Appendix F.   Plots of Duty Cycle

The plot below shows the waveform characteristics of the signal used in the SAR measurement. The pulse duration corresponds to a DL:UL symbol ratio of 29:18 and control symbols are not active.

The time vector plots are shown as below. The plot A is used to get the frame length of test signal and the plot B is used to get the time of UL data symbols. Since there was no energy in the control symbols, the effective power is only across 15 data symbols. The calculation of duty cycle is as below:

Duty Cycle = 15 data symbols UL time / Frame Length x 100 %

PUSC, 16QAM 1/2, BW 5MHz, 2498.5 MHz	
Plot A	**Plot B**
Frame Length = Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms	**Control Symbols (3 symbols)** = Mark 2 – Mark 1 = 10.348 – 9.994 = 0.354 ms **UL Data Symbols (15 symbols)** = Mark 3 – Mark 2 = 11.92 – 10.348 = 1.572 ms **Duty Cycle** = 15 data symbols UL time / Frame Length x 100 % = 1.572 / 5 x 100 % = 31.4 %

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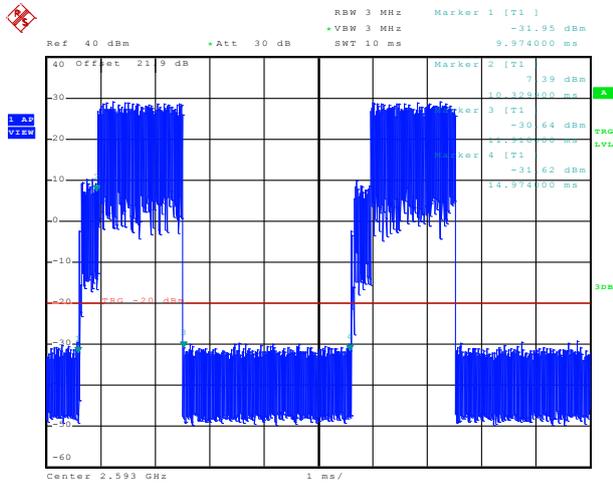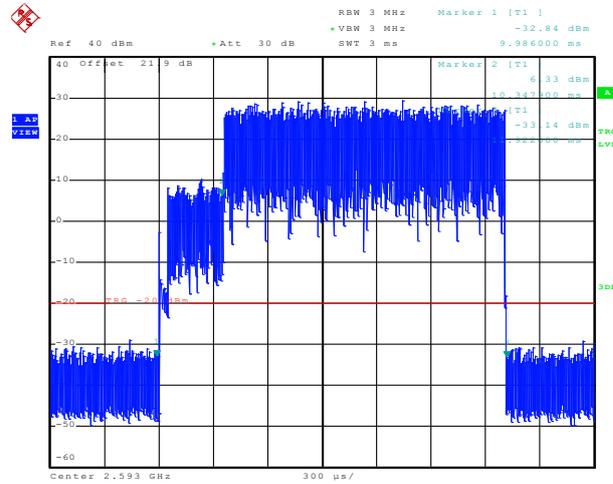Report Version   : Rev. 02

PUSC, 16QAM 1/2, BW 5MHz, 2593.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

PUSC, 16QAM 1/2, BW 5MHz, 2687.5 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.986 – 9.986 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
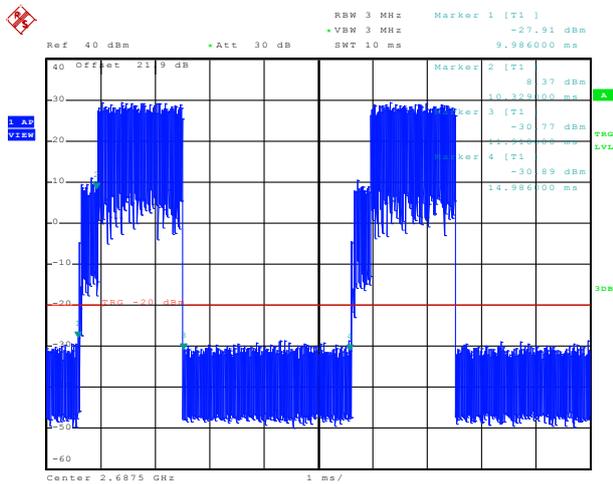= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

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PUSC, 16QAM 1/2, BW 10MHz, 2501.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

PUSC, 16QAM 1/2, BW 10MHz, 2593.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
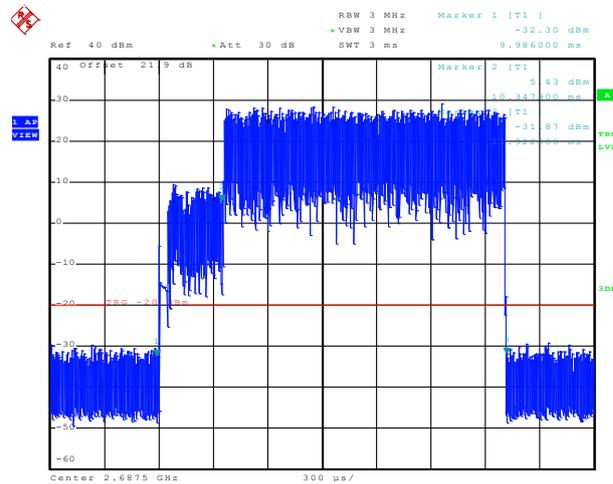= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

