R4-B26ah-0003

806-824MHz Narrowband Systems protection from B26 UL A-MPR study

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TSG-RAN Working Group 4 (Radio) meeting B26ah
Jersey City, January 17-19 2012

Source:	Nokia Corporation
Title:	A-MPR study for Narrowband Systems protection below B26
Agenda item:	4.2.2
Document for:	Discussion

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Simulation Campaign

Protection of Public Safety UL below Band 26 UL

- Protected band extending to f_{offset} from the B26 channel edge:
  - 500kHz, 750kHz, 1MHz, 2MHz, and 3MHz offsets
  - 8MHz and 9MHz offsets (A'' & A-blocks to 816MHz)
- –35 and –42dBm/6.25kHz emission limits
- B26 modulator LO and image suppression 25…30dBc:
  - IQ 25dBc / LO25dBc
  - IQ 28dBc / LO25dBc
  - IQ 28dBc / LO28dBc
  - IQ 30dBc / LO30dBc
  - 60dBc CIM3 (not effect due to relaxed emission limit)
- PA operating point set so that with full RB allocation and QPSK signal, ACLR and SEM masks just met with 1dB MPR
- A-MPR (dB) as a function of all legal RB allocations (QPSK)

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1.4MHz carrier

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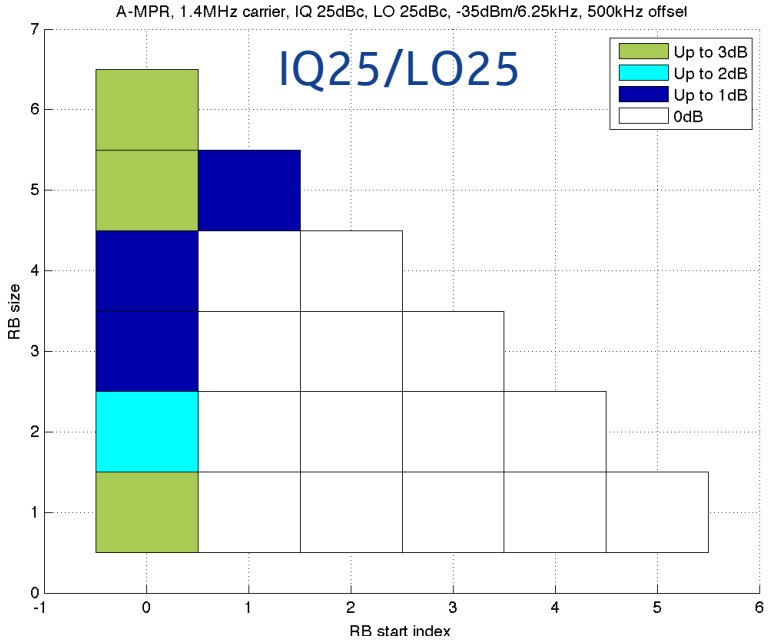
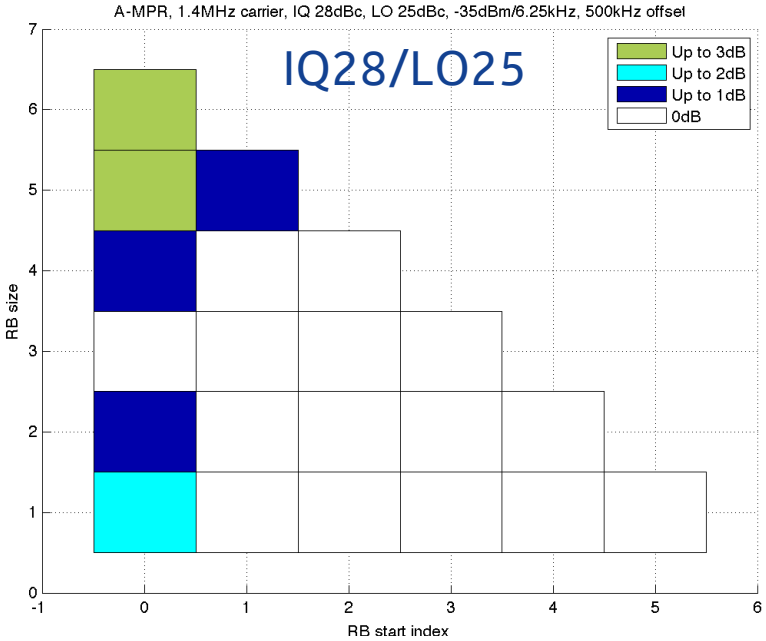
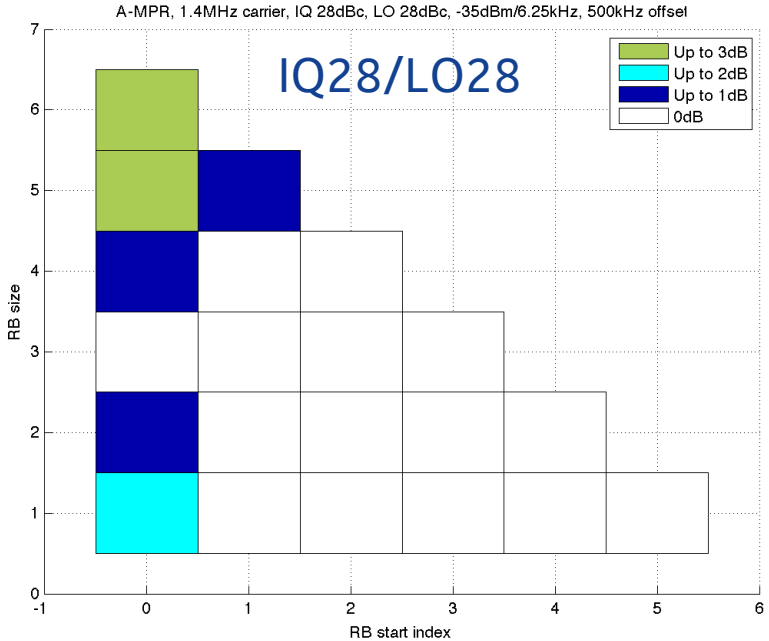
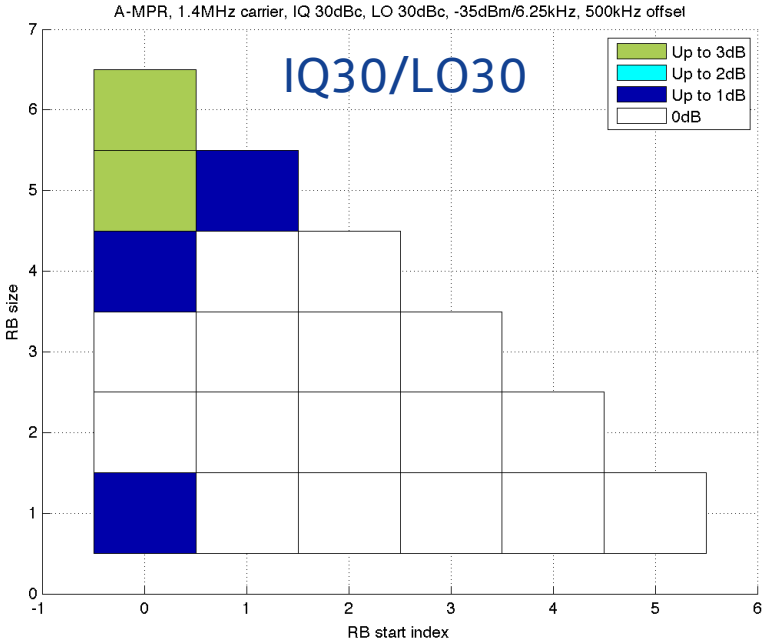
A-MPR, 1.4MHz carrier –35dBm/6.25kHz, 500kHz offset









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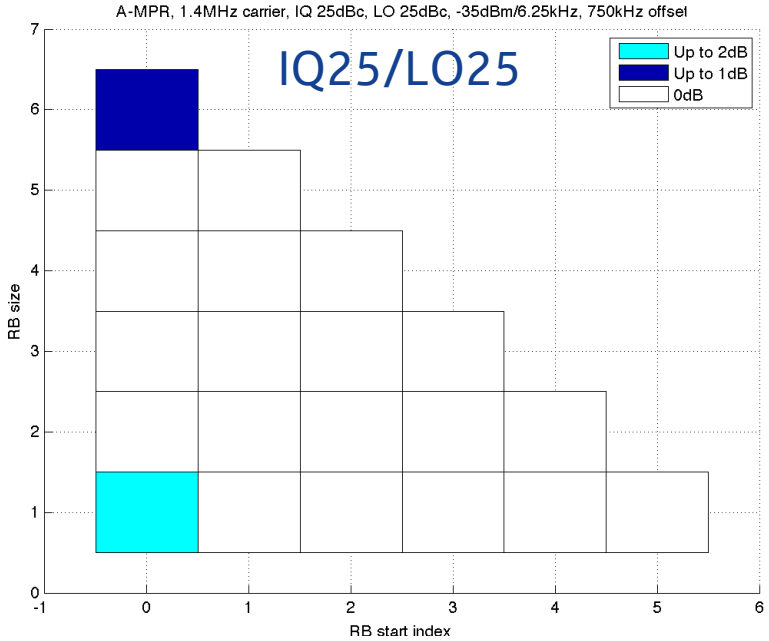
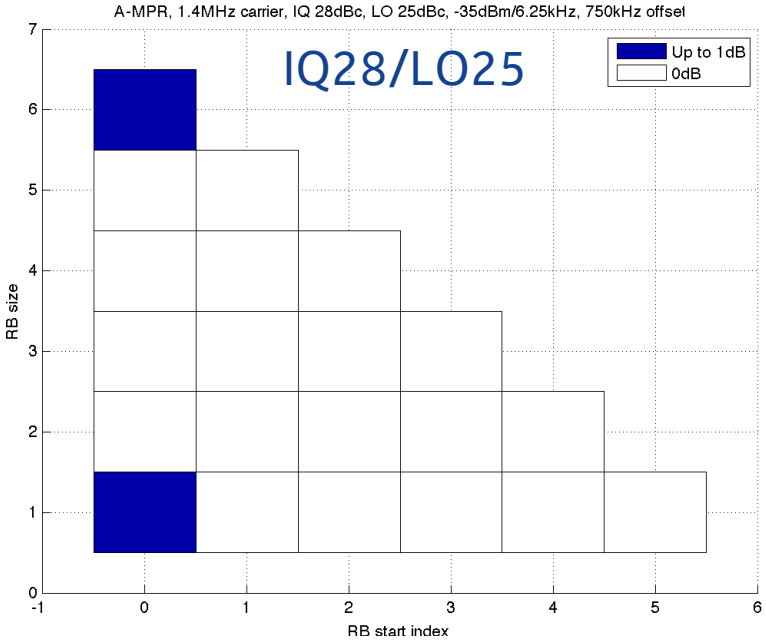
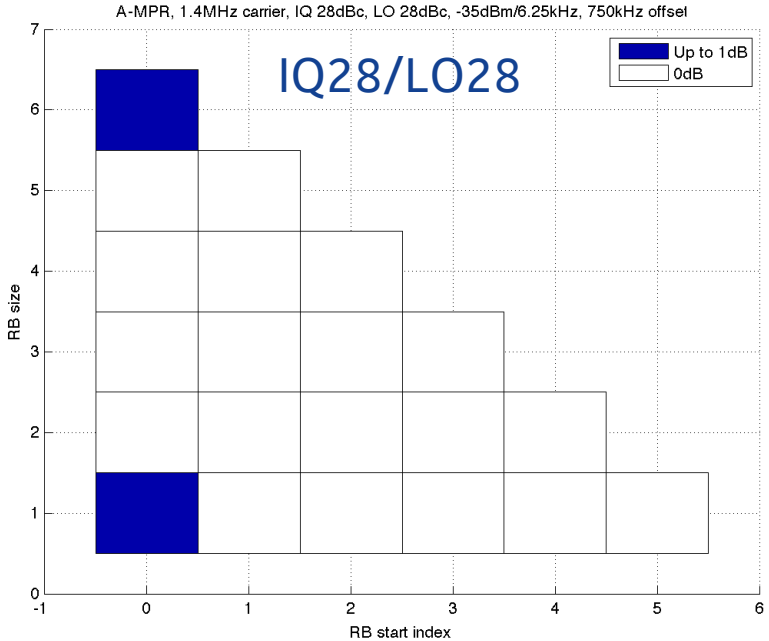
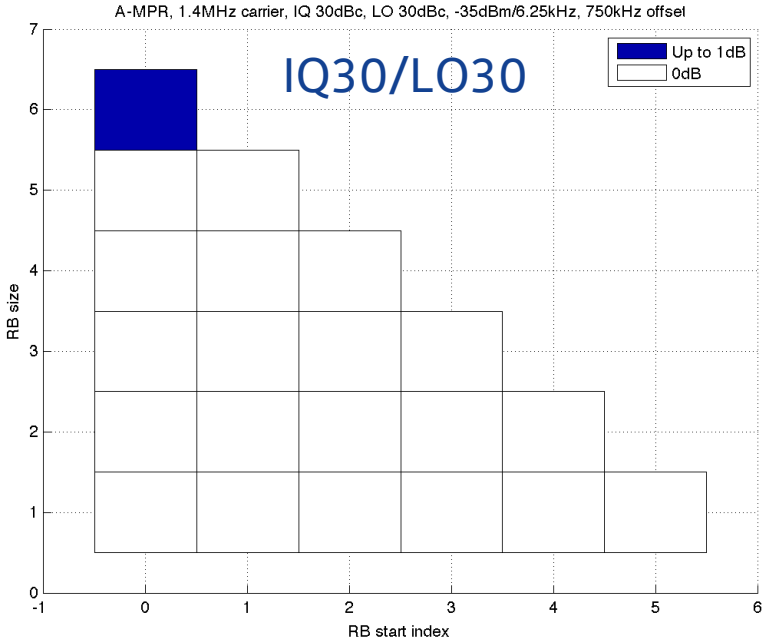
A-MPR, 1.4MHz carrier –35dBm/6.25kHz, 750kHz offset









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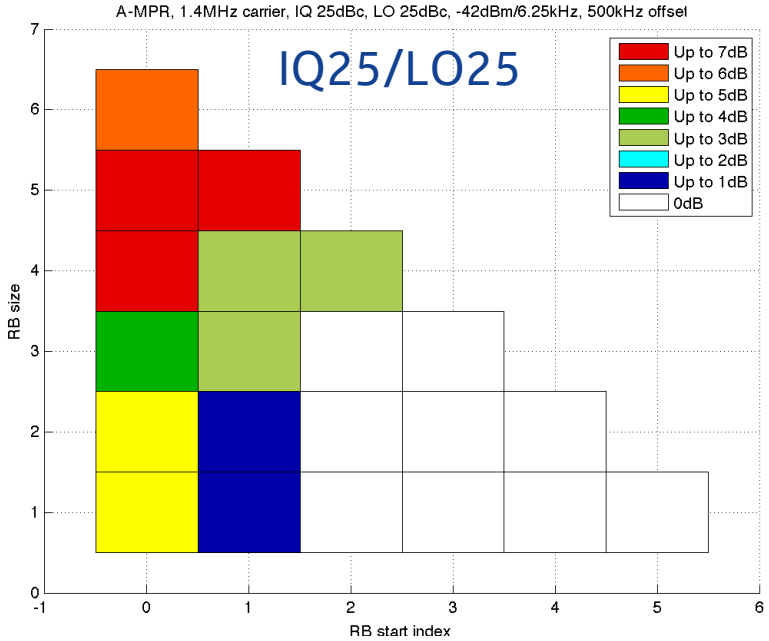
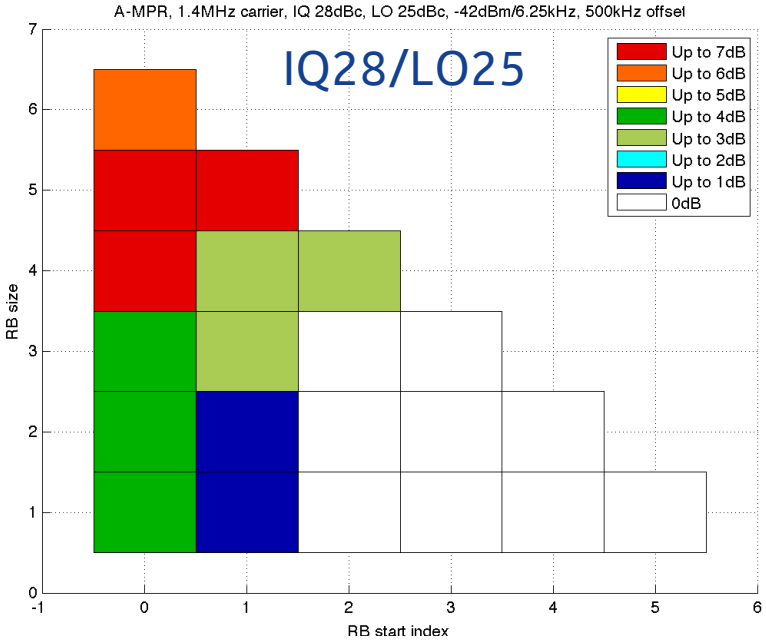
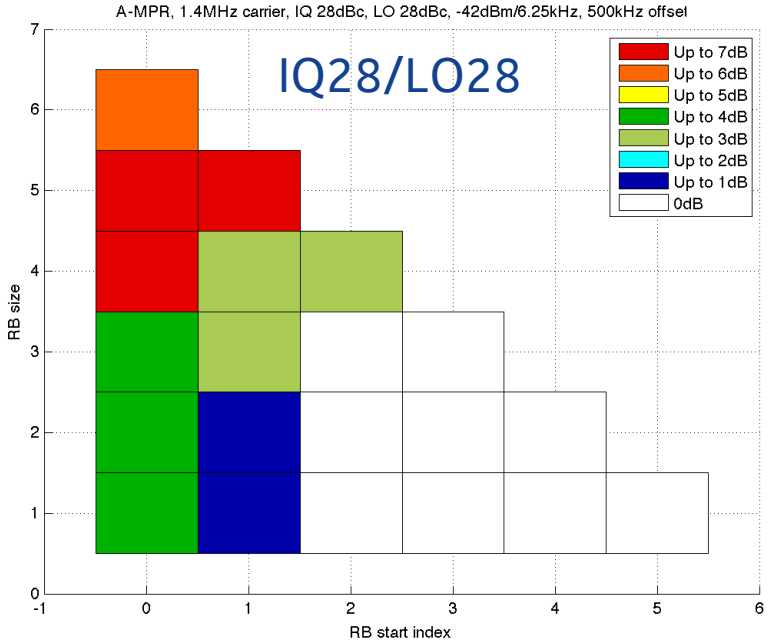
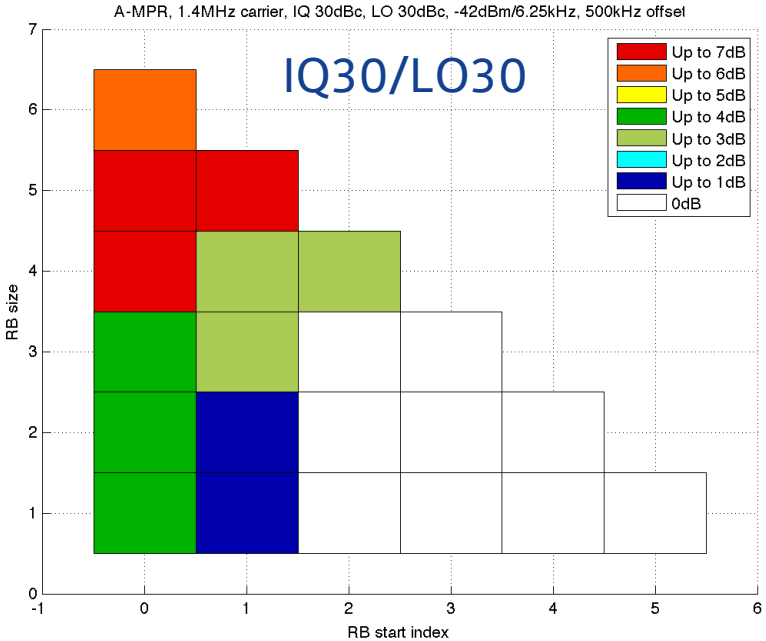
A-MPR, 1.4MHz carrier –42dBm/6.25kHz, 500kHz offset









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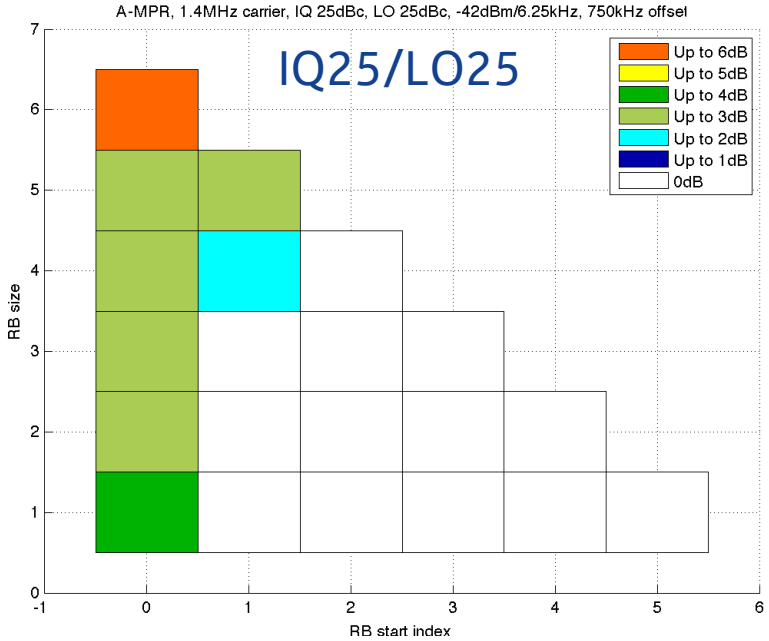
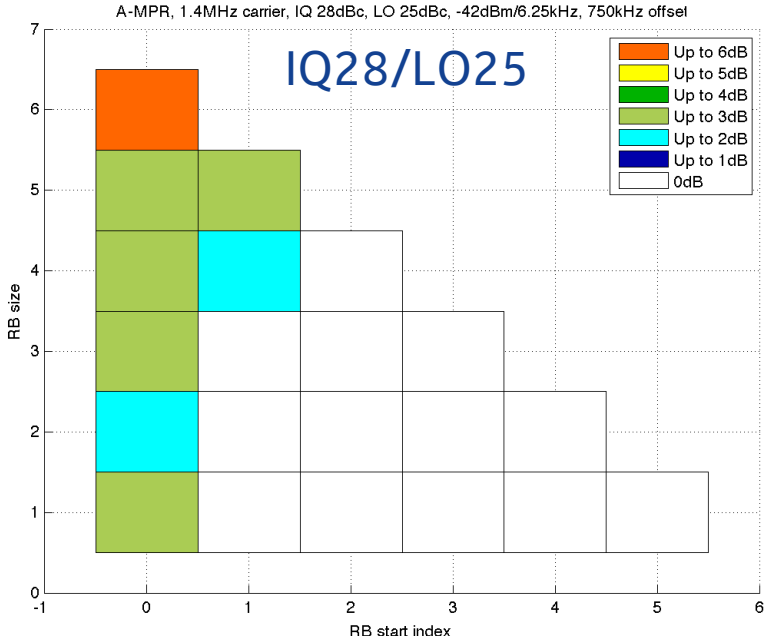
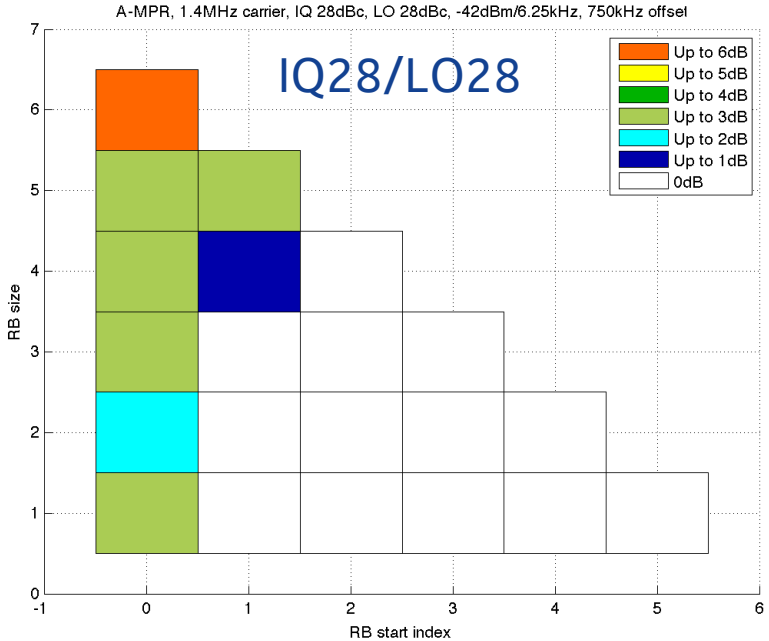
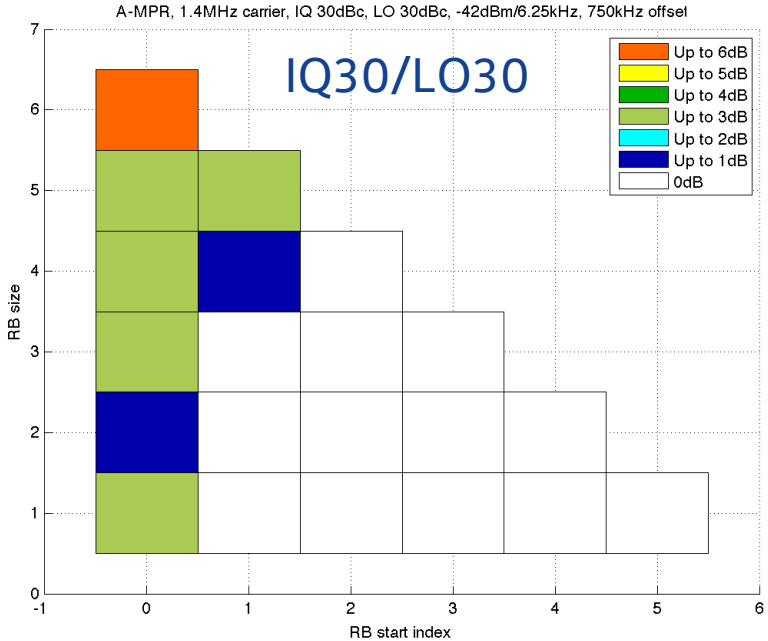
A-MPR, 1.4MHz carrier –42dBm/6.25kHz, 750kHz offset









