)%%.+\$ ^`
#a?' EK7HK#3 / "GXMJ : 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.\$["Nl)9'"4. %&.\$%'&' "[+8'*\$P' '\$%)\$6'N*.8)'%'2'9+*?^A"
F&' "G+P P.22.+\$R%'&' 2' "+%'&' *' [+; N2R")\$6%'&' "4. *'1'22".\$6; 2%'<")1l'&)'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#R")\$6'
%'&' *'9+*6' "%2' '52%' +6'8' l+NR"4.1l'&' lN'\$.%'&)' " ,+*%?"

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

D #\$. .22; .\$.["%'&.2'3 E#R"> : Z: W'&)'2'9+*6.\$)'%'6'4. %&%'&' E.,.9' "+, 'HS[\$. '\$' *.\$["]\$6'F'9&\$+l+ [<)]\$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' l2'3)%.+)\$ l"#2% %; %' "+, " : %) \$6)*62)">\$6'F'9&\$+l+ [. '2'b3# : F=" 3# : F'" *9' '\$%l<' .22; '6' [; .6' l. '\$'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%l<' .\$.%+*#F'%'9&\$+l+ [<?'"See 3# : FR" : <2% 'P2' : '9; *%<HS[\$. '\$' *.\$[0' G+\$2.6' *)%.+\$2' ,+*") (; l%.6.29.Nl.\$)'<MNN*+)9&'. \$%'&' "HS[\$. '\$' *.\$["+, 'F* ; 2%4+*%&< : '9; *' " : <2% 'P, 3# : F" : N'9.)l" > ; Q'" TTB@AT"b3+8)"ST@A=R'&%'N20hh6+ .?+* [h@T'ATS`h3# : F? : >? TTB@AT?"F&' "7' N)'%P' '\$%"+, "Z+P' l)\$6' : '9; *%< " b7Z : =)l2+* *'9' '\$%l<' *'1')2'6. %2'+4\$'9<Q' *'2'9; *%<N+1.9< ,+*#F'%'6'8.9'2R'6' l.\$')%.\$["2.c'2%'%)' [.9'N*.\$9.Nl'2%'&)'%". 'N' Q' l. '8'2'4.1l'&' lN'2%)5' +l6' *'2'2+N; \$) ; %&+* .j' '6' .\$.%' ; 6' *2' ,+P'%) PN' *.\$["4. %&'9+\$'9%'6'6'8.9'2?'"See J? : ?'7' N'?" +, "Z+P' l)\$6' : '9; *%<R" : %)%' [.9'> *.\$9.Nl'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)%.+)\$ l'F'1'9+P P; \$.9)%.+\$2)">\$6'#\$, +*P)%.+\$'M6P. \$.2%'%)%.+\$' b3F#M=6'8' l+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)l'#\$, *)2%' *%9; *' "G<Q' *'2'9; *%< bST@A=R' &%'N20hh444?\$.2%' [+8h2. %'2h6' ,) ; l%h., l'2h6+9; P' '\$%2h9<Q' *' ,) P' 4+*5h9<Q' *'2'9; *%<B, *) P' 4+*5BTS@S@^?N6, ?'"F&' " G+P P; \$.9)%.+\$2' : '9; *%<R'K' l.)Q.l.%<R')\$6'#\$%' *N' *)Q.l.%<G+; \$9. l"#a12'bG : K#G"#a12="G<Q' *'2'9; *%<K.25" ()\$) ['P' '\$%)\$6'W'2%'>*)9%.9'2' 0 +*5.\$[" / *+; N" ^"6'8' l+N'6')'2' [P' '\$%B2N'9.,.9')\$)l<2.2+ , %&' ")NNl.9)%.+\$' , %&' " G<Q' *'2'9; *%< - *) P' 4+*5R')2'4' l1')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' - .)\$)l'K'N+*%bST@D=R' &%'N20hh*)\$2.%.+\$, 99? [+8h2&2h)68.2+*<h92*.9^hG : K#Gm# a m 0 / ^m- .)\$)l mK'N+*%mTC@`@D?N6, ?'"#)\$)66.%.+\$R%'&' " G+P P.22.+ \$l2'F'9&\$.9)l" M68.2+*<G+; \$9. l'bF&' "FMG="G<Q' *'2'9; *%< 0 +*5.\$[" / *+; N.22; '6' .%2' *'N+*%+")NNl.<.\$[" 2'9; *%<%"9+\$2; P' *'#+F'%'6'8.9'2'+\$'7'9' P'Q' *'R"ST@D?"See - '6' *)l G+P P; \$.9)%.+\$2'G+P P.22.+ \$'F'9&\$.9)l" M68.2+*<G+; \$9. l'b- GG'FMG=R'G<Q' *'2'9; *%< 0 +*5.\$[" / *+; NR'F'9&\$.9)l" G+\$2.6' *)%.+\$2' 0 &%' " >)N' *'bST@D=R' &%'N20hh*)\$2.%.+\$, 99? [+8h+ ' %h%)9h%)96+92h* 'N+*%2hST@Dh- GGBFMGBG<Q' *'B#+FB 0 &%' B>)N' *'BK' l@?@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., l'2h6+9; P' '\$%2h' *'N+*%2h, '6' *)lB%)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')l%'&)'\$6'Z; P')\$' : *'8.9'2R' K)6. + - *'d; '\$9< " 0. *'1'22'F'9&\$+l+ [<'\$. ('6.9)l'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)l7'8.9'2h7'8.9'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%.8'6'8' l+N'P' '\$%)\$6" ; 2' "+, "K- %'9&\$+l+ [<'\$. P'6.9)l'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*'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"")\$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...)1<)99+PNI.2&'6"&*+; [&' , '9%.8'R")\$6"2+P'%.P'2"