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PUSC, 16QAM 1/2, BW 10MHz, 2685.0 MHz

Plot A

Plot B

Frame Length = Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms	**Control Symbols (3 symbols)** = Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms **UL Data Symbols (15 symbols)** = Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms **Duty Cycle** = 15 data symbols UL time / Frame Length x 100 % = 1.566 / 5 x 100 % = 31.3 %

PUSC, 16QAM 3/4, BW 5MHz, 2498.5 MHz

Plot A

Plot B

Frame Length = Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms	**Control Symbols (3 symbols)** = Mark 2 – Mark 1 = 10.348 – 9.994 = 0.354 ms **UL Data Symbols (15 symbols)** = Mark 3 – Mark 2 = 11.92 – 10.348 = 1.572 ms **Duty Cycle** = 15 data symbols UL time / Frame Length x 100 % = 1.572 / 5 x 100 % = 31.4 %

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PUSC, 16QAM 3/4, BW 5MHz, 2593.0 MHz

Plot A	Plot B

Frame Length
= Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

PUSC, 16QAM 3/4, BW 5MHz, 2687.5 MHz

Plot A	Plot B

Frame Length
= Mark 4 – Mark 1 = 14.986 – 9.986 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

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PUSC, 16QAM 3/4, BW 10MHz, 2501.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
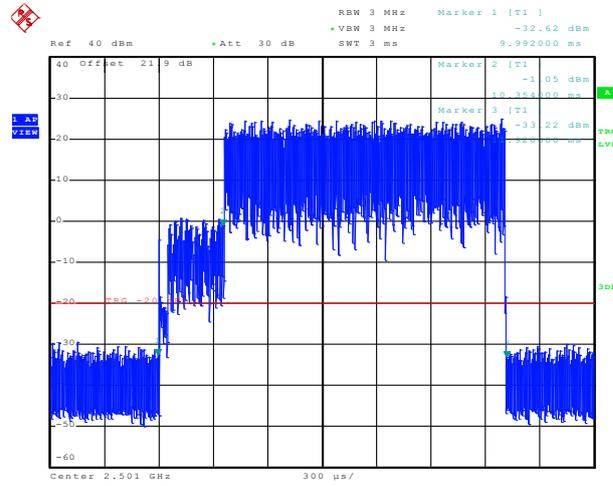= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

PUSC, 16QAM 3/4, BW 10MHz, 2593.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

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PUSC, 16QAM 3/4, BW 10MHz, 2685.0 MHz
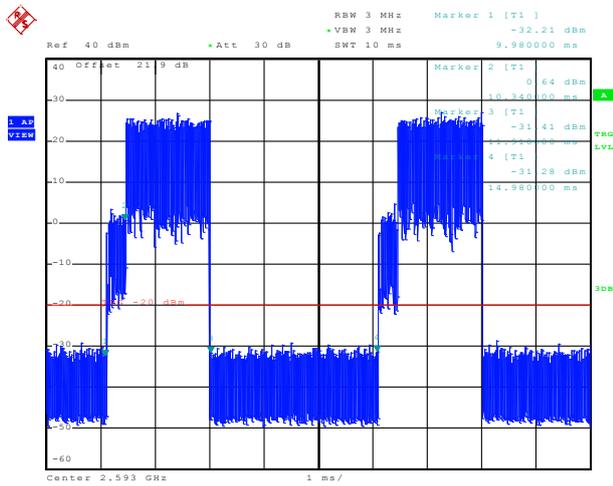
Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

PUSC, QPSK 1/2, BW 5MHz, 2498.5 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.348 – 9.994 = 0.354 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.348 = 1.572 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.572 / 5 x 100 % = 31.4 %

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PUSC, QPSK 1/2, BW 5MHz, 2593.0 MHz

Plot A

Plot B

Frame Length
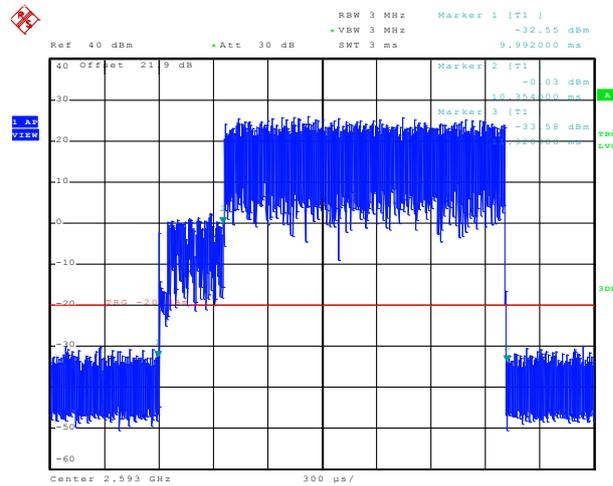= Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