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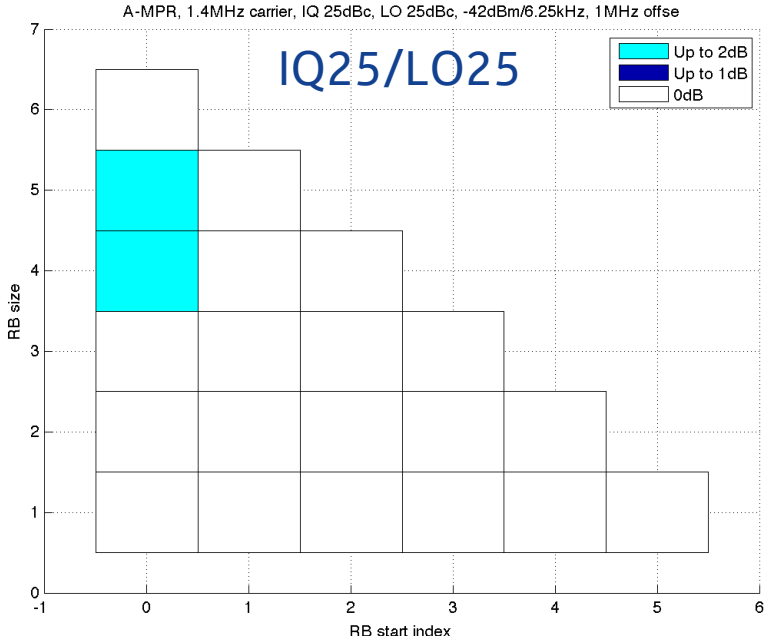
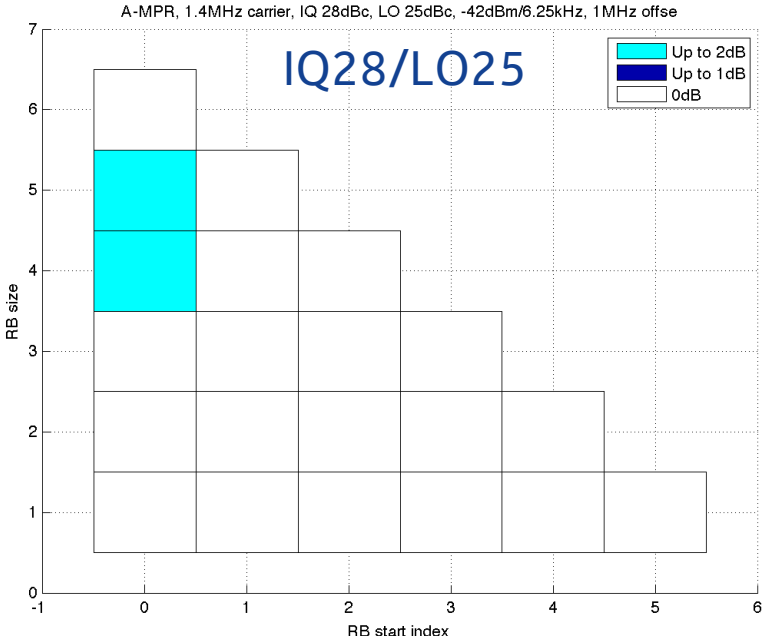
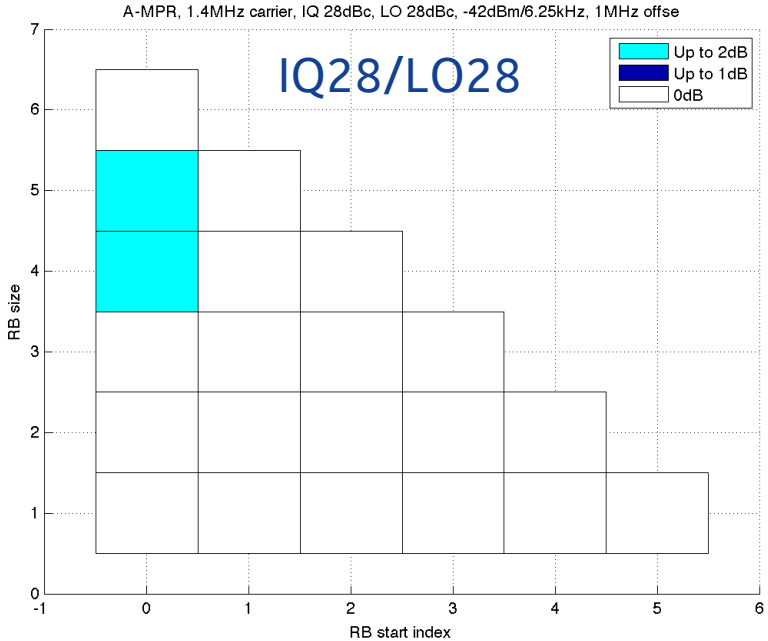
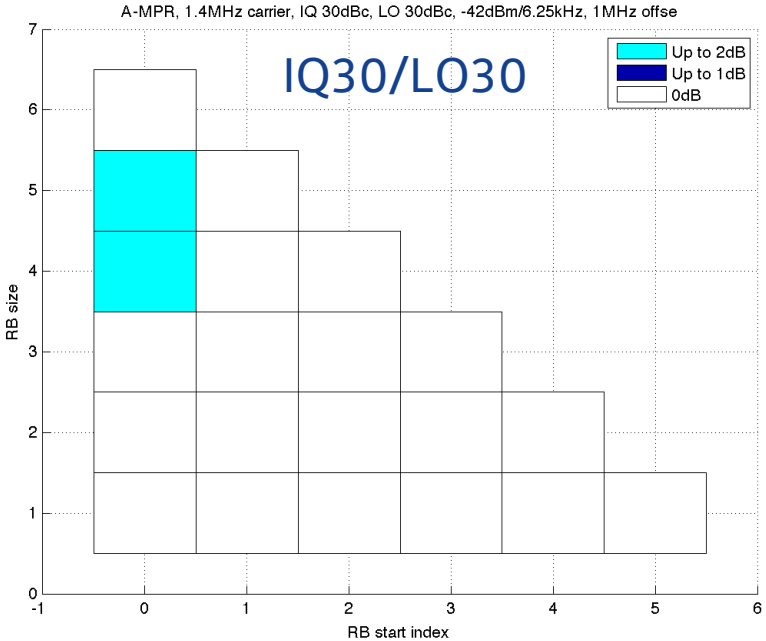
A-MPR, 1.4MHz carrier –42dBm/6.25kHz, 1MHz offset









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1.4MHz carrier
Minimum offsets for 0dB A-MPR

Offset (MHz)		Emission mask (dBm/6.25kHz)	
		–42	–35
Modulator IQ and LO suppression (dBc)	25/25	1.0MHz^{6RB} 1.4MHz^{5RB} 0.9MHz^{1RB}	0.8MHz^{6RB} 0.9MHz^{1RB}
	28/25	1.0MHz^{6RB} 1.4MHz^{5RB} 0.9MHz^{1RB}	0.8MHz^{6RB} 0.8MHz^{1RB}
	28/28	1.0MHz^{6RB} 1.4MHz^{5RB} 0.9MHz^{1RB}	0.8MHz^{6RB} 0.8MHz^{1RB}
	30/30	1.0MHz^{6RB} 0.9MHz^{1RB}	0.8MHz^{6RB} 0.75MHz^{1RB}

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3MHz carrier

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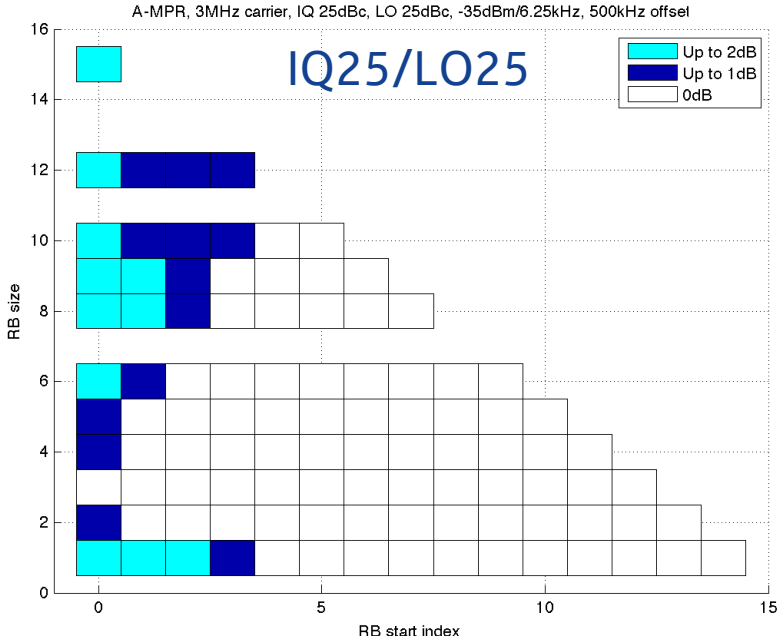
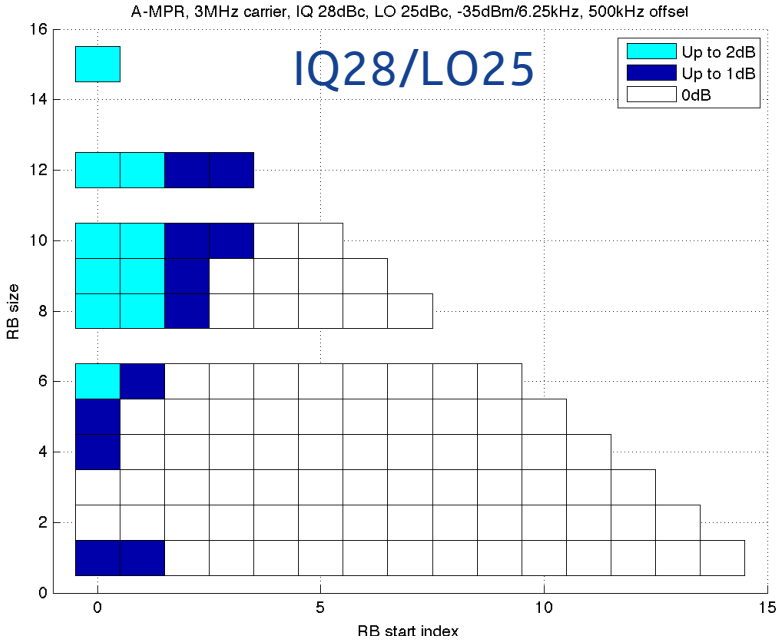
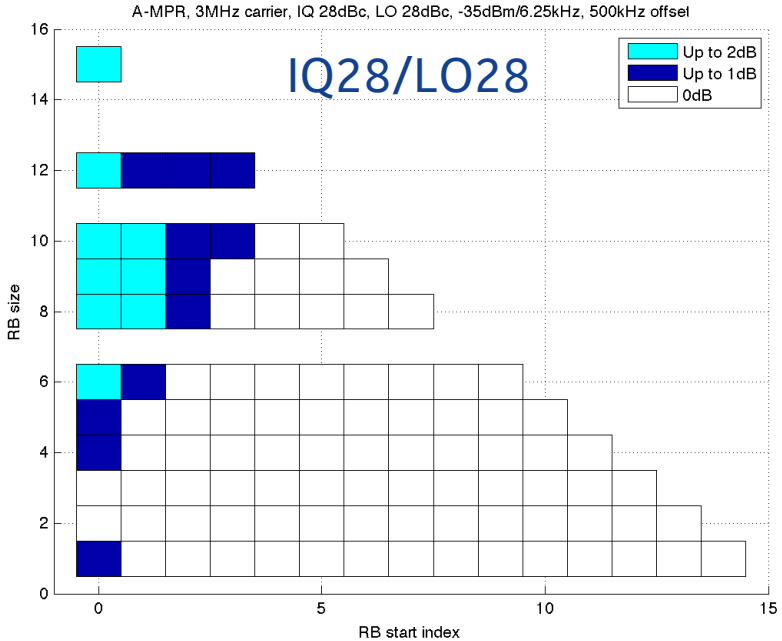
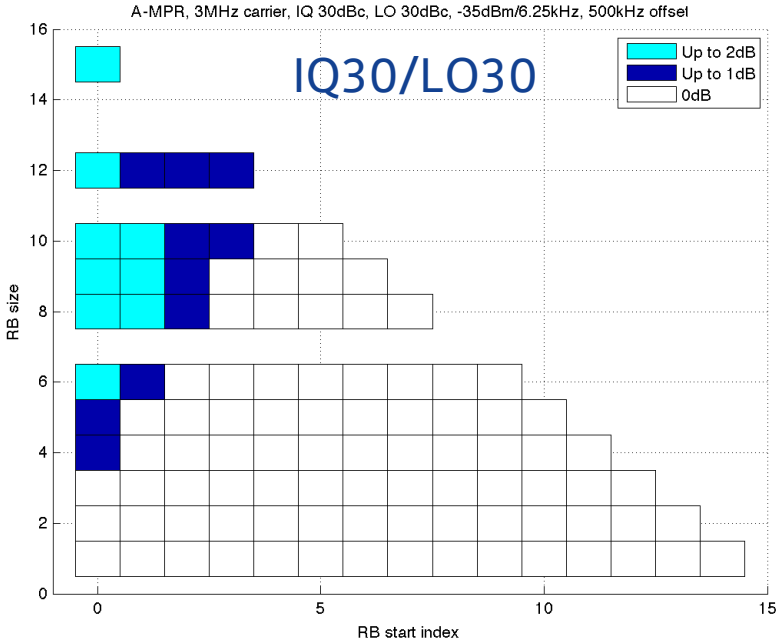
A-MPR, 3MHz carrier
–35dBm/6.25kHz, 500kHz offset









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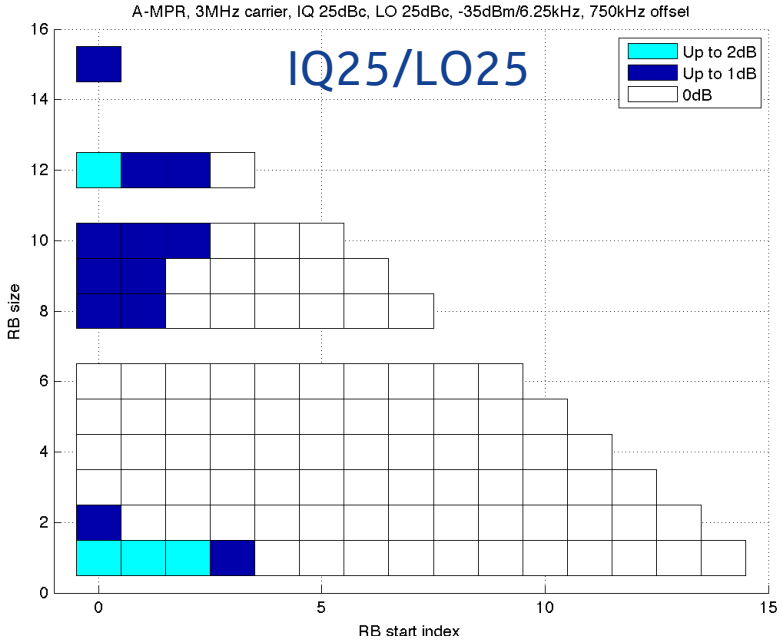
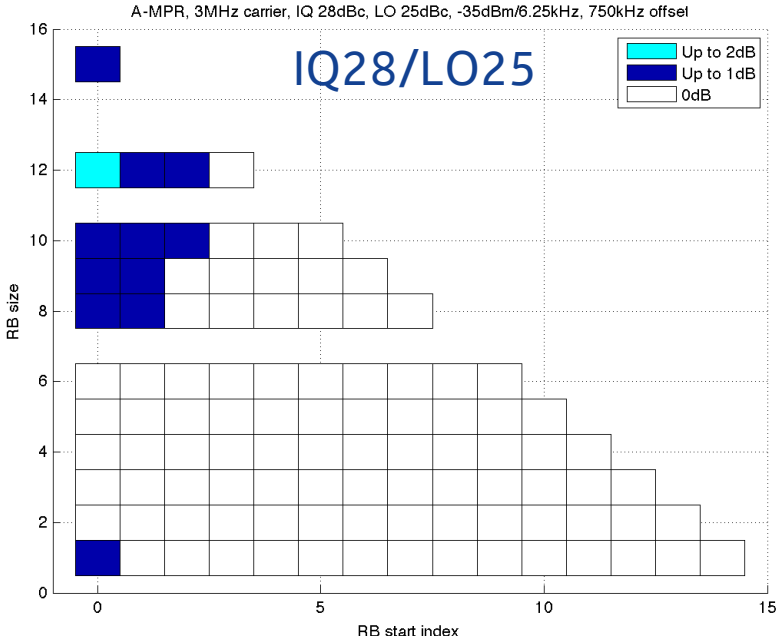
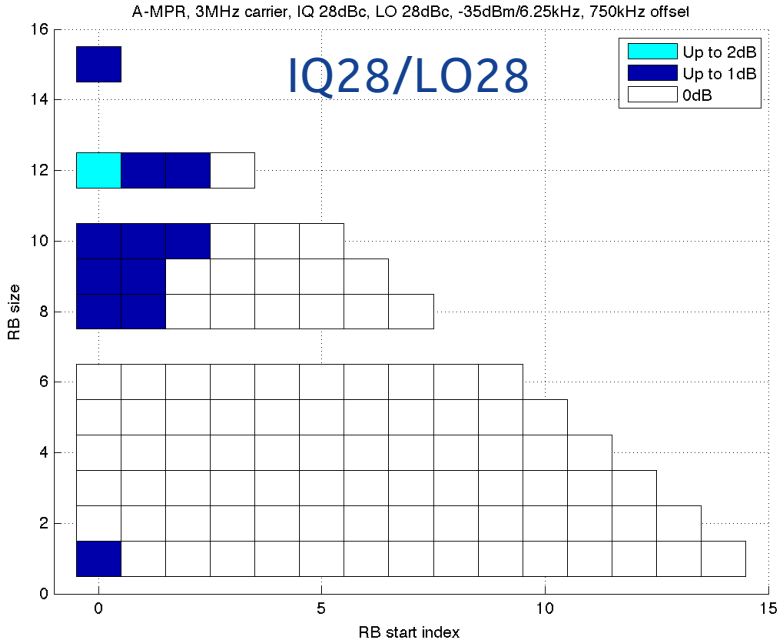
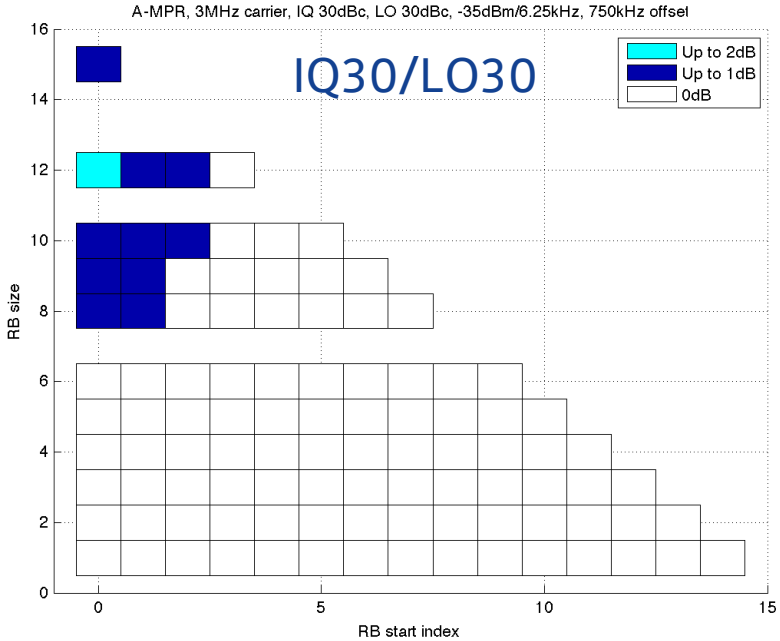
A-MPR, 3MHz carrier –35dBm/6.25kHz, 750kHz offset









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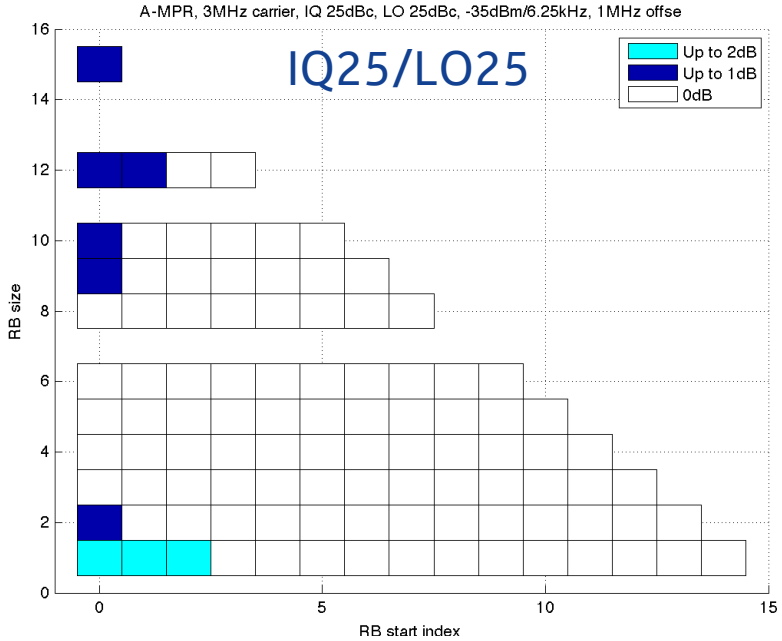
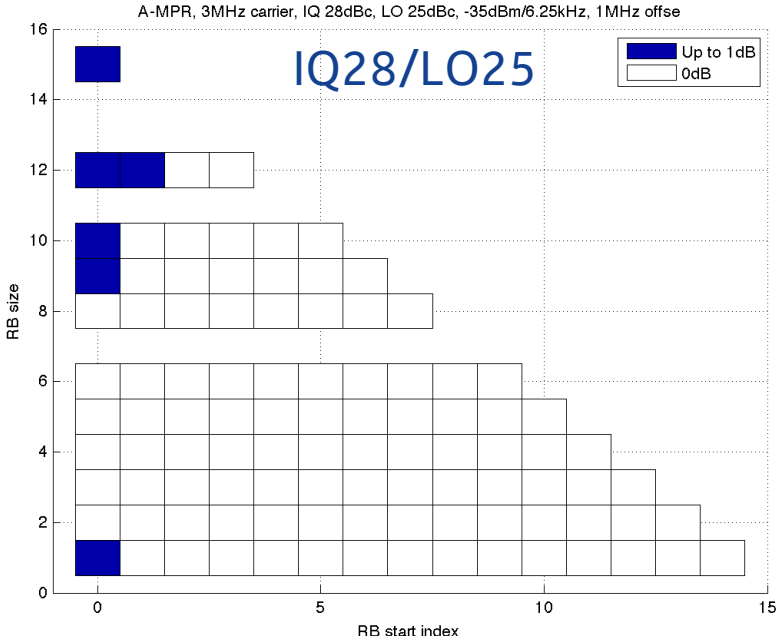
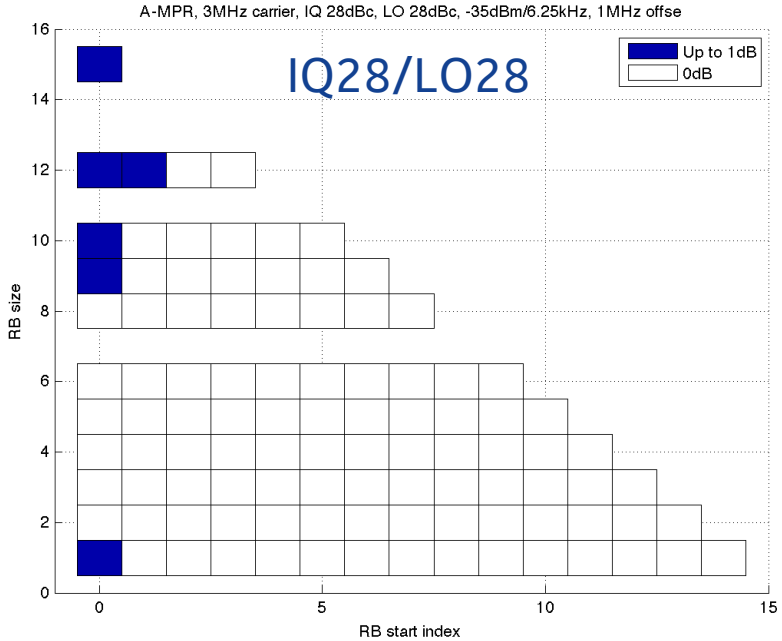
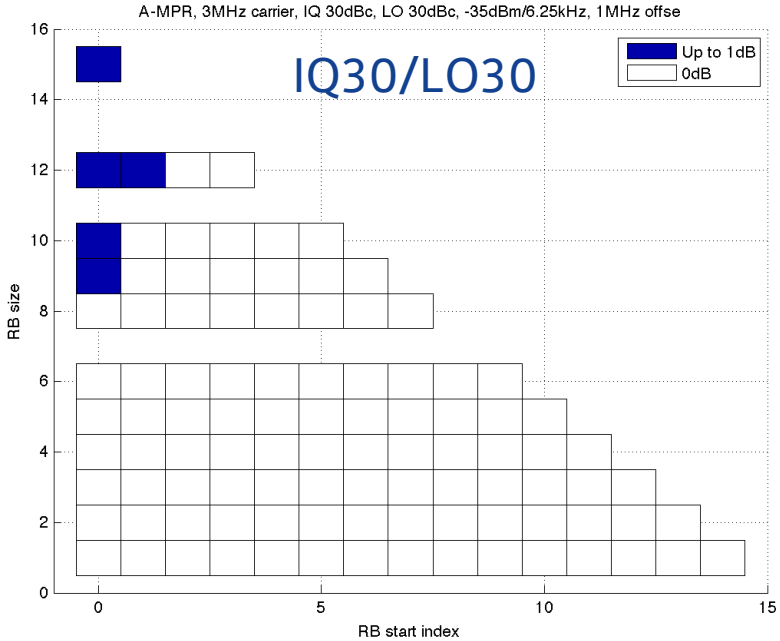
A-MPR, 3MHz carrier –35dBm/6.25kHz, 1MHz offset









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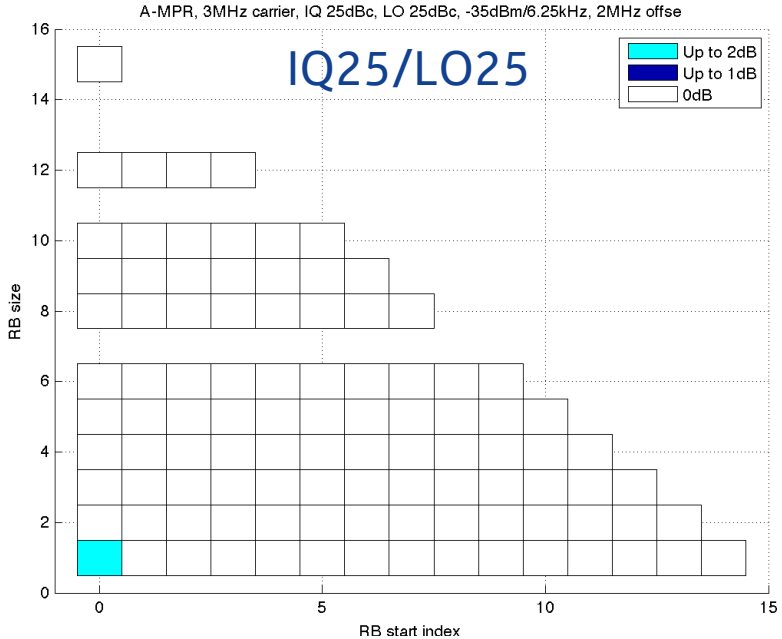
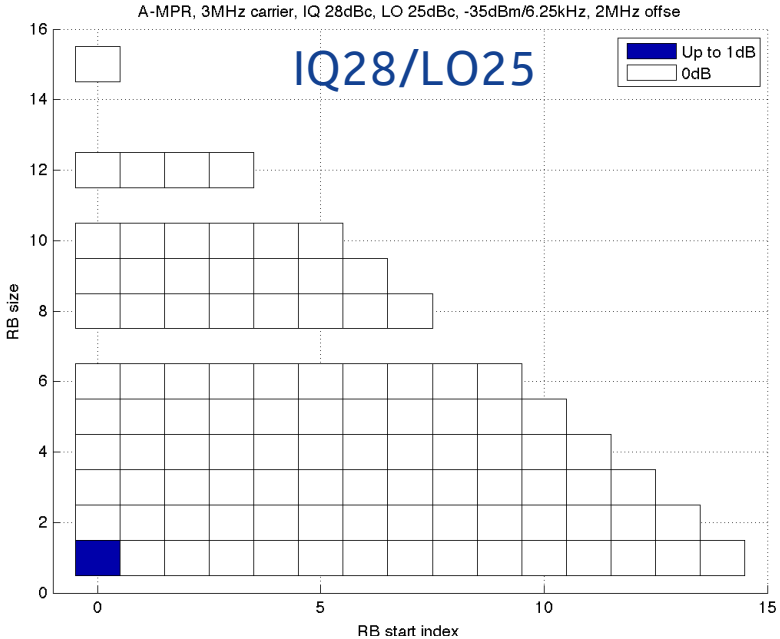
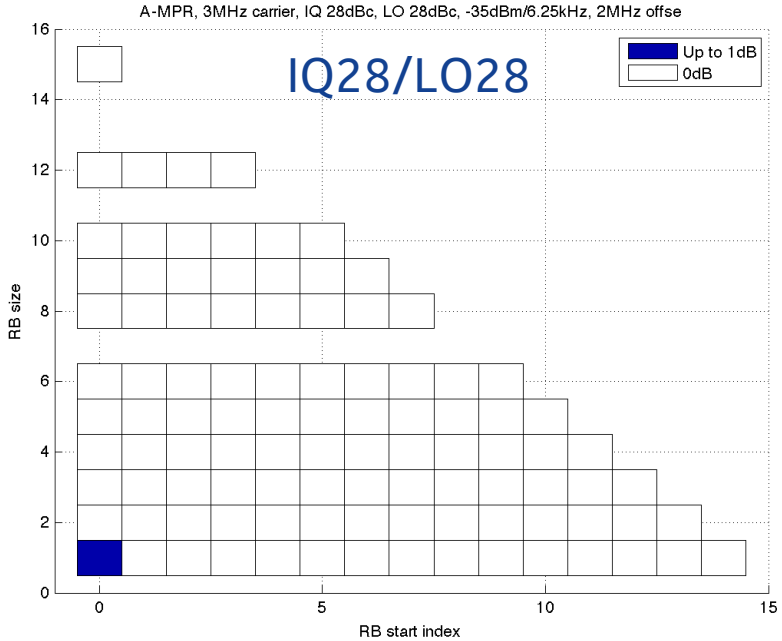
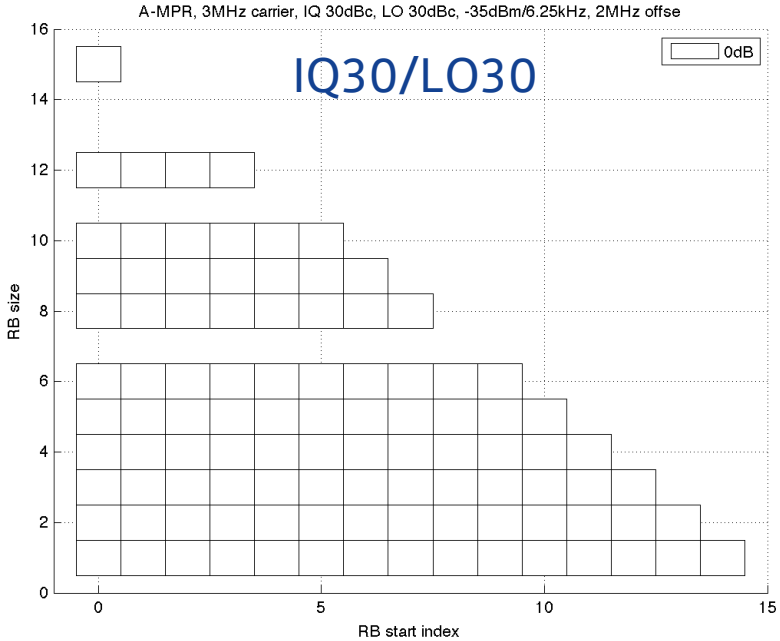
A-MPR, 3MHz carrier –35dBm/6.25kHz, 2MHz offset









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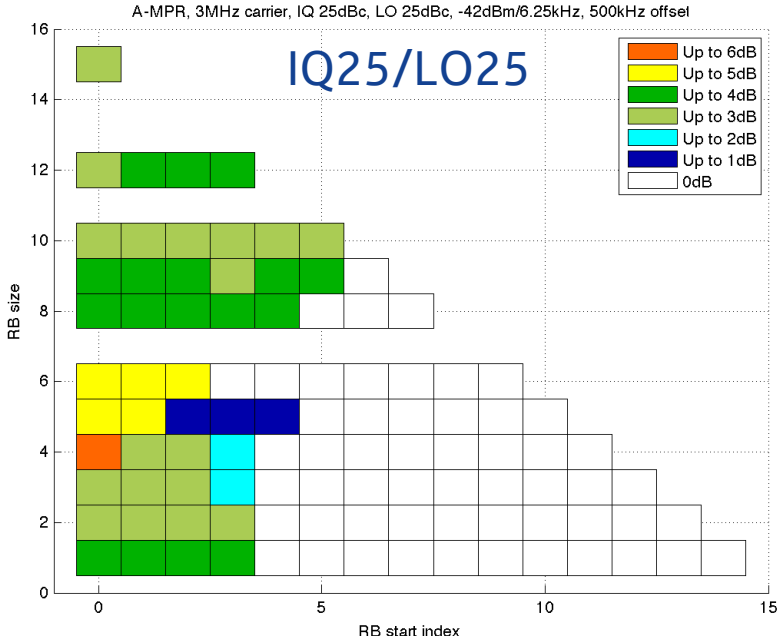
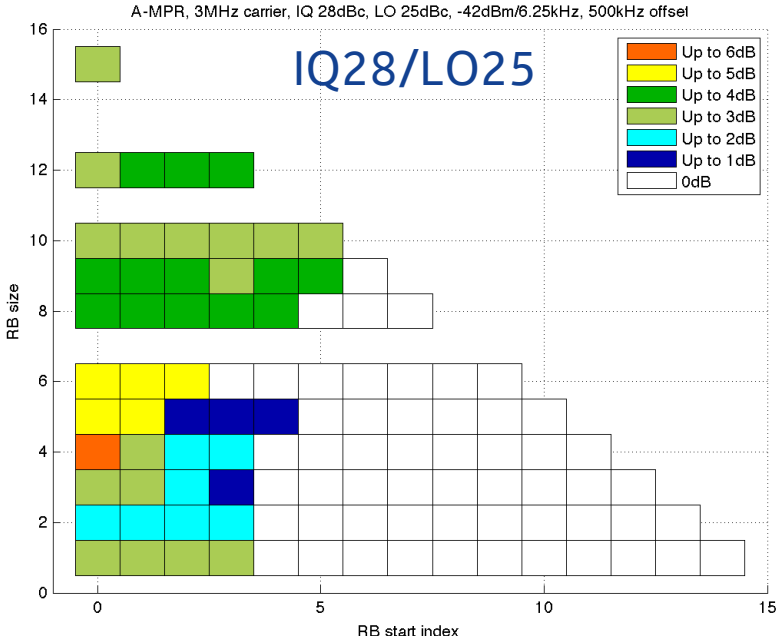
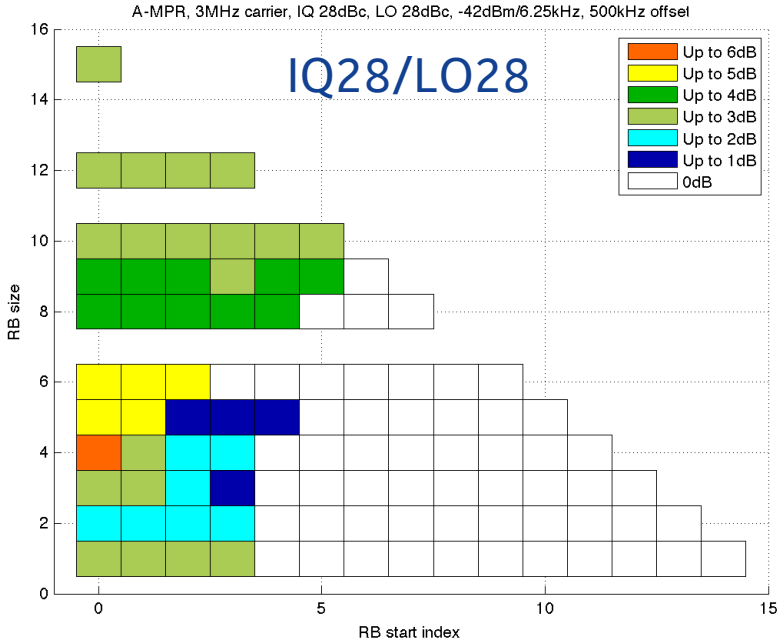
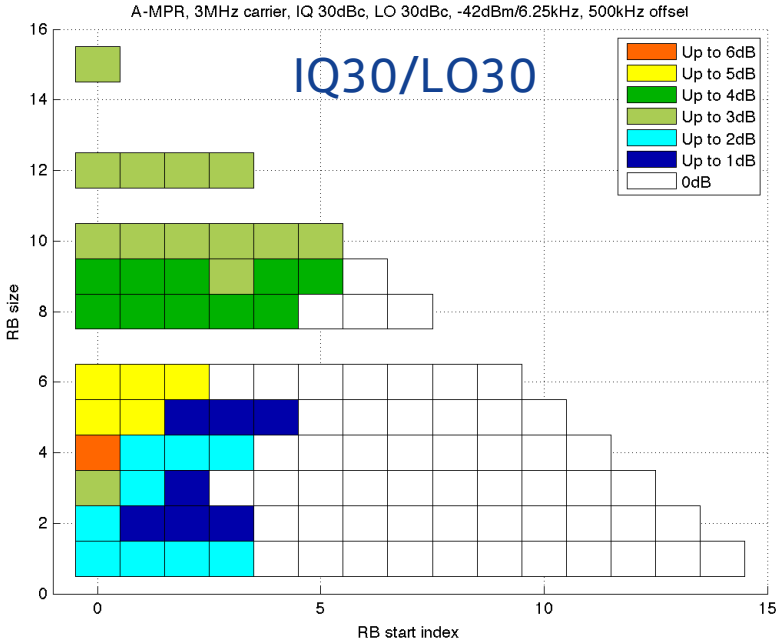
A-MPR, 3MHz carrier –42dBm/6.25kHz, 500kHz offset









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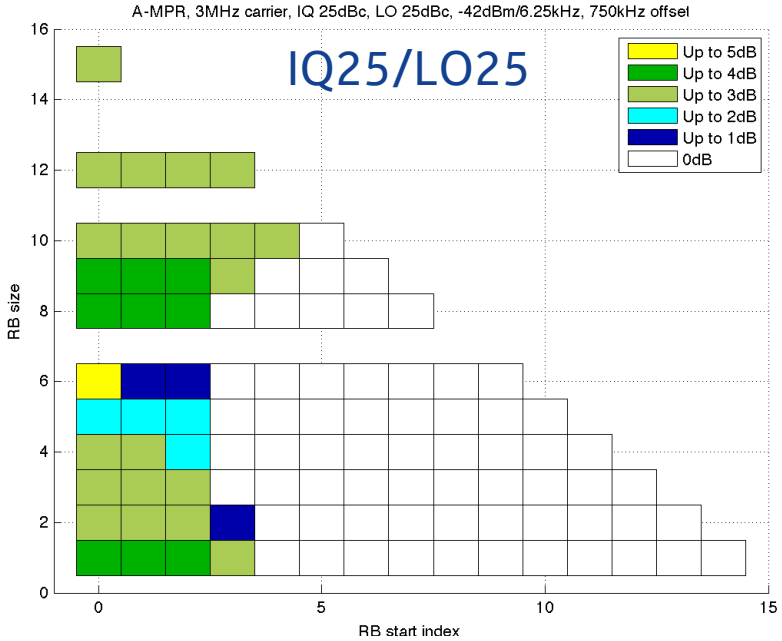
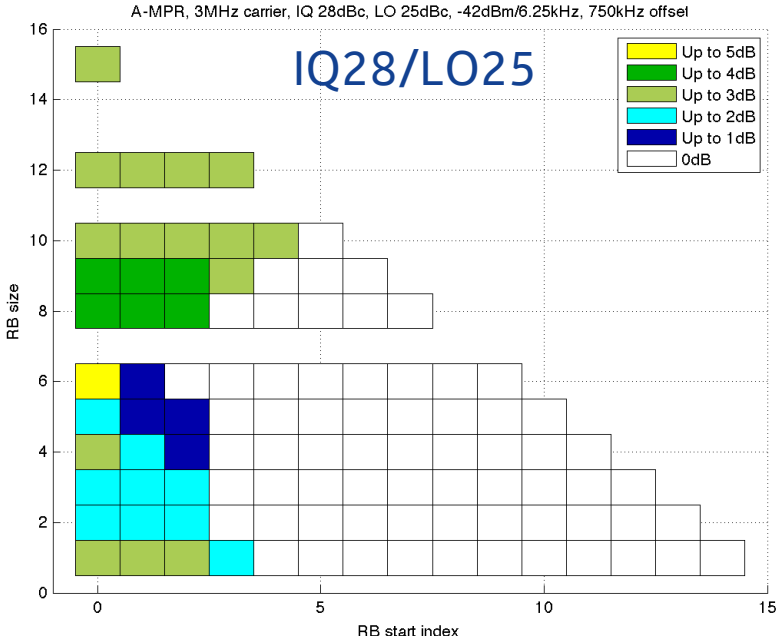
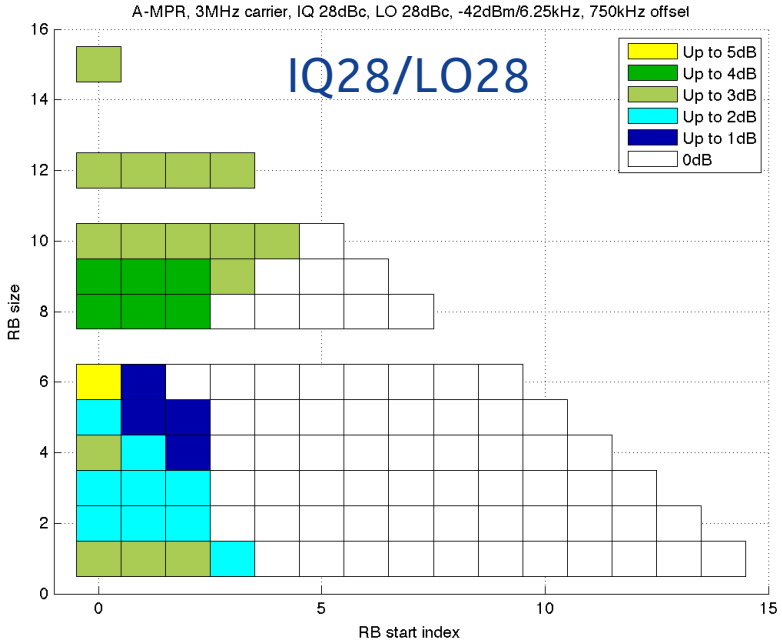
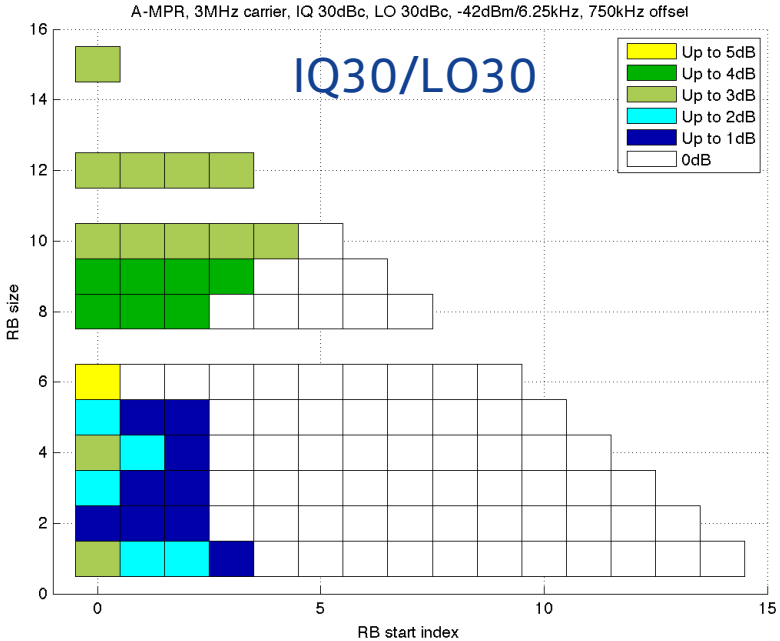
A-MPR, 3MHz carrier –42dBm/6.25kHz, 750kHz offset









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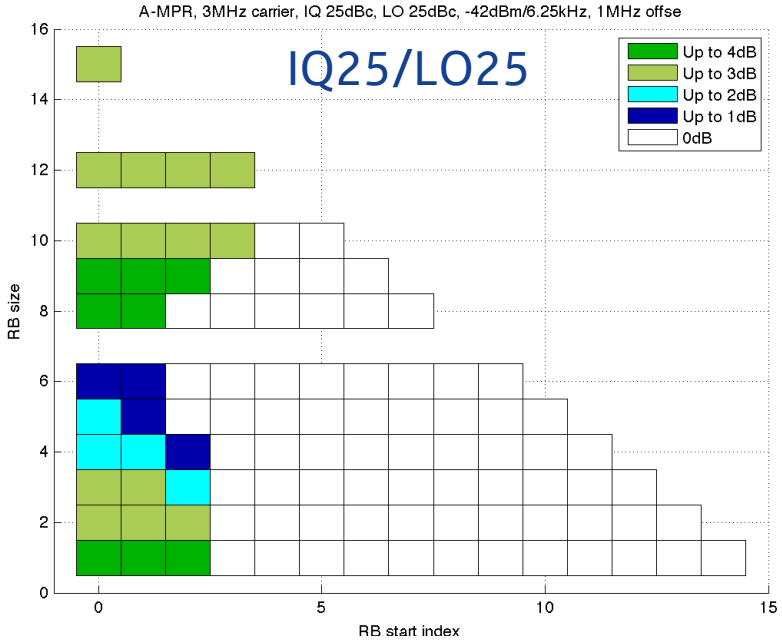
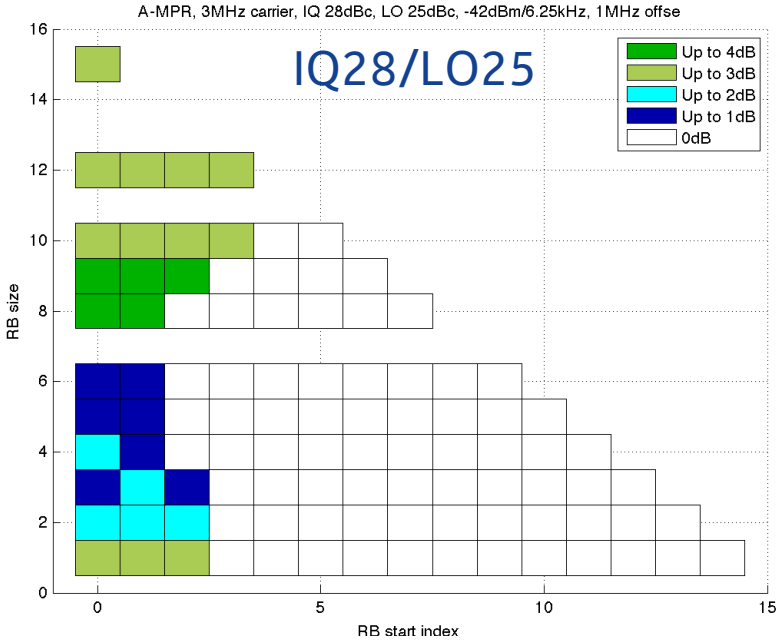
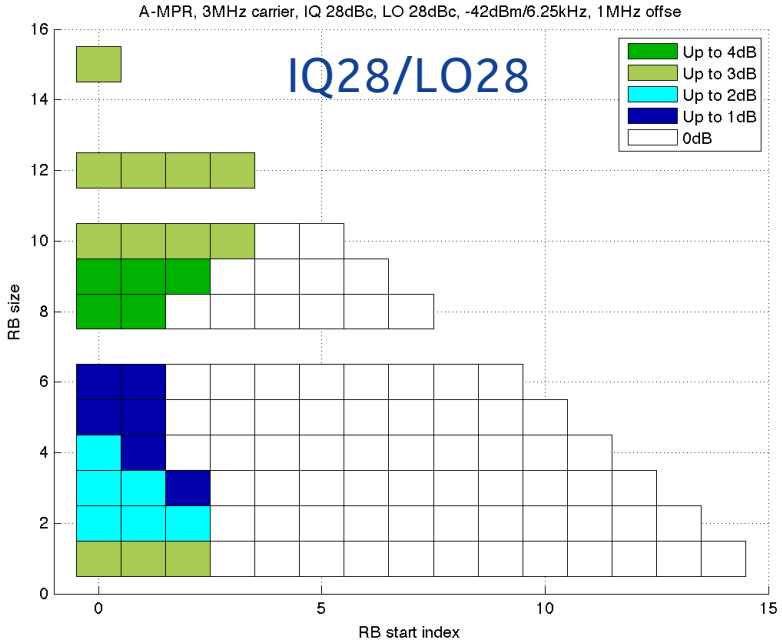
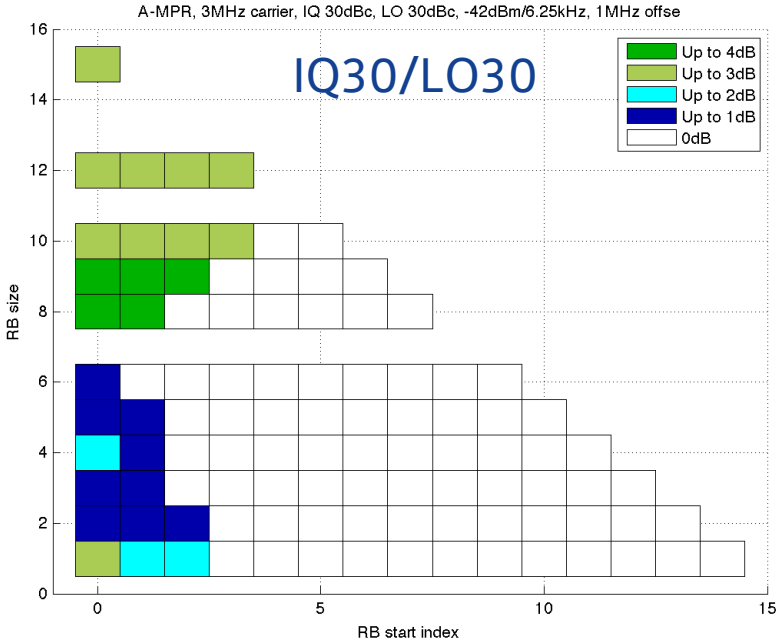
A-MPR, 3MHz carrier –42dBm/6.25kHz, 1MHz offset









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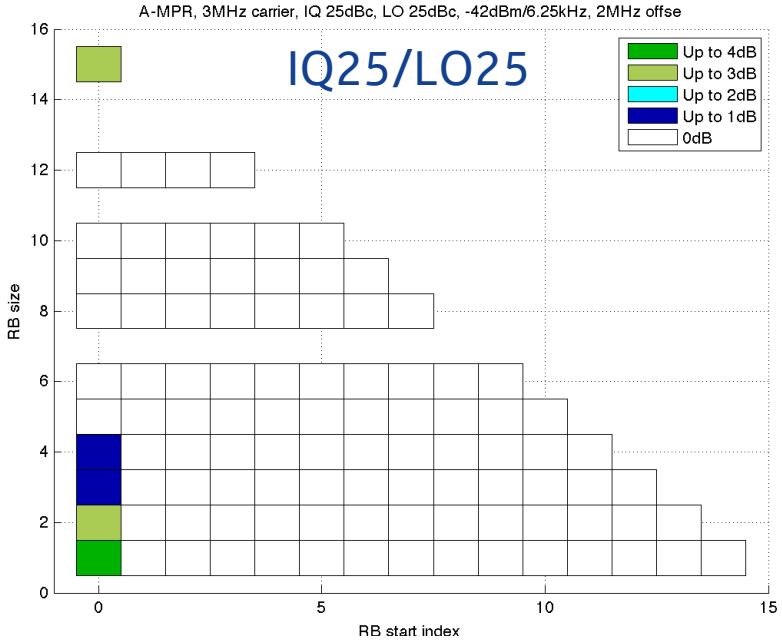
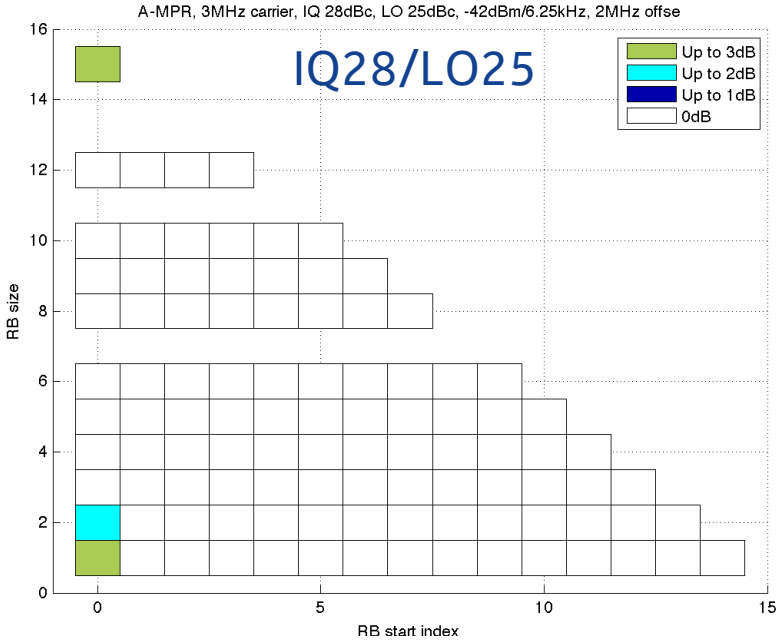
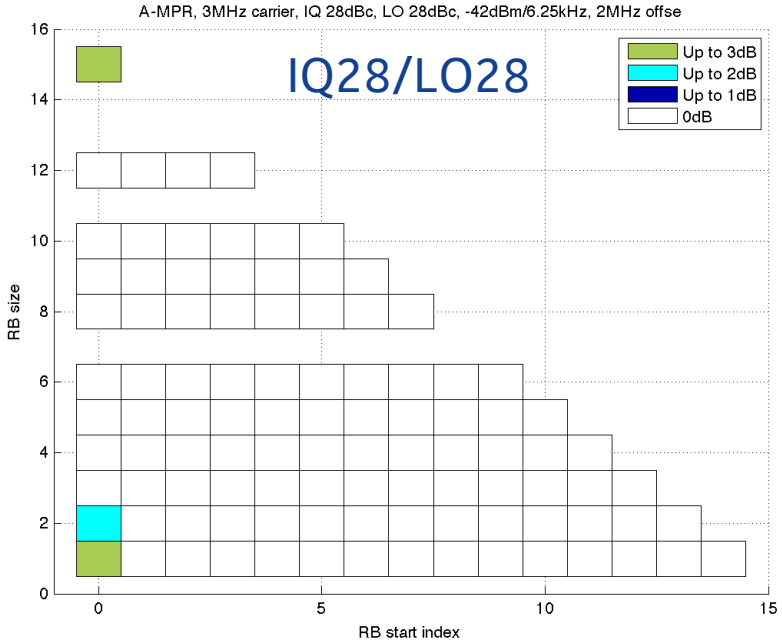
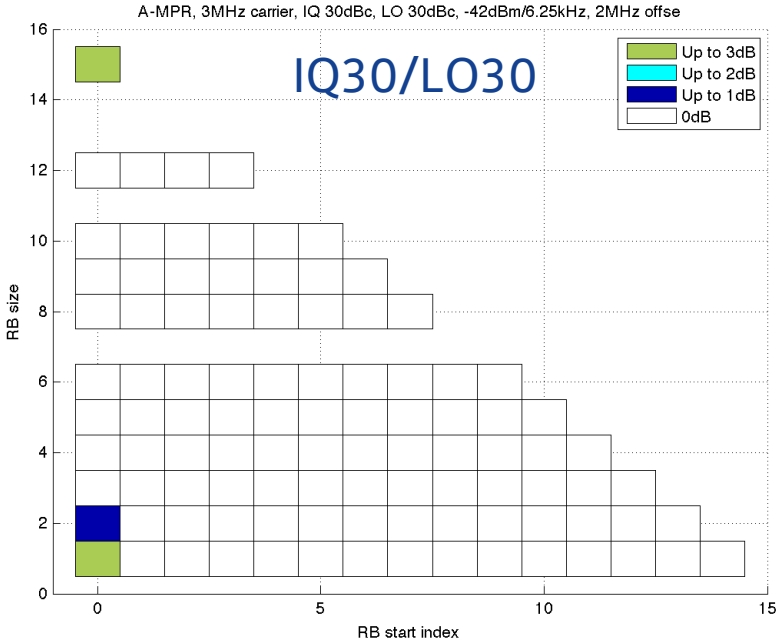
A-MPR, 3MHz carrier –42dBm/6.25kHz, 2MHz offset









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3MHz carrier
Minimum offsets for 0dB A-MPR

Offset (MHz)		Emission mask (dBm/6.25kHz)	
		–42	–35
Modulator IQ and LO suppression (dBc)	25/25	2.4MHz^{15RB} 2.5MHz^{1RB}	1.5MHz^{15RB} 2.5MHz^{1RB}
	28/25	2.4MHz^{15RB} 2.5MHz^{1RB}	1.5MHz^{15RB} 2.4MHz^{1RB}
	28/28	2.4MHz^{15RB} 2.5MHz^{1RB}	1.5MHz^{15RB} 2.4MHz^{1RB}
	30/30	2.4MHz^{15RB} 2.5MHz^{1RB}	1.5MHz^{15RB} ≤0.5MHz^{1RB}

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5MHz carrier

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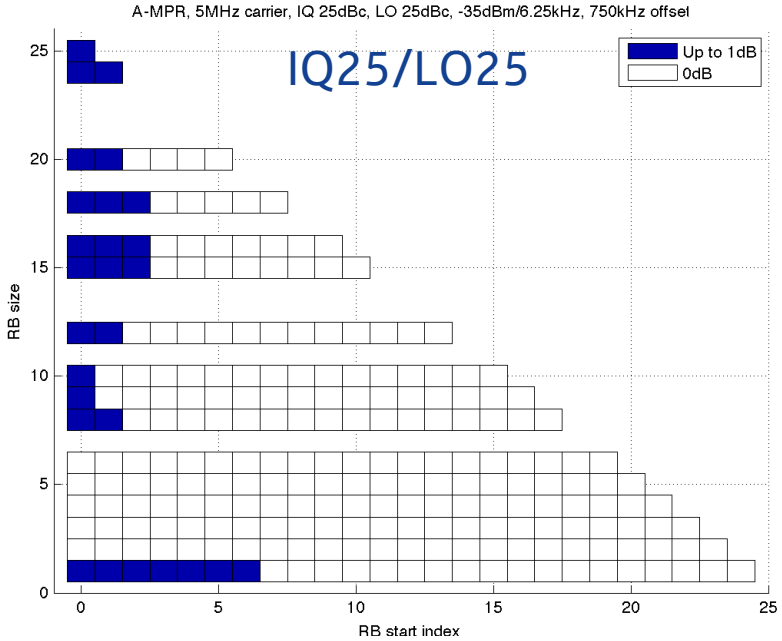
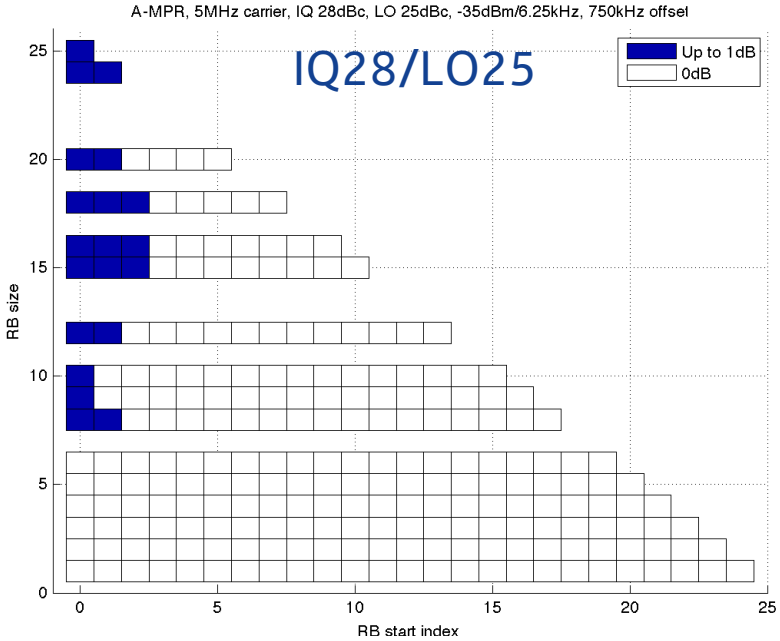
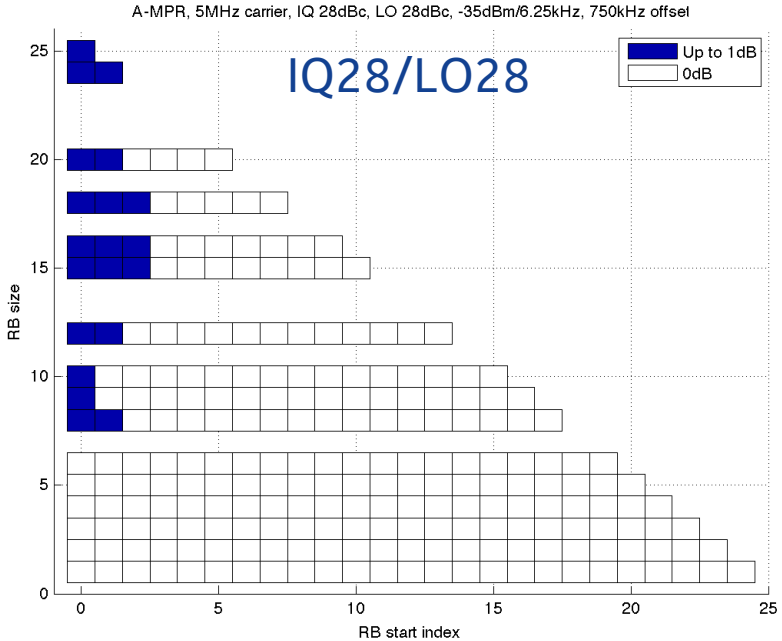
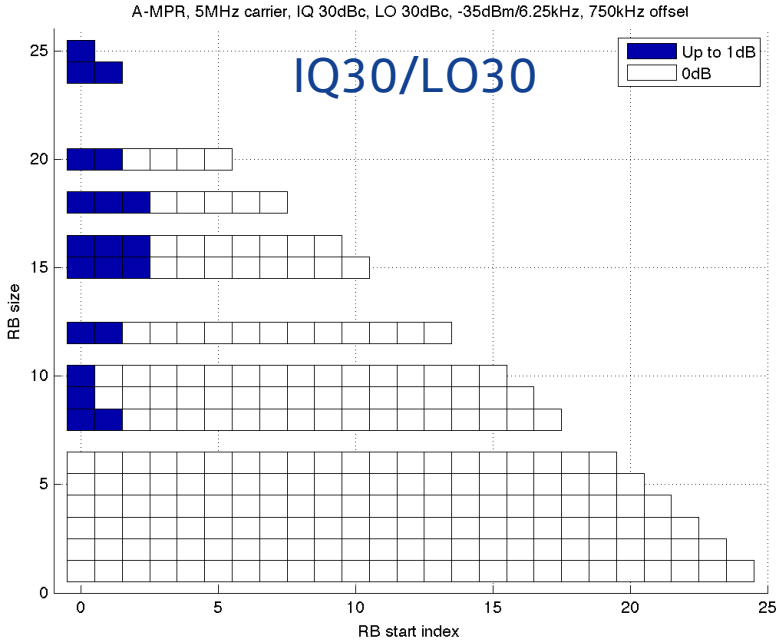
A-MPR, 5MHz carrier –35dBm/6.25kHz, 750kHz offset









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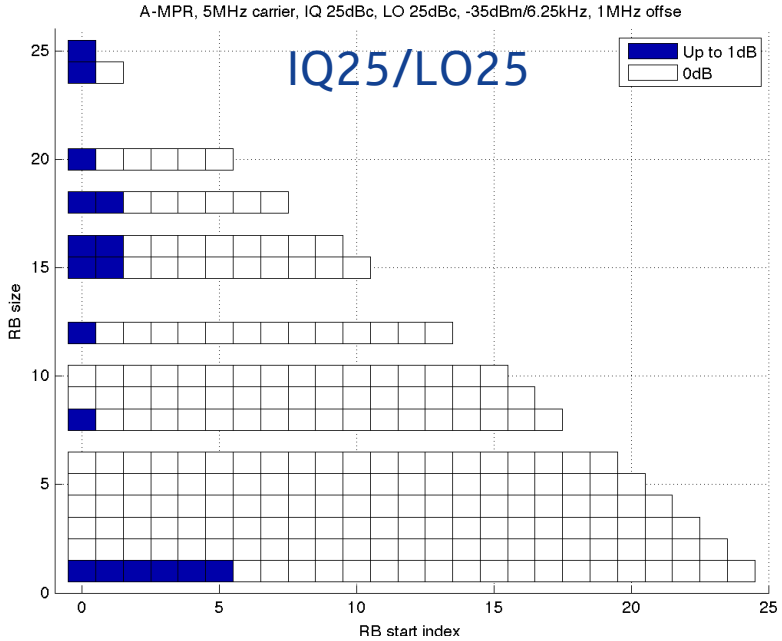
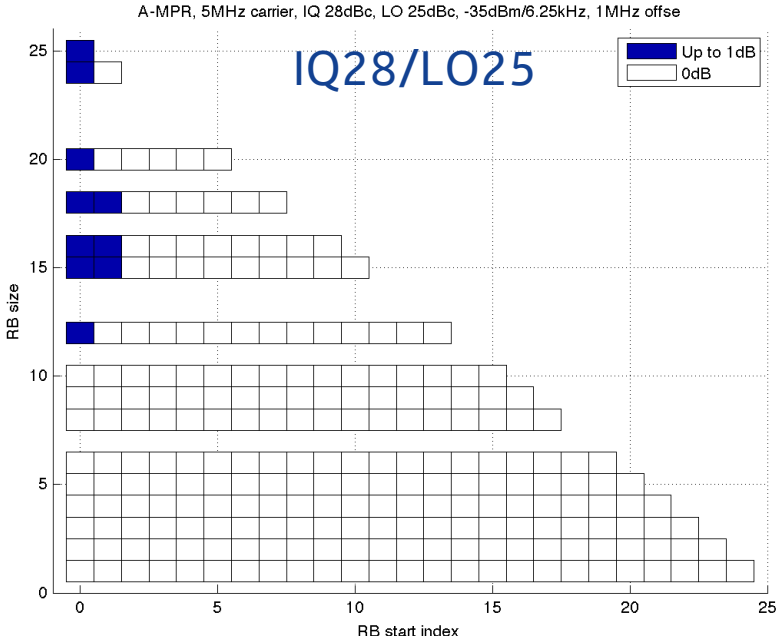
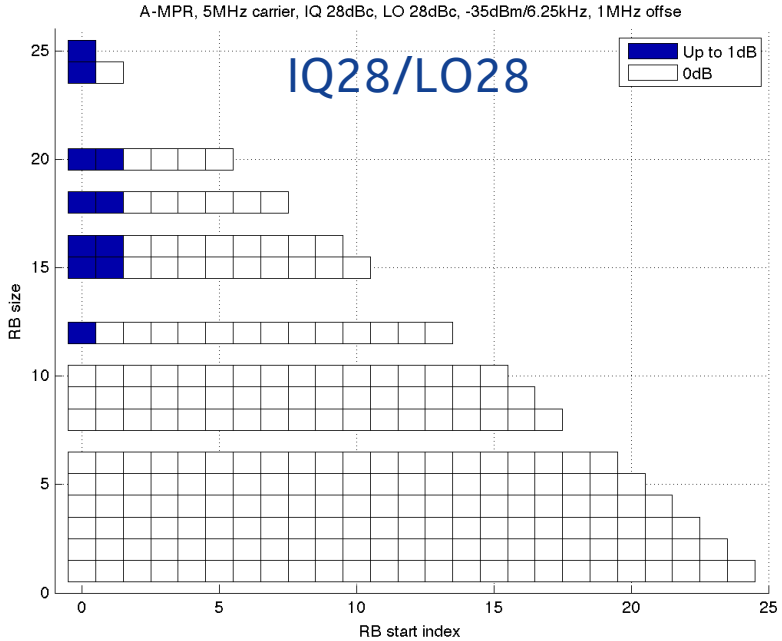
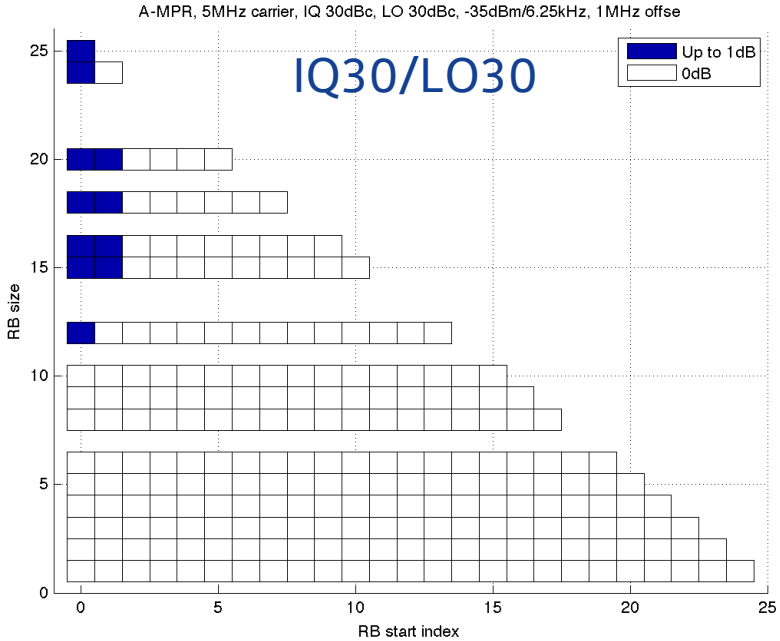
A-MPR, 5MHz carrier –35dBm/6.25kHz, 1MHz offset









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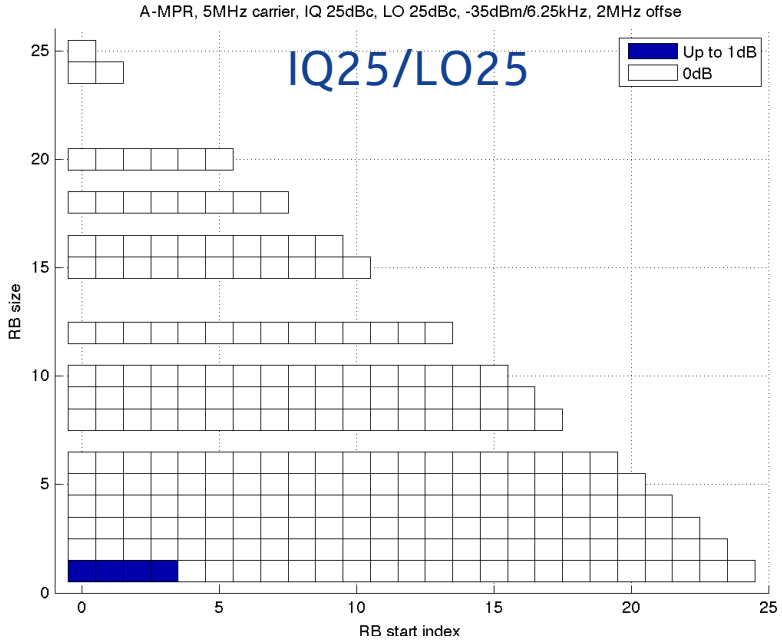
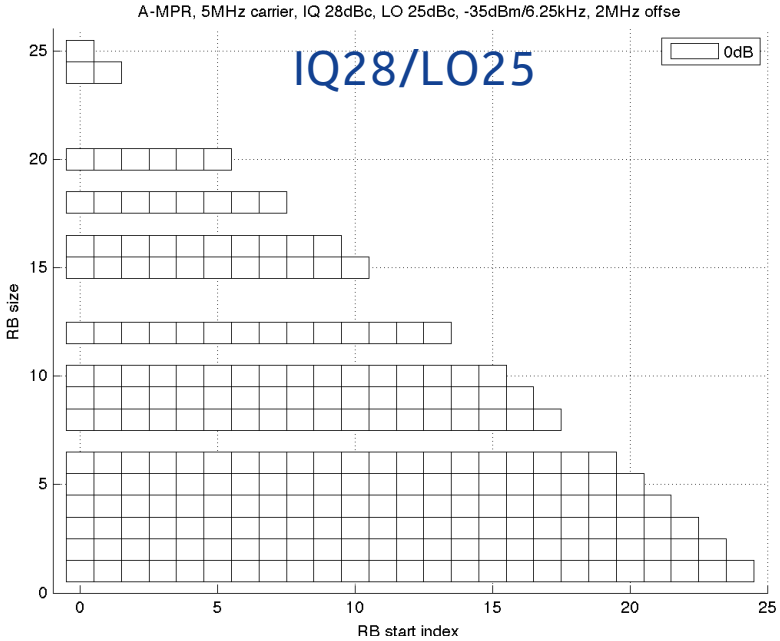
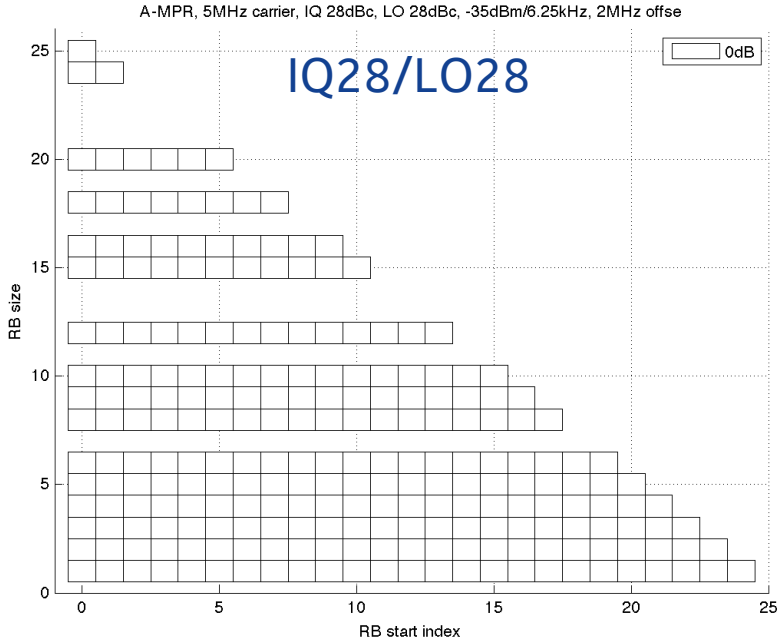
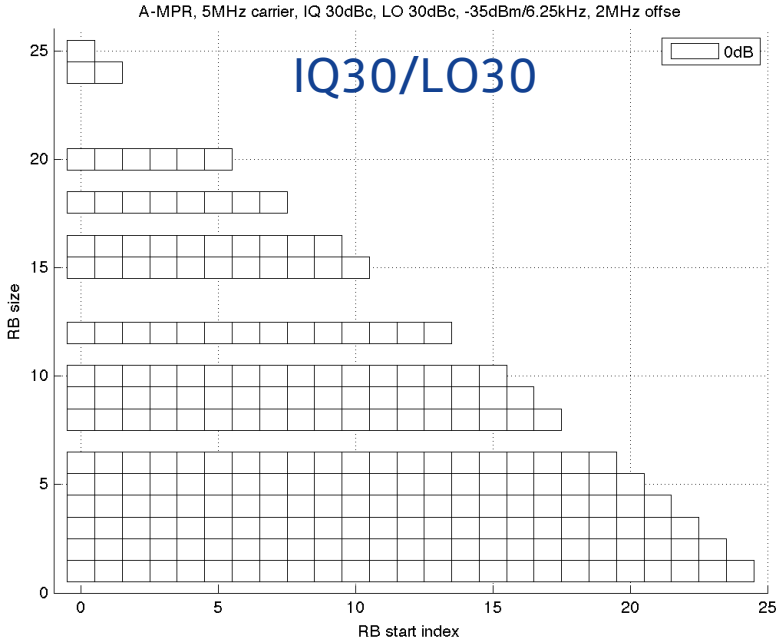
A-MPR, 5MHz carrier –35dBm/6.25kHz, 2MHz offset









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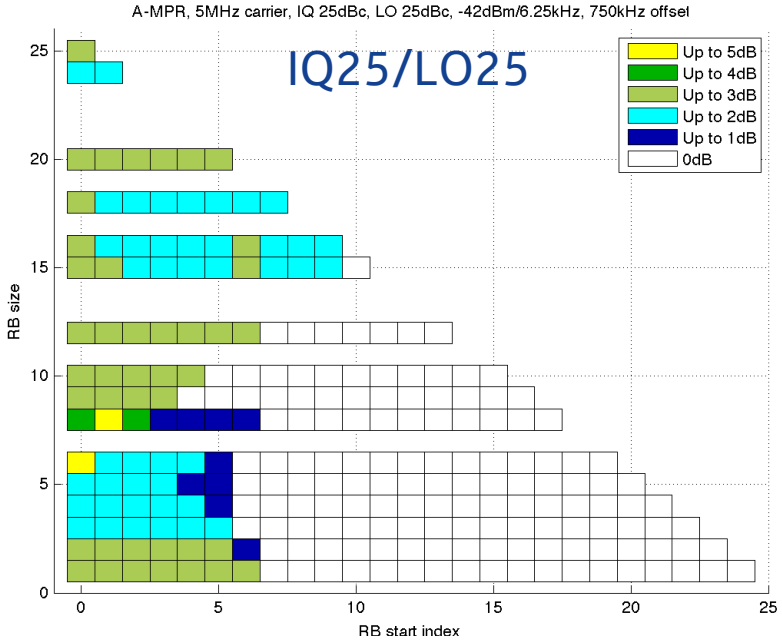
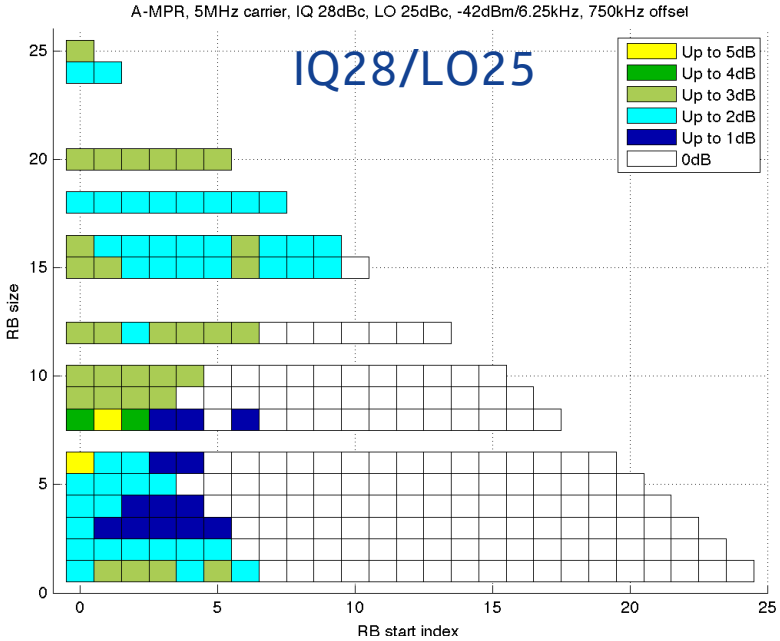
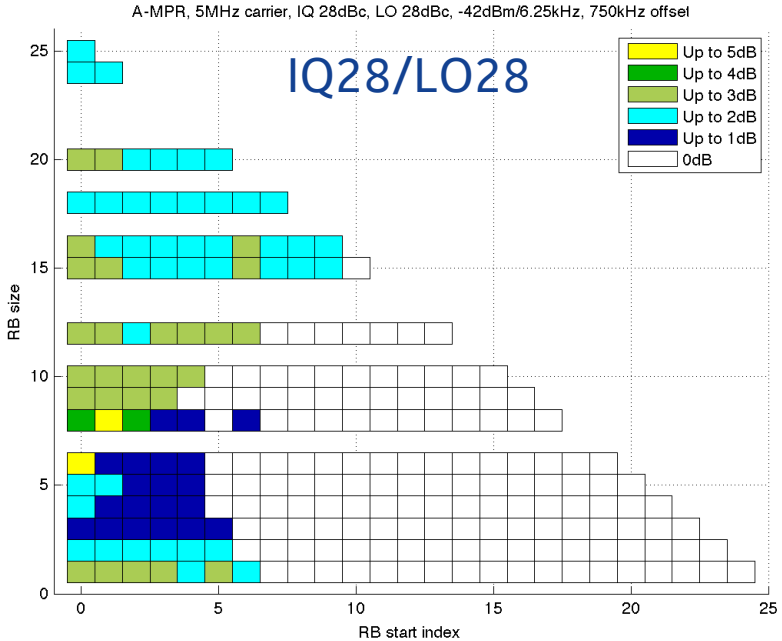
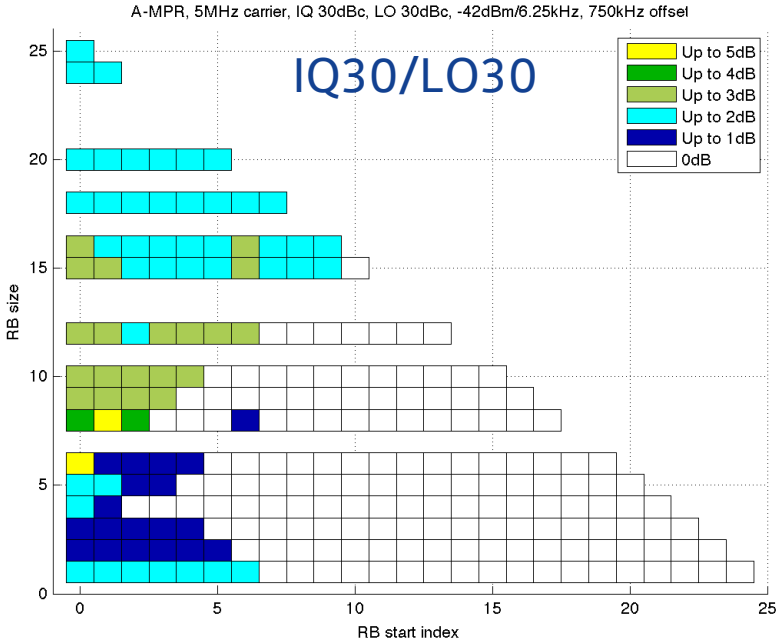
A-MPR, 5MHz carrier –42dBm/6.25kHz, 750kHz offset









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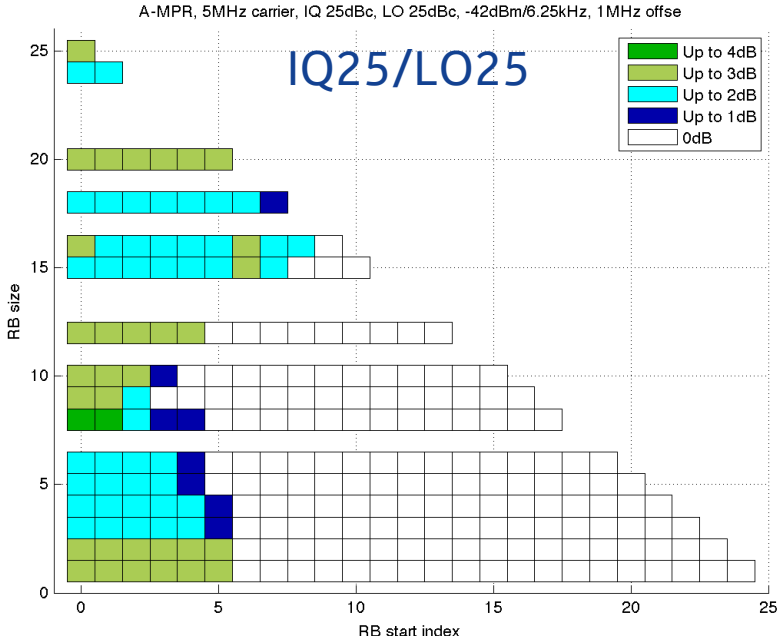
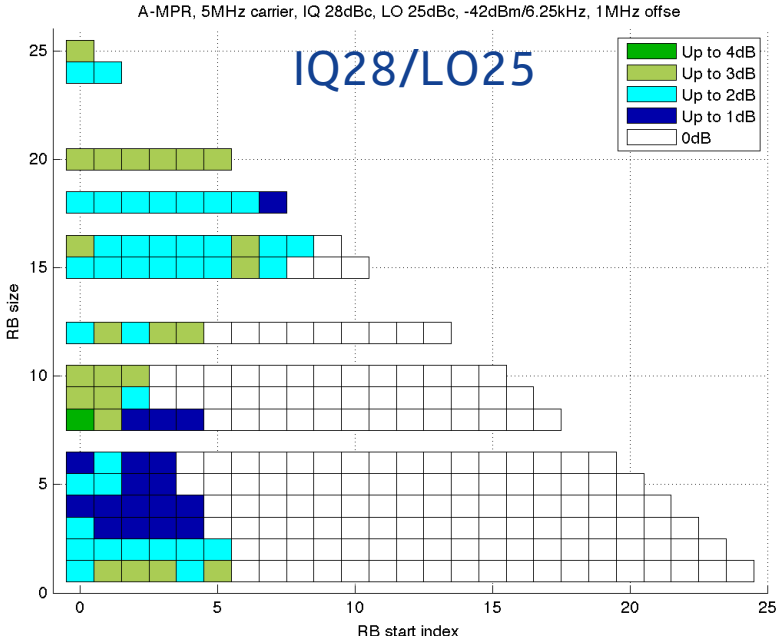
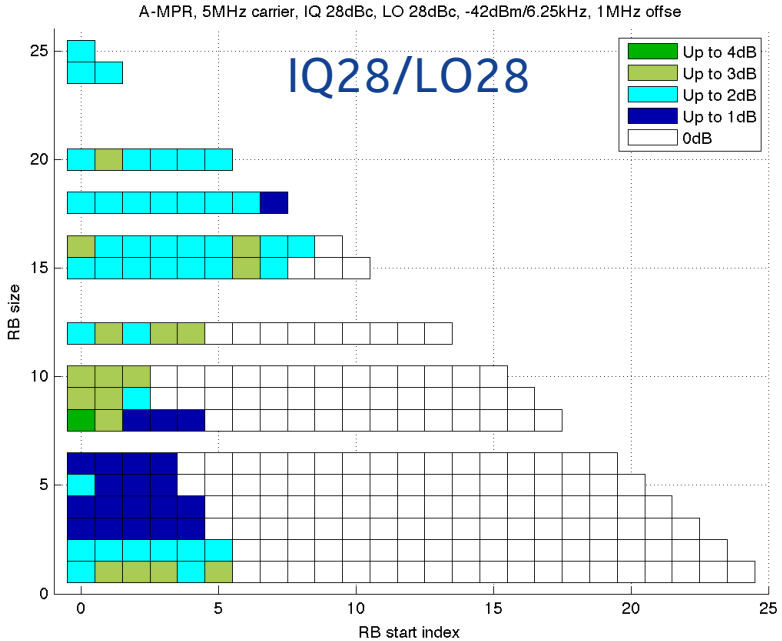
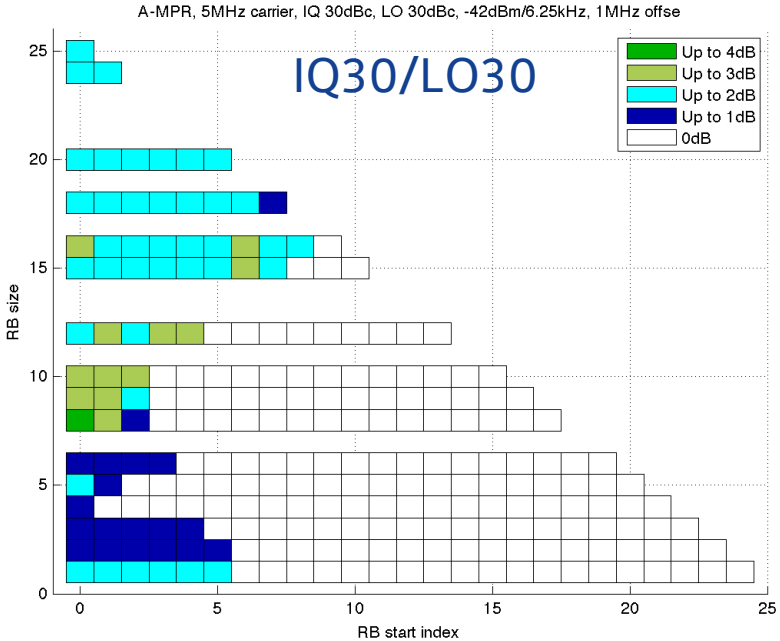
A-MPR, 5MHz carrier –42dBm/6.25kHz, 1MHz offset









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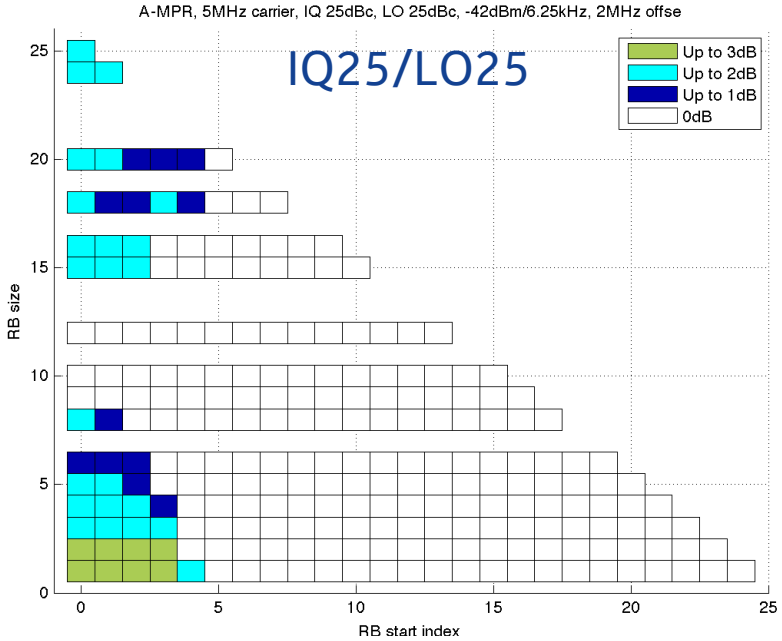
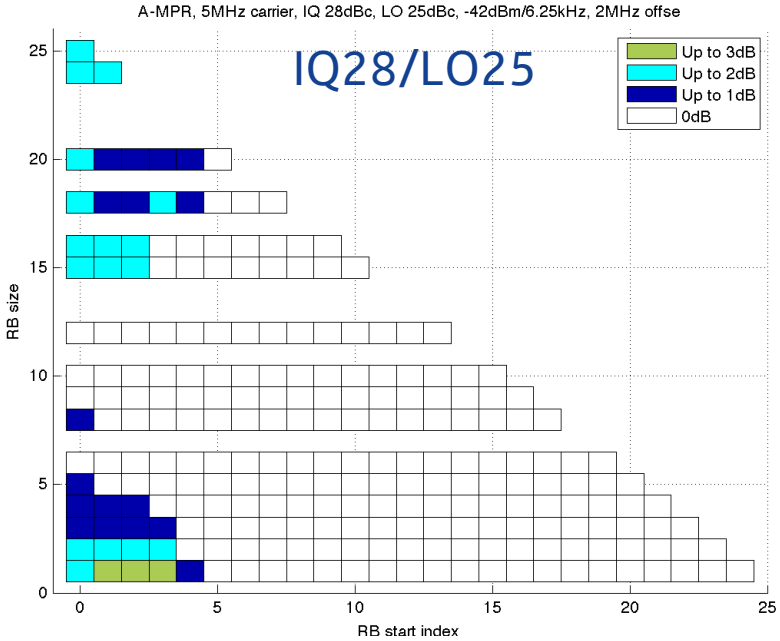
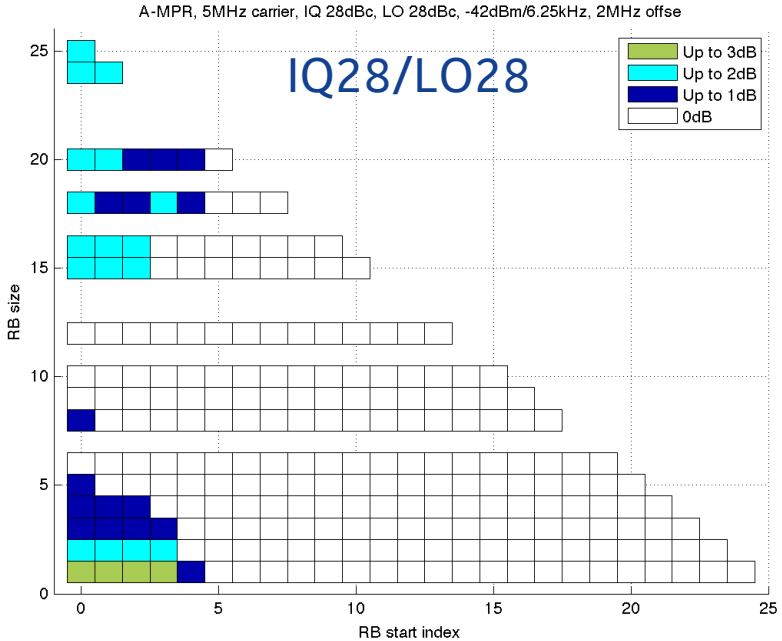
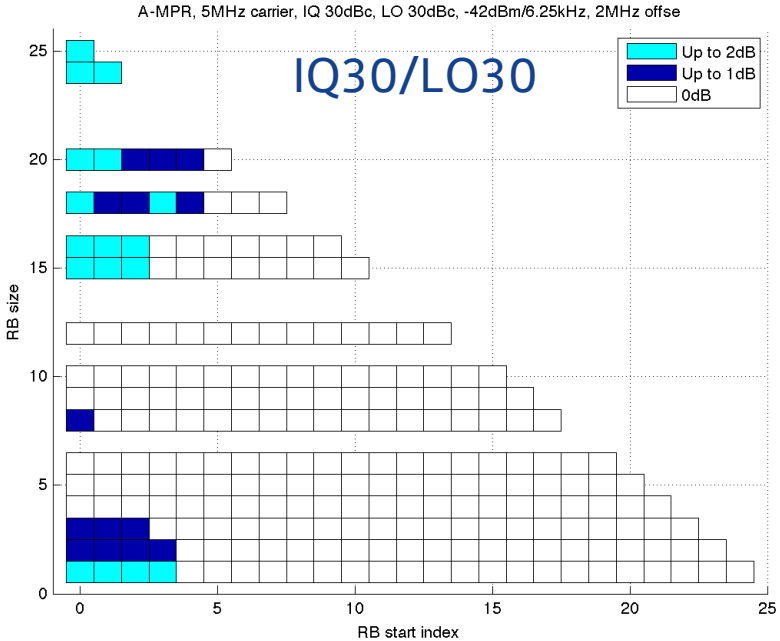
A-MPR, 5MHz carrier –42dBm/6.25kHz, 2MHz offset









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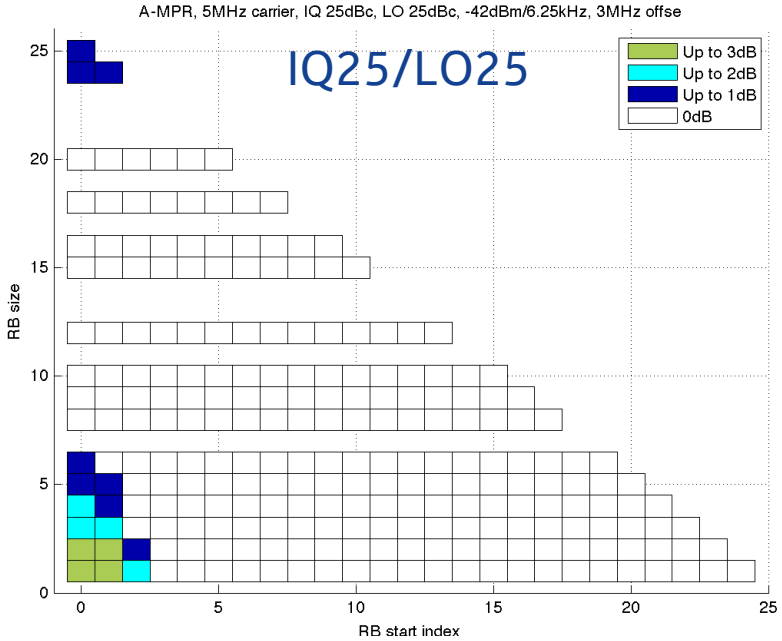
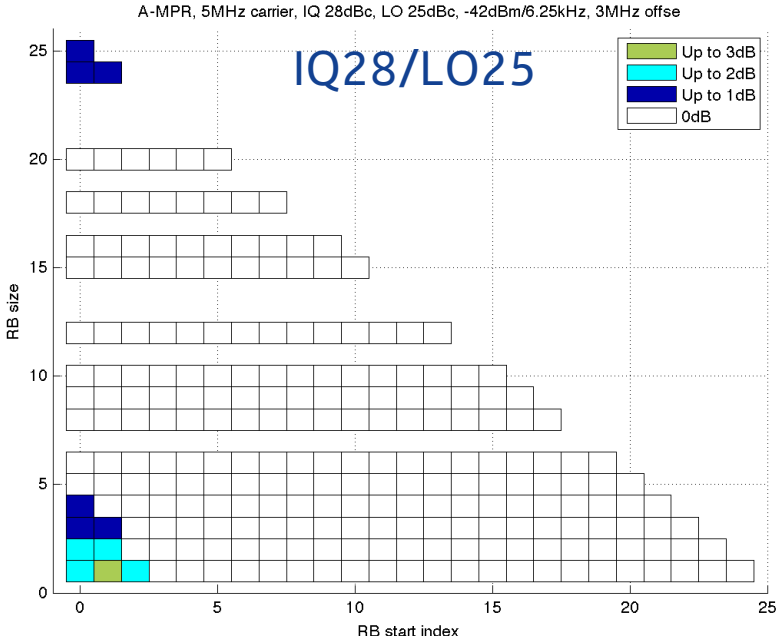
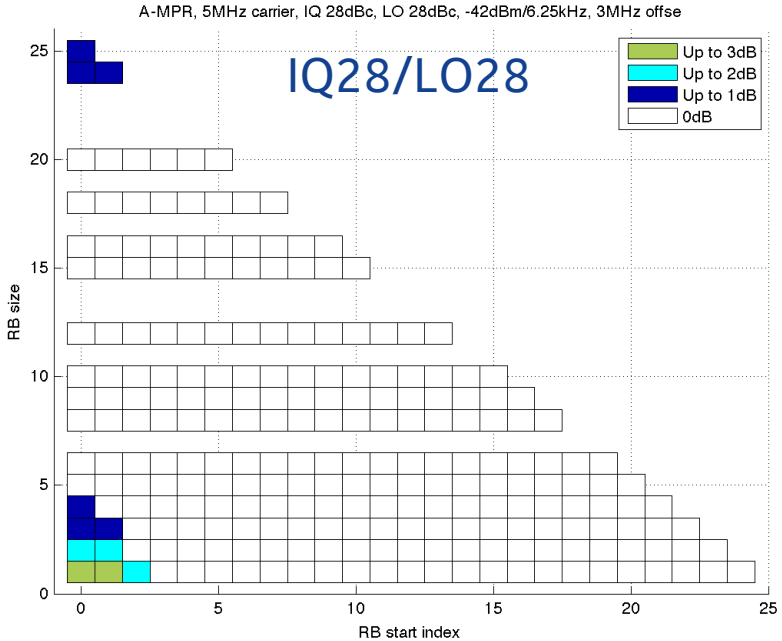
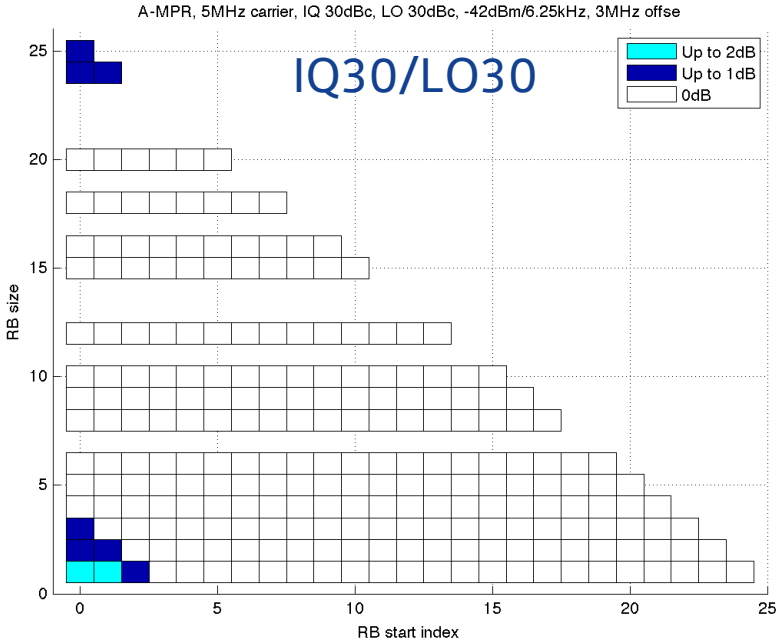
A-MPR, 5MHz carrier –42dBm/6.25kHz, 3MHz offset









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5MHz carrier
Minimum offsets for 0dB A-MPR

Offset (MHz)		Emission mask (dBm/6.25kHz)	
		–42	–35
Modulator IQ and LO suppression (dBc)	25/25	3.5MHz^{25RB} 4.5MHz^{1RB}	1.5MHz^{25RB} 4.5MHz^{1RB}
	28/25	3.5MHz^{25RB} 4.5MHz^{1RB}	1.5MHz^{25RB} ≤0.75MHz^{1RB}
	28/28	3.5MHz^{25RB} 4.5MHz^{1RB}	1.5MHz^{25RB} ≤0.75MHz^{1RB}
	30/30	3.5MHz^{25RB} 4.5MHz^{1RB}	1.5MHz^{25RB} ≤0.75MHz^{1RB}

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10MHz carrier

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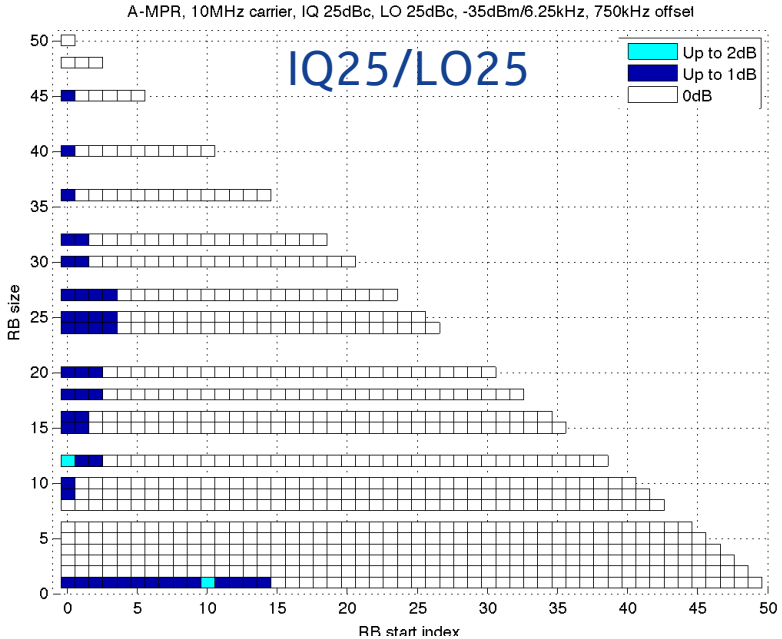
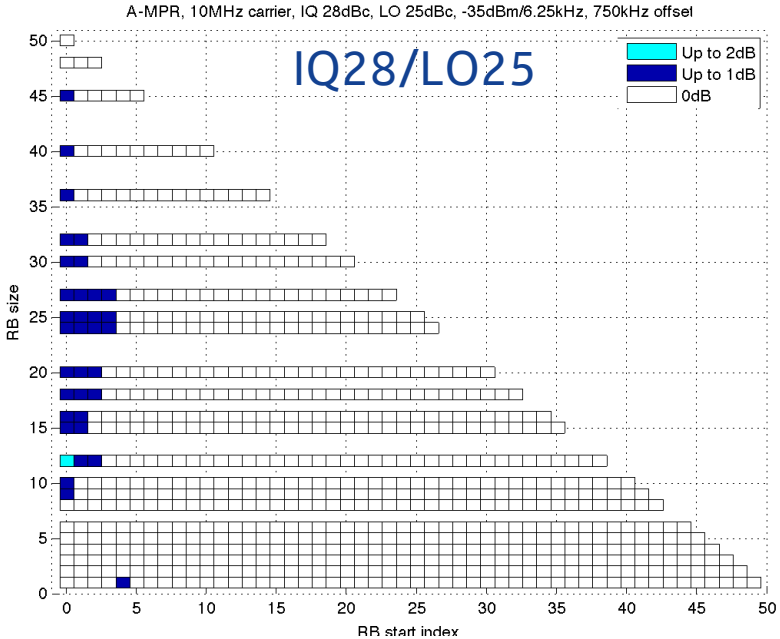
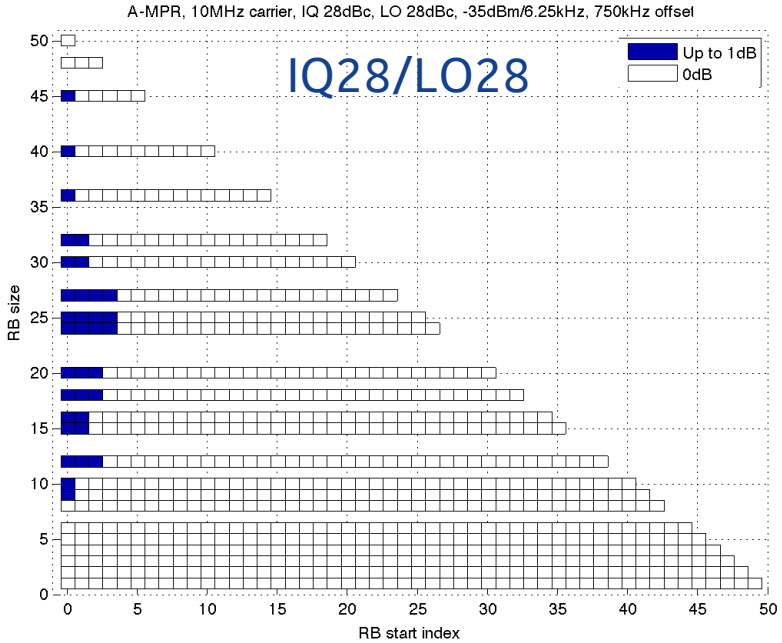
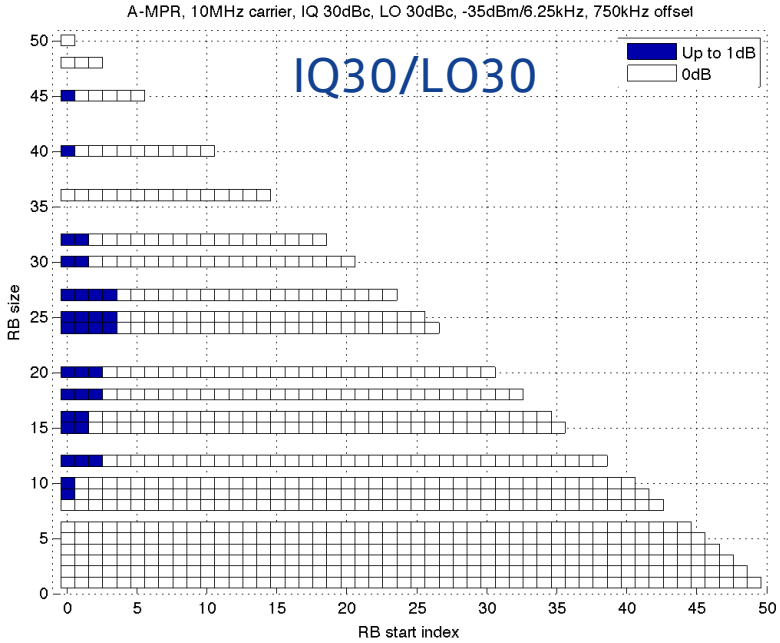
A-MPR, 10MHz carrier –35dBm/6.25kHz, 750kHz offset









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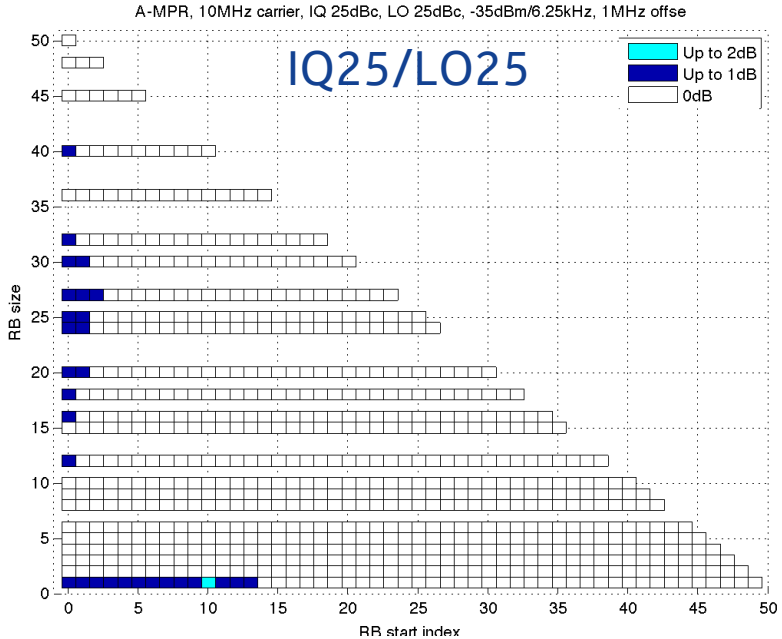
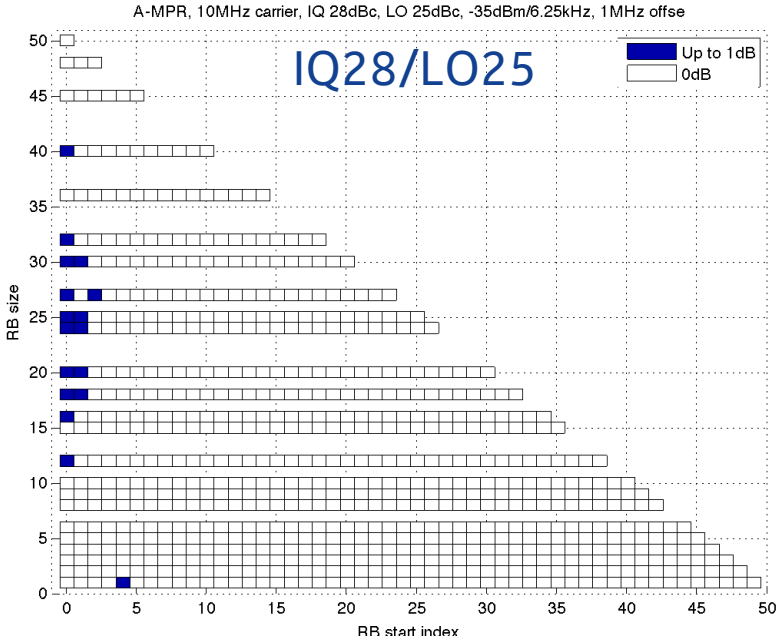
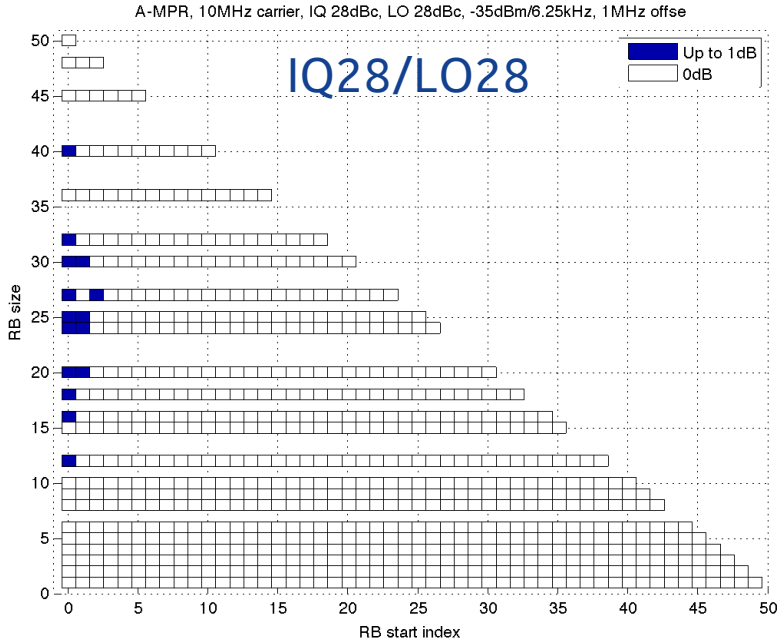
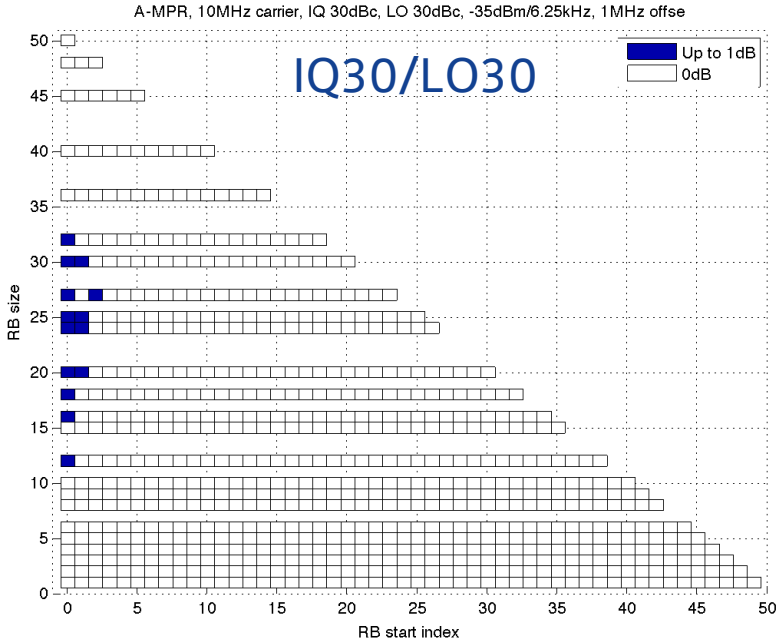
A-MPR, 10MHz carrier –35dBm/6.25kHz, 1MHz offset









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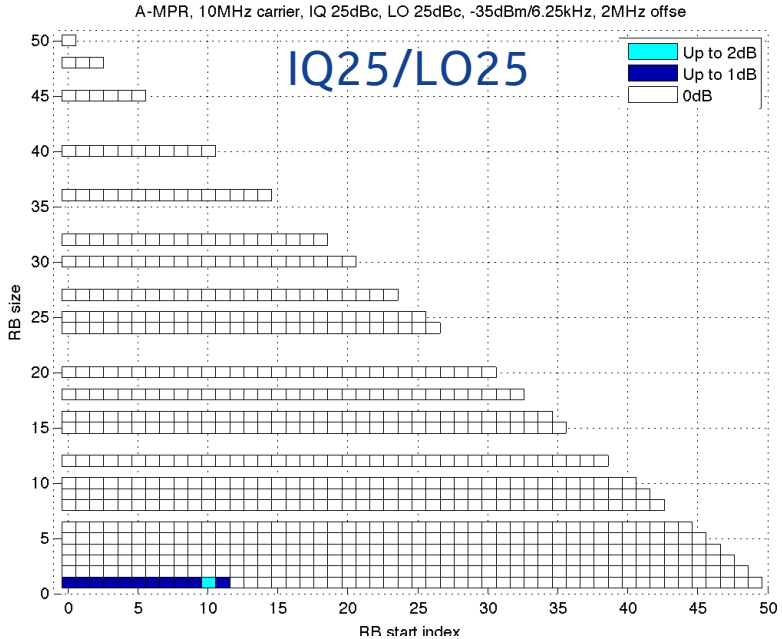
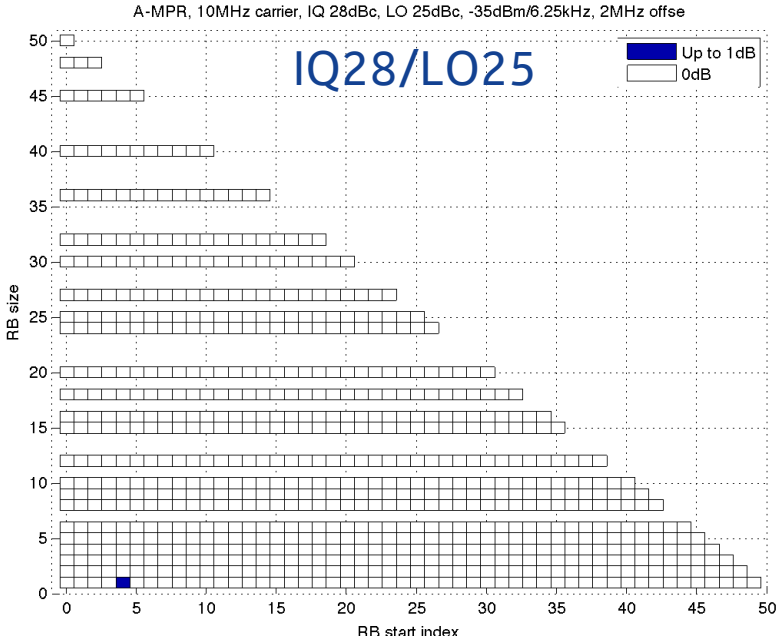
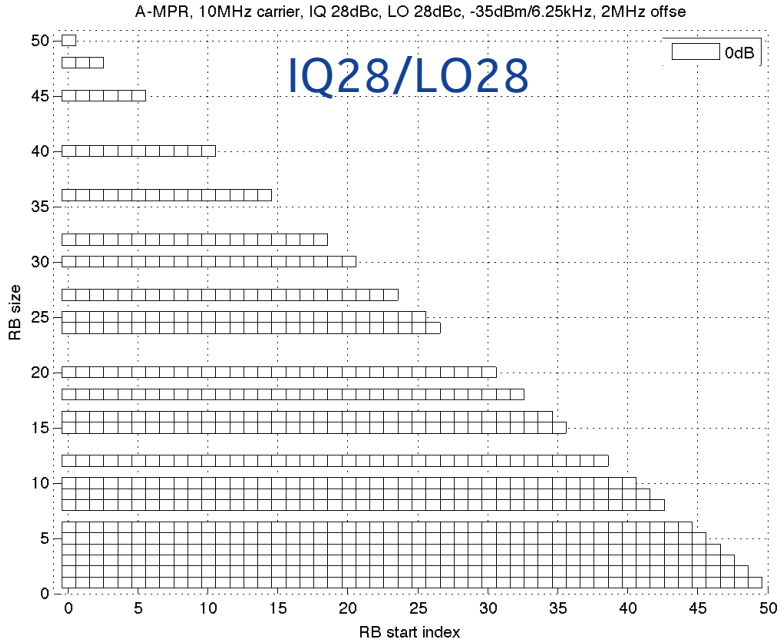
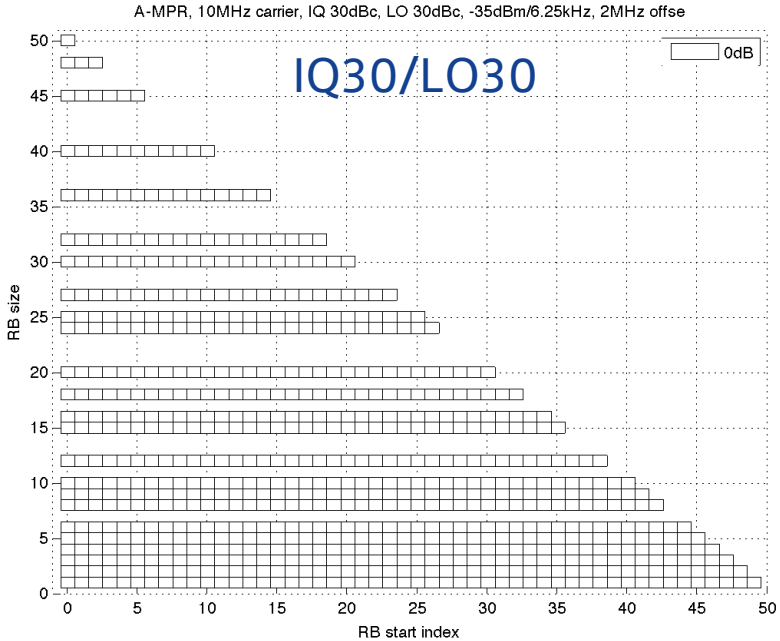
A-MPR, 10MHz carrier –35dBm/6.25kHz, 2MHz offset









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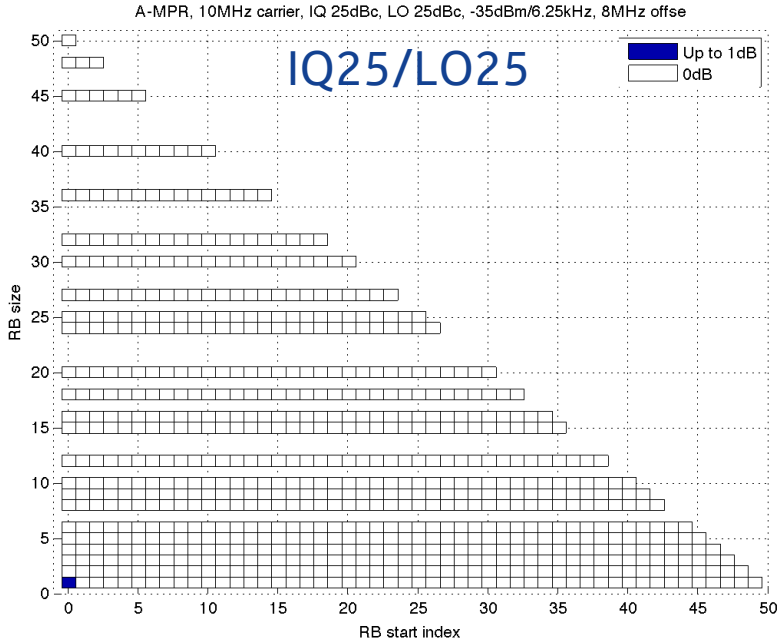
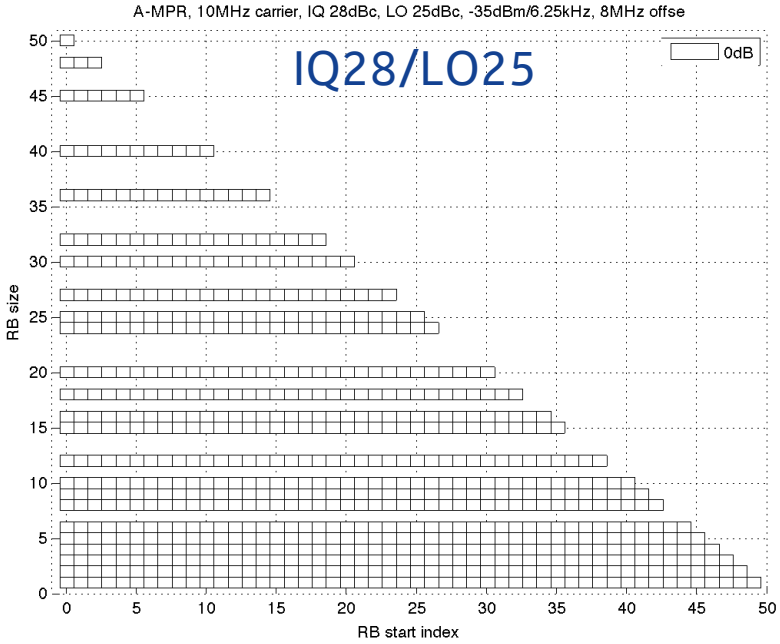
A-MPR, 10MHz carrier –35dBm/6.25kHz, 8MHz offset





IQ28/LO28

No A-MPR required

IQ30/LO30

No A-MPR required

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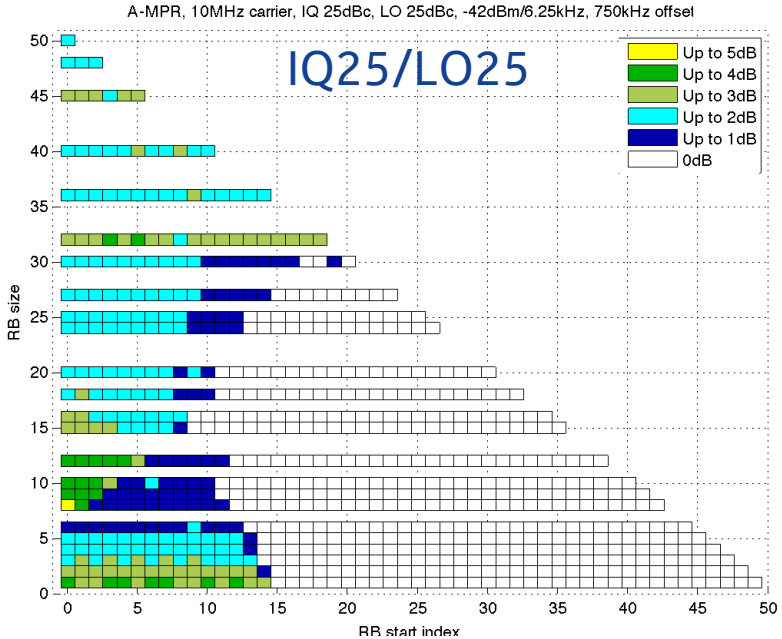
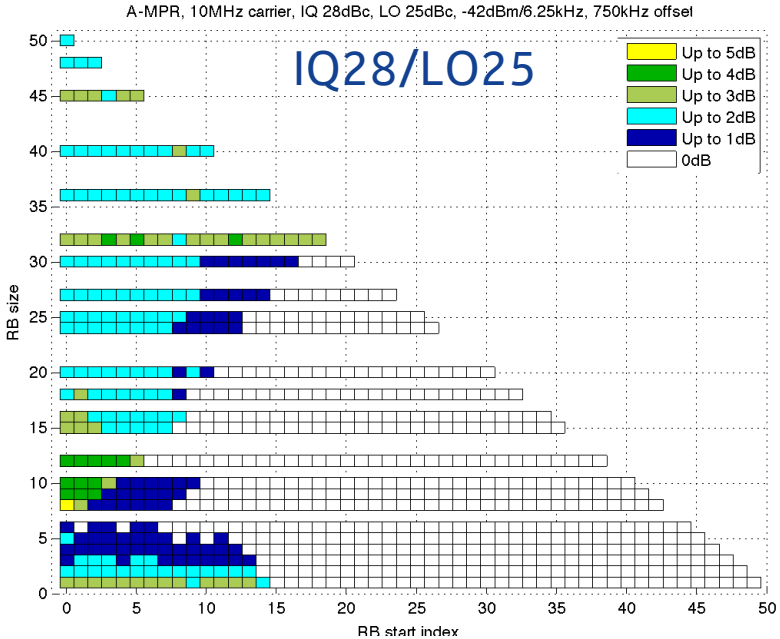
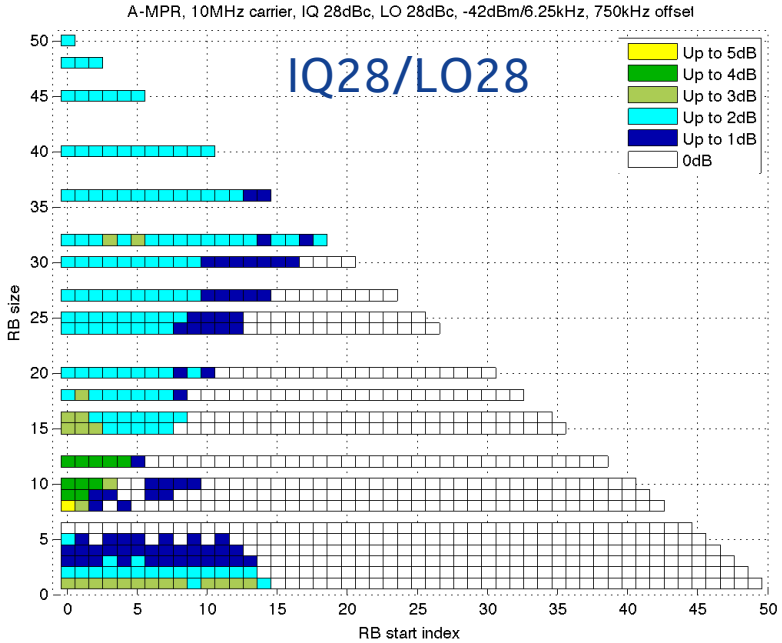
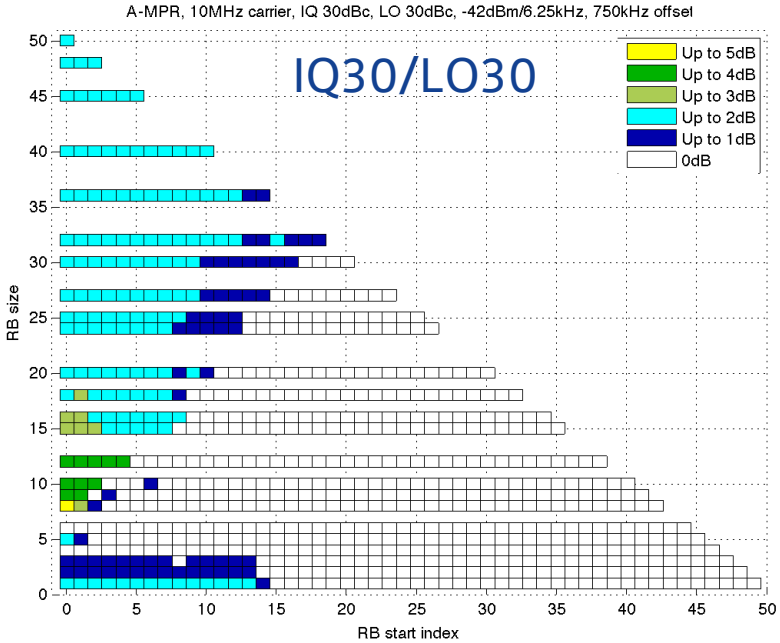
A-MPR, 10MHz carrier –42dBm/6.25kHz, 750kHz offset









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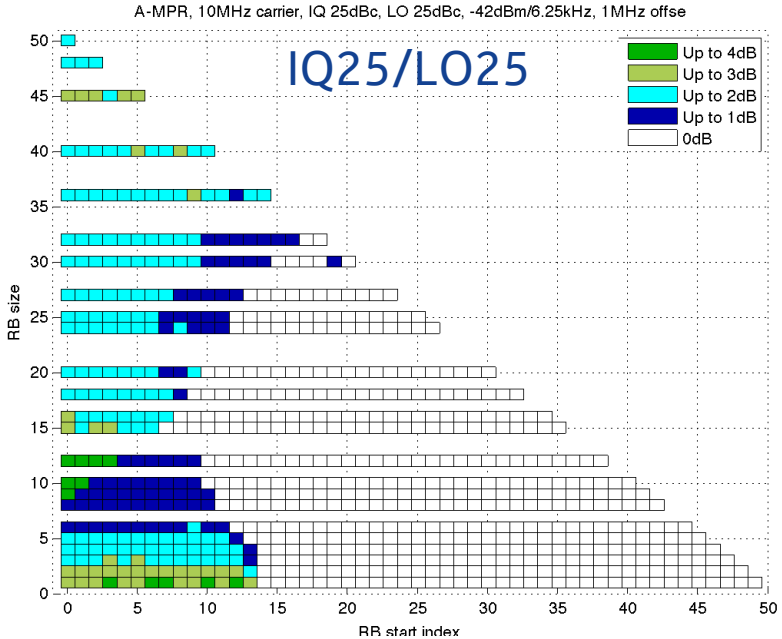
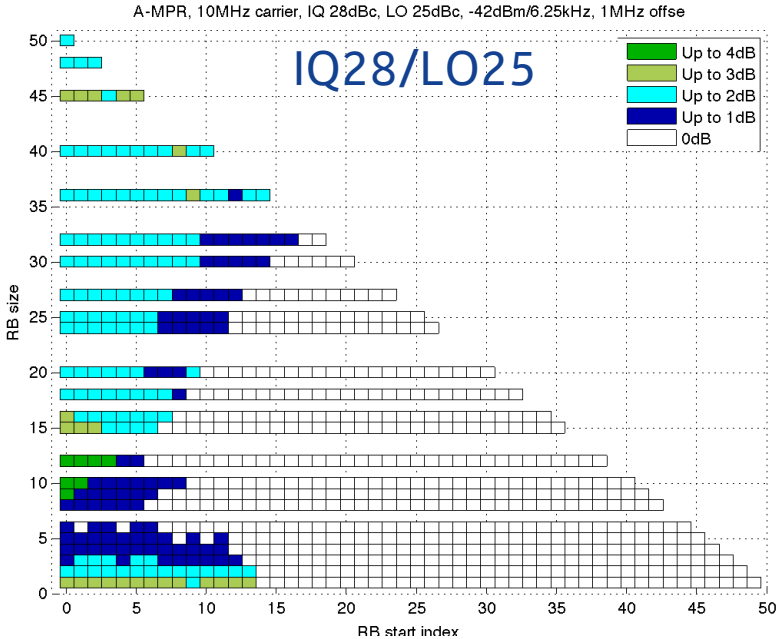
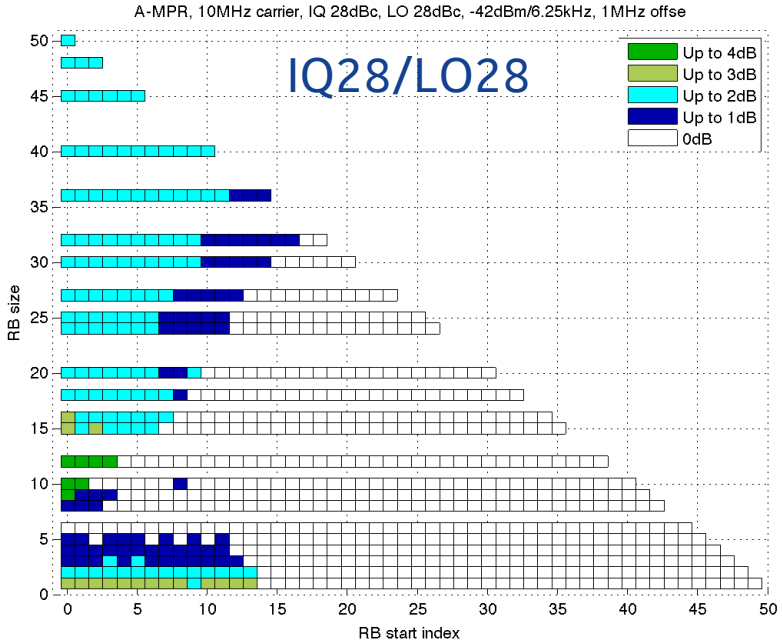
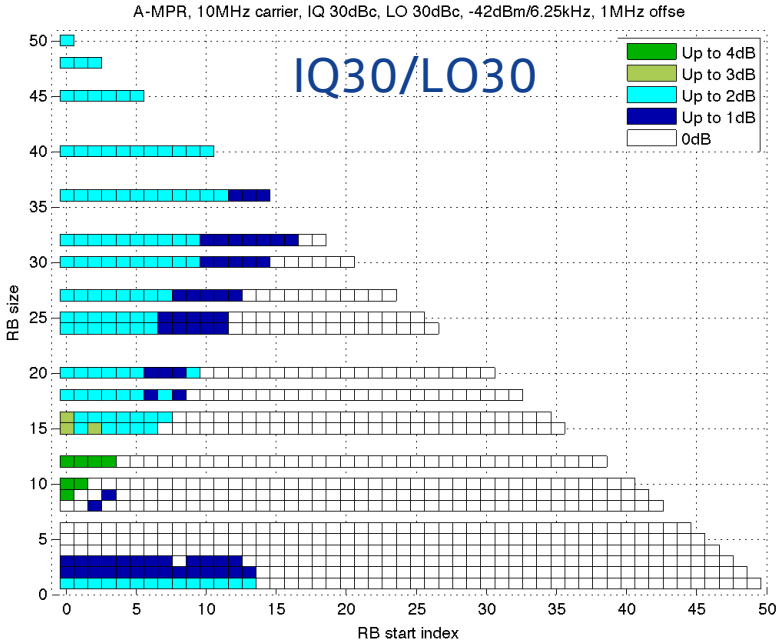
A-MPR, 10MHz carrier –42dBm/6.25kHz, 1MHz offset









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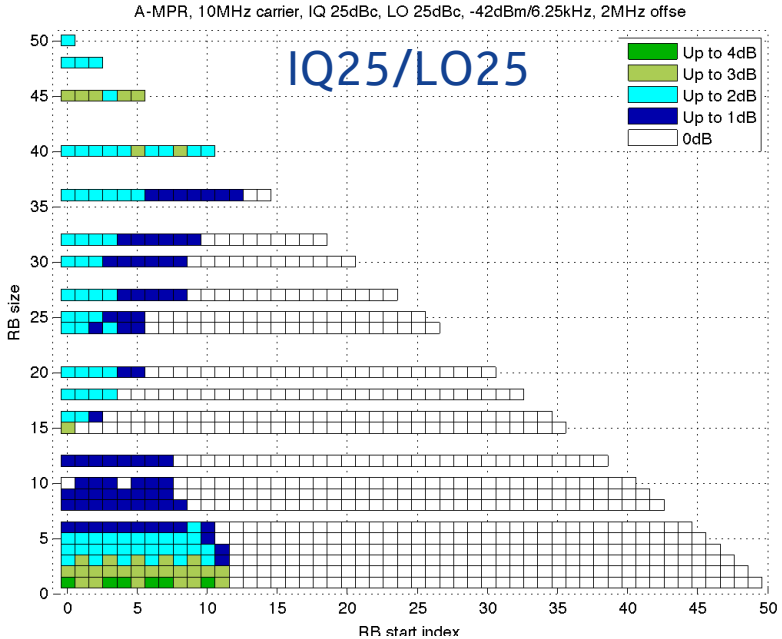
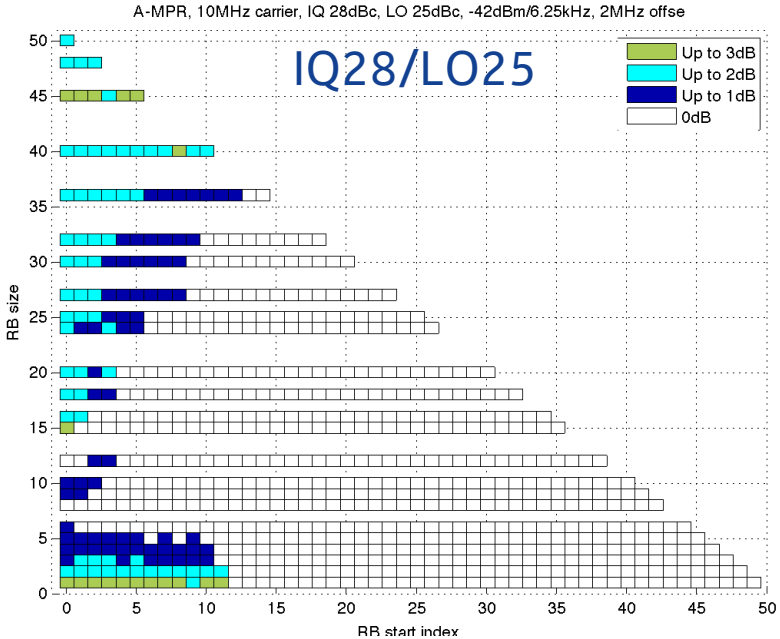
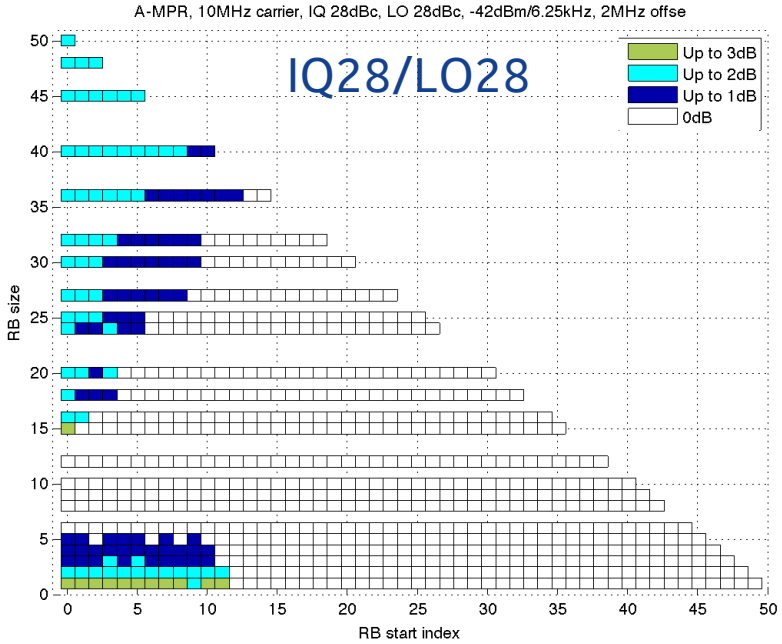
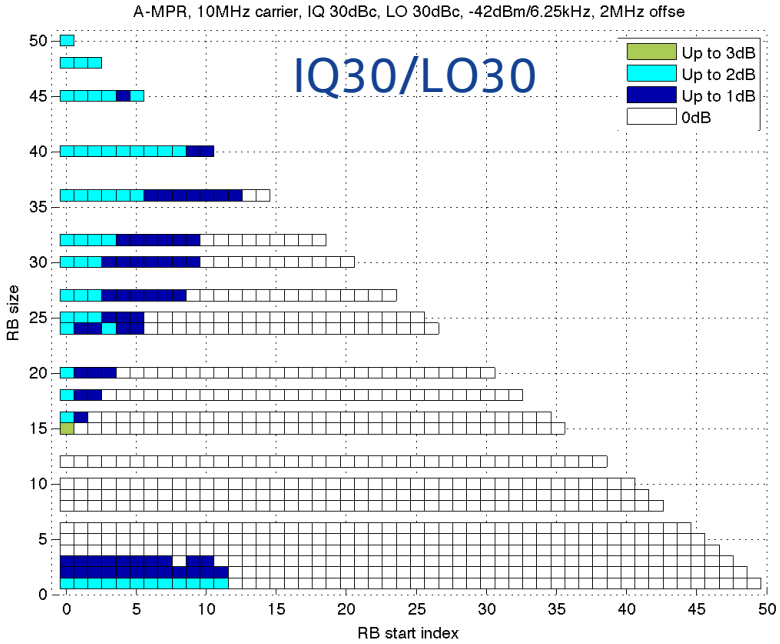
A-MPR, 10MHz carrier –42dBm/6.25kHz, 2MHz offset









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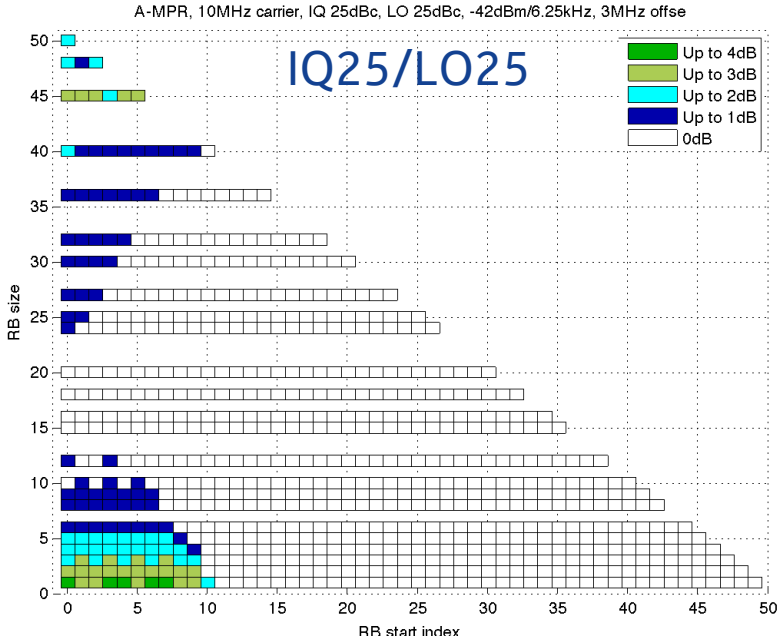
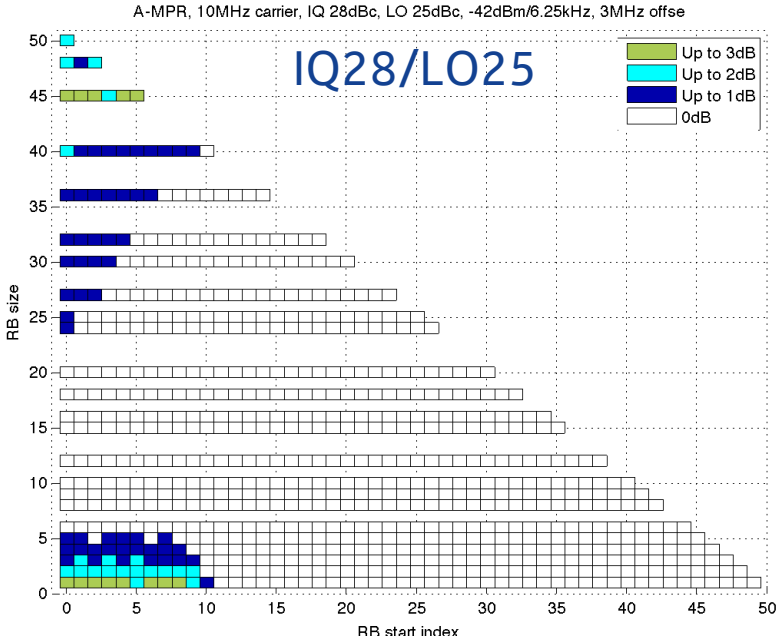
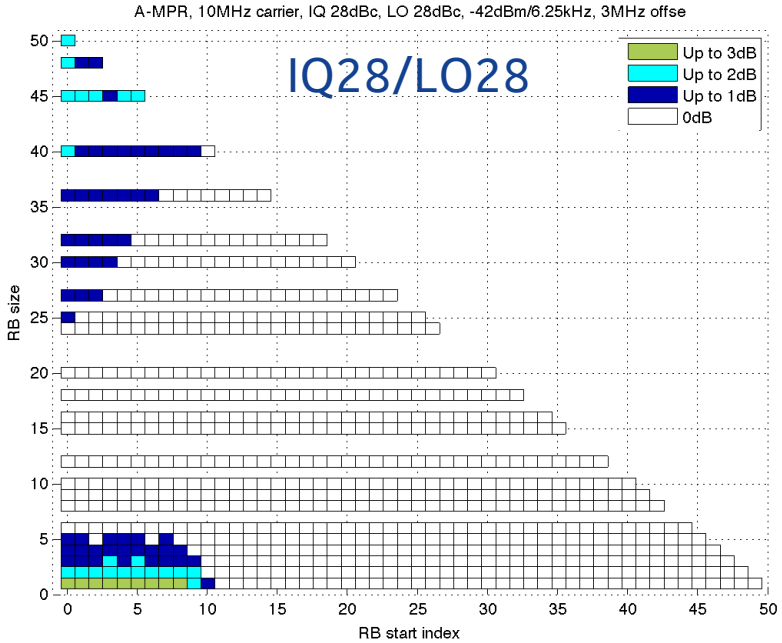
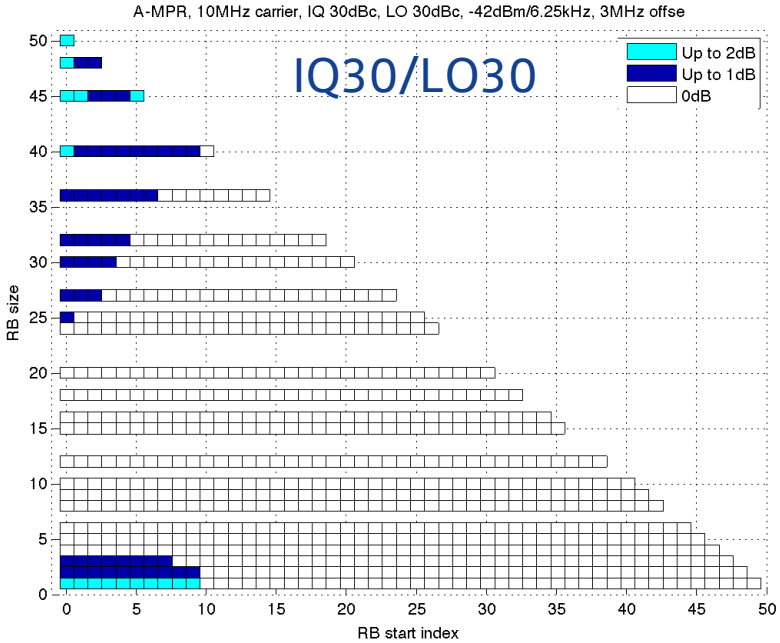
A-MPR, 10MHz carrier –42dBm/6.25kHz, 3MHz offset









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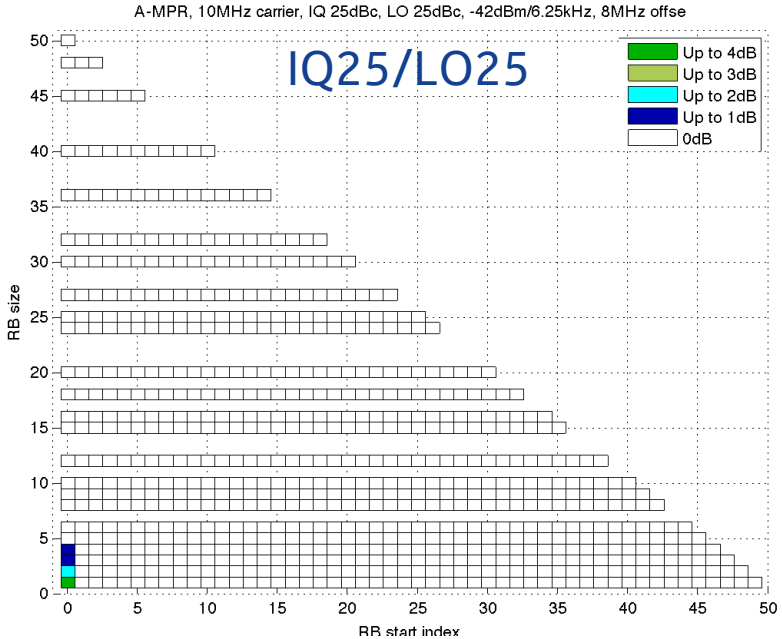
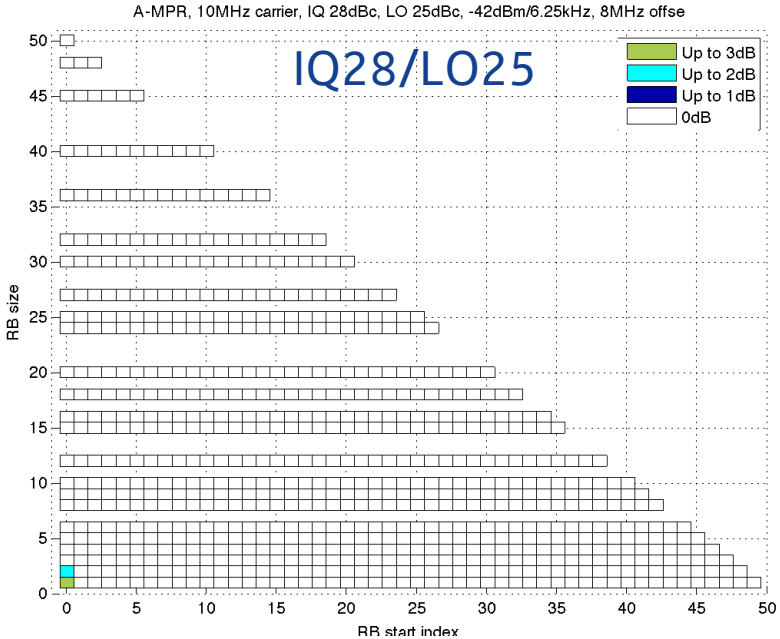
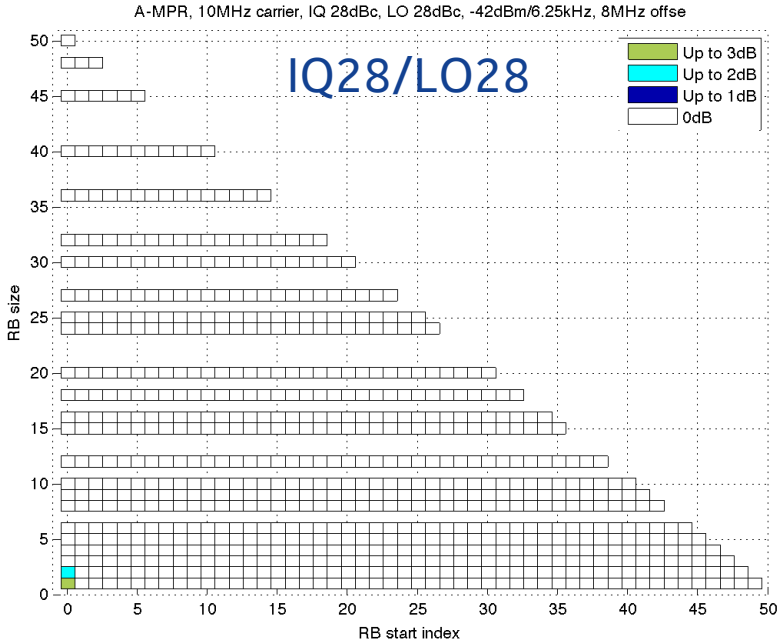
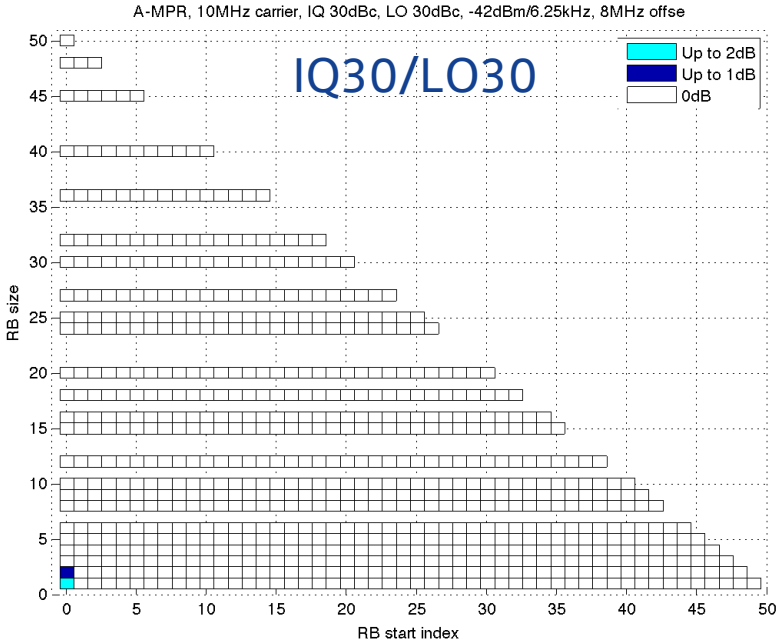
A-MPR, 10MHz carrier –42dBm/6.25kHz, 8MHz offset









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10MHz carrier
Minimum offsets for 0dB A-MPR

Offset (MHz)		Emission mask (dBm/6.25kHz)	
		–42	–35
Modulator IQ and LO suppression (dBc)	25/25	6MHz^{50RB} 8.5MHz^{1RB}	1.5MHz^{12RB} 8.5MHz^{1RB}
	28/25	6MHz^{50RB} 8.5MHz^{1RB}	1.5MHz^{12RB} 4MHz^{1RB}
	28/28	6MHz^{50RB} 8.5MHz^{1RB}	1.5MHz^{12RB} ≤0.75MHz^{1RB}
	30/30	6MHz^{50RB} 8.5MHz^{1RB}	1.5MHz^{12RB} ≤0.75MHz^{1RB}

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15MHz carrier

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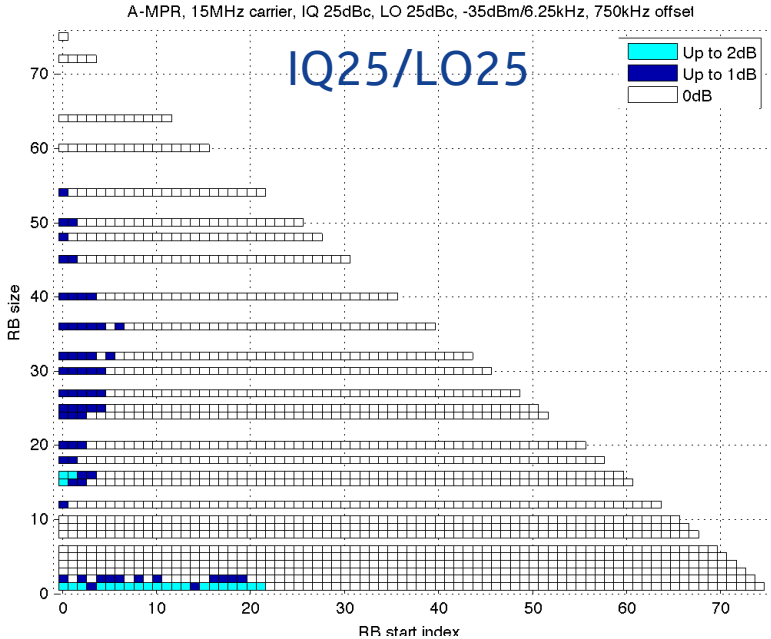
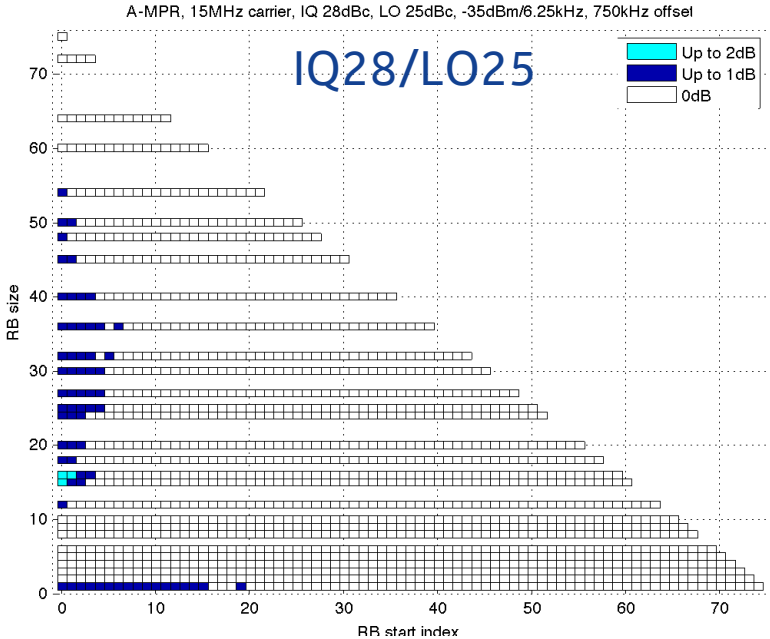
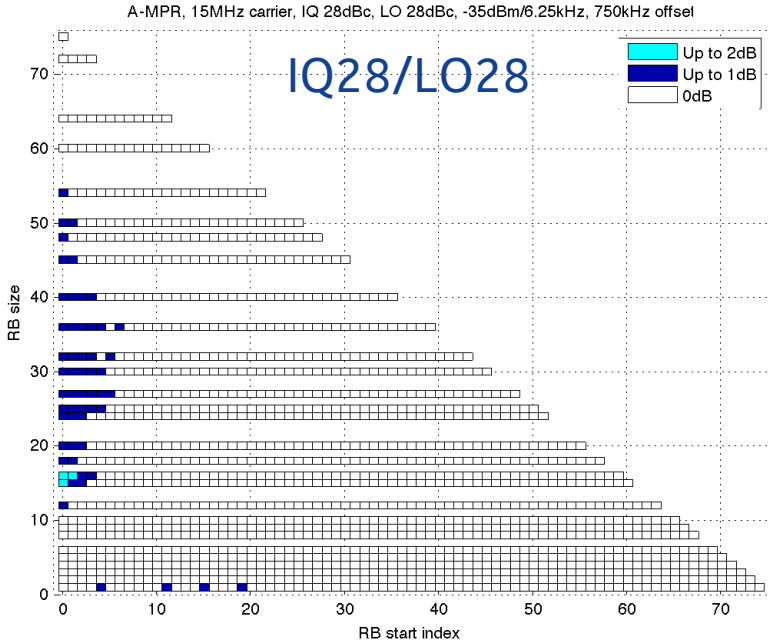
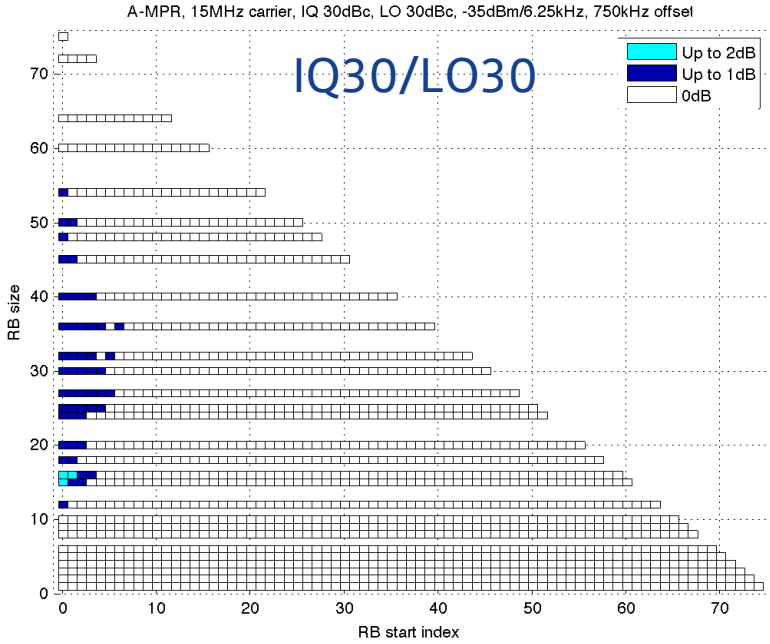
A-MPR, 15MHz carrier –35dBm/6.25kHz, 750kHz offset









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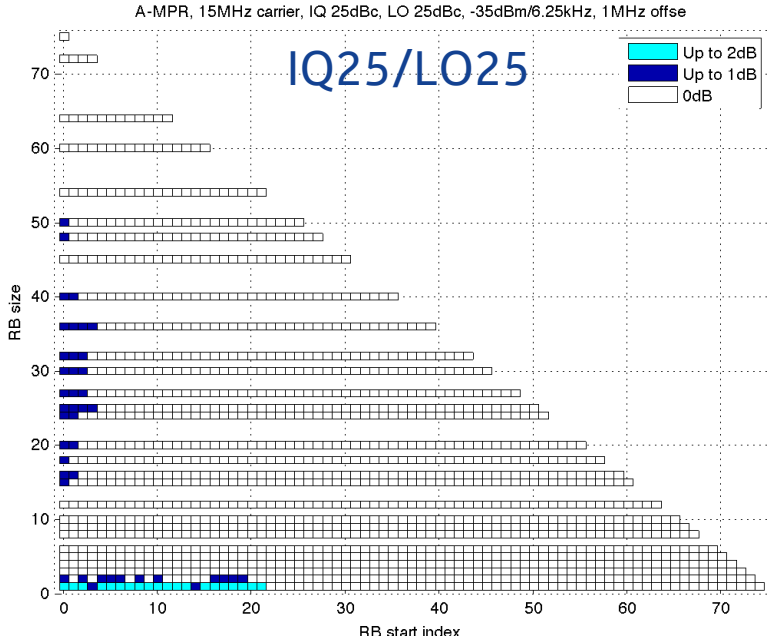
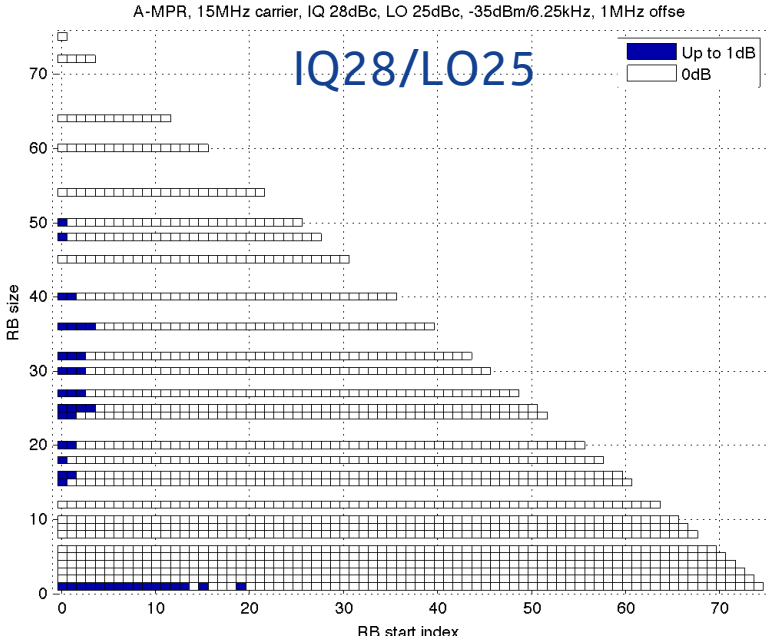