 P ;%;)lR");%... '\$% +\$"&'";2'+,");%&'\$.9).+\$.\$"\$'4+*52"+6)<")\$6"4&'%&'*"
 'c.2%.(\$");%... ("Q")NNI.9)Ql'"%+%&'D / "'\$8.*+\$P'\$%?" 0 "2' '5"9+PP'\$%"+\$ %&' "
 ', '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")NNI<"+"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+PP ;\$.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".S#+F"\$'4+*52"N* '2'\$%N)*%.9;1)*"
);%&'\$.9).+\$9&)11'\$["'2o""Z+4"9)\$"N*+8.6'*2' , '9%.8'1<");%&'\$.9)%"%&' "9+PP ;\$.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)Ql' "+,); %&' '\$%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)Ql' '9+PN+\$' \$%2+", "P+Q.1' "N&+\$'2')\$6'6'8.9'2%'&)%' '\$)Ql' "%&' '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)%.\$+?"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'9)%)%95' *)%PN%2%'+N' *8' '\$%"; 2' *2', *+P)99'22.\$[".,\$+*P)%.\$+*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^ "" 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+"%&' ")%)952.\$["P)9&.\$'2'9)\$+\$%+"Q"'')2.1<'.6'\$.%., '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'%"+"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+; %2'+, '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)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' *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?@AR'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%'.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=iTen 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 ?; [+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*'[')*61'22+",%&'";\$6'*1<.\$["6'8.9"+N'*)%.\$["2<2%'P".)\$]"D/"'9+2<2%'P?""#\$%&'")Q2'\$9'+,)"\$<"6'N1+<'6"2%)\$6)*6R"2&+;16"%&.2"'',+*%Q'"'cN1+*'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+PP.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"2N1.%%.\$["\$'4+*5''1'P '\$%2'\$.%+2'N)*%"9+PN+\$'\$%2%+"&'1N".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+PP;\$.9)%.\$2"b%+ ".91;6'"#G:")\$6":GM7M=?""0'"2'5"9+PP'\$%+\$%&'";2'"+,2'[P '\$%)%.\$.S"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 ")l2+"2' '5"9+P P '\$%"+\$ 4&'%'*)\$6"&+4 2'9;*.%<"\$ ' 62",+*D / "#+F"6'8.9'2"P.[&%" 6.,,'*',*+P"+%&'*. \$,*)2%*;9%;*2R'\$.9l;6.\$[R'\$.N)*%.9;1)*R ')9&"+,%&'9*%.9)l'\$. \$,*)2%*;9%;* '2'9%+*2?'" 0 &)" 'cN'9%)%.\$2"4+;16"8)*. +;2"9*%.9)l'\$. \$,*)2%*;9%;* '2'9%+*2"1.5'1<(&)"8' ",+*%&'2'9;*.%<")N)Q.1.%.'2")\$6" ,')%*; *2"+,"D / "2'*8.9'2o""7+'2%&' "[+8'*\$P '\$%&)"8'")"*+1""4&'***'2.6;)l"*25"; \$6;1<("%&'*)\$2"9*%.9)l' \$. \$,*)2%*;9%;* ' "+*%)%.\$1)l'2'9;*.%<R")\$6"., "2+R"4&)"2&+;16'."Q'o""

CD? / .8'%"&'1.5'1<";\$N*'9'6'\$%'6"6.8'2%<"+,"9+\$ \$'9%'6"6'8.9'2")\$6"&'*. *P)\$; ,)9%;* *2R" 4'")l2+"[' '\$'*)l1<"2' '5"9+P P '\$%"+\$ 4&'%'*)D / "2'9;*.%<"+;16"Q'"9&)"l1'\$['6"Q<(&)*64)*' ".22; '2R" .\$.9l;6.\$["%&'*)2' ,*+P")9+PN*+P.2'6"2;NNl<"9&).\$? Z+4")* '2'8.9'N*+8.6'*2")\$6" 'd; NP '\$% P)\$; ,)9%;* *2'9;*' '\$%l<")22'22.\$["2;NNl<"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", *P4)*'R'2+, %4)*'R')\$6")NNl.9)%.\$2"+N'*)%.\$[".\$%&'*. *'\$8.*+P '\$%2? 0 &)" 2N'9.)l'9+\$2.6'*)%.\$2R".,")\$<R"2&+;16"Q'"NNl. '6"*'1).8'%"%+D / "2;NNl<"9&).\$* *.252o""

CA? 0 '"; ,%&' *2' '5"9+P P '\$%"+\$Q'\$',.2")\$6"9+2%2")22+9.)%'6"4. %&' ", , '9%.8'")&)*64)*'R" ,.*P4)*'R'2+, %4)*'R')\$6")NNl.9)%.\$2'9;*.%<"+,*D / ?'" 0 &)"*)*'"%&'9+2%2")22+9.)%'6"4. %&"; N6)%.\$["'c.2%.\$[" &)*64)*'R",.*P4)*'R'2+, %4)*'R')\$6")NNl.9)%.\$2'8'*2;2"%&'9+2%2"+,")66.\$[" '\$%.'1<"\$'4'"1'P '\$%2',+*") "%+%)l1<"\$'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", *P4)*'R'2+, %4)*'")\$6")NNl.9)%.\$2o"" M*'"%&' *'"29)l'1'"9+\$+P. '2"+Q2'*8'6")9*+22"1+9)lR"*' [.+\$)lR")\$6"\$)%.\$4.6'"D / "\$'4'+52o" -. \$)l1<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%&)"4.1l"Q'" 6'Nl+<'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)l.6" 9+\$9'*\$o"" 0 '2'9; "9+T'*)l1<+PN)\$%"9; 4&'%'&2'2*2N9+2'*. \$); *.%<' '\$%+22"1+7"

P)S) ['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.*)Ql'" +; %9+P '2' . \$"9<Q' *"* .25" P)S) [' P ' \$%o""

C`? K'1) %'6l<R"4 "'2' '5". \$,+*P) %.\$+\$&+4 "%&'D / "'9+2<2%' P"4. 1l"2&)*' . \$,+*P) %.\$+)Q+; %' 9<Q' *"%&* ')%2")\$6"9+\$9' *\$2?"" -+*" c) PNI 'R'#\$,+*P) %.\$+:&)*. \$[")\$6"MS)l<2.2"E* [)\$.j) %.\$+2'b#: ME=" 2%)\$6)*62") *'"2%. 1l"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' l+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)l"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 ; PQ' *.\$["G+; \$9.1"b3M3G=R". \$6; 2%*<"); %&+*. % . '2R"\$; PQ' *.\$[")\$6"6)%" 2' *8.9'2")\$6"%&' " -GGo

CV? 0 ' "+Q2' *8' "%&)"%&' "3#: F- *) P' 4+*5", +*#PN*+8.\$["G*. %.9)l"#\$, *)2%*; 9%; *' "G<Q' *2'9; *%<" -*) P' 4+*5"b3#: 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' *2'1'N' *2+\$)11<'.6' \$% ., .)Q1' ". \$, +*P) % .+\$% 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)% " '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`=?