PUSC, QPSK 1/2, BW 5MHz, 2687.5 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.986 – 9.986 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

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PUSC, QPSK 1/2, BW 10MHz, 2501.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

PUSC, QPSK 1/2, BW 10MHz, 2593.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

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PUSC, QPSK 1/2, BW 10MHz, 2685.0 MHz
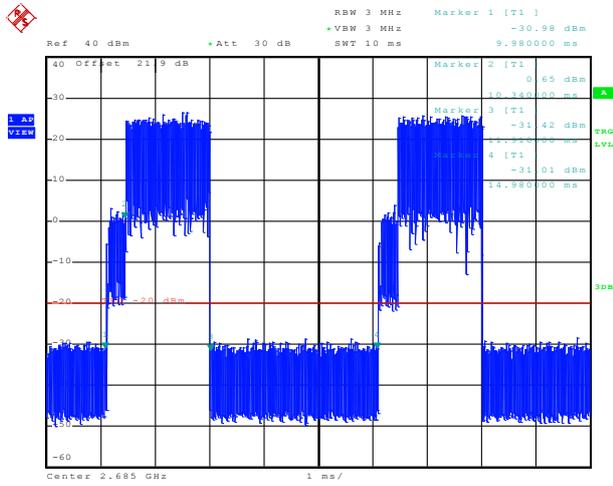
Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

PUSC, QPSK 3/4, BW 5MHz, 2498.5 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.348 – 9.994 = 0.354 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.348 = 1.572 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.572 / 5 x 100 % = 31.4 %

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PUSC, QPSK 3/4, BW 5MHz, 2593.0 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.974 – 9.974 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

PUSC, QPSK 3/4, BW 5MHz, 2687.5 MHz

Plot A

Plot B

Frame Length
= Mark 4 – Mark 1 = 14.986 – 9.986 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.347 – 9.986 = 0.361 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.922 – 10.347 = 1.575 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.575 / 5 x 100 % = 31.5 %

PUSC, QPSK 3/4, BW 10MHz, 2501.0 MHz
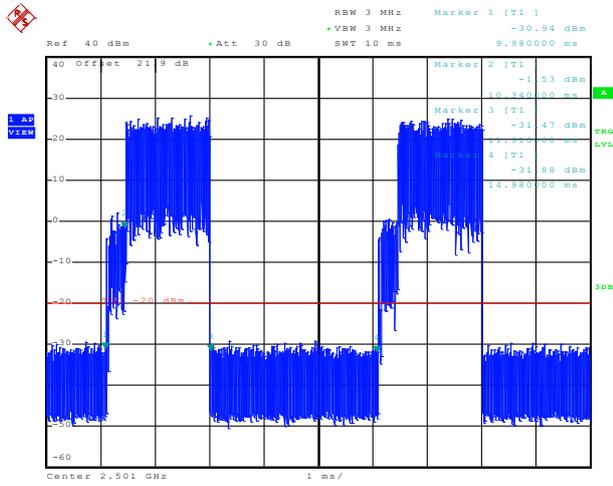
Plot A	Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
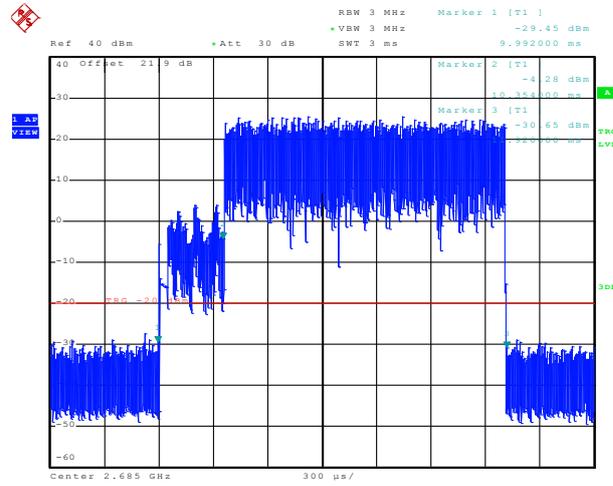= 1.566 / 5 x 100 % = 31.3 %

PUSC, QPSK 3/4, BW 10MHz, 2593.0 MHz

Plot A	Plot B

Frame Length
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms

Control Symbols (3 symbols)
= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
UL Data Symbols (15 symbols)
= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
Duty Cycle
= 15 data symbols UL time / Frame Length x 100 %
= 1.566 / 5 x 100 % = 31.3 %

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PUSC, QPSK 3/4, BW 10MHz, 2685.0 MHz

Plot A

Center 2.685 GHz   1 ms/

Plot B

Center 2.685 GHz   300 µs/

Frame Length	**Control Symbols (3 symbols)**
= Mark 4 – Mark 1 = 14.98 – 9.98 = 5 ms	= Mark 2 – Mark 1 = 10.354 – 9.992 = 0.362 ms
	UL Data Symbols (15 symbols)
	= Mark 3 – Mark 2 = 11.92 – 10.354 = 1.566 ms
	Duty Cycle
	= 15 data symbols UL time / Frame Length x 100 %
	= 1.566 / 5 x 100 % = 31.3 %

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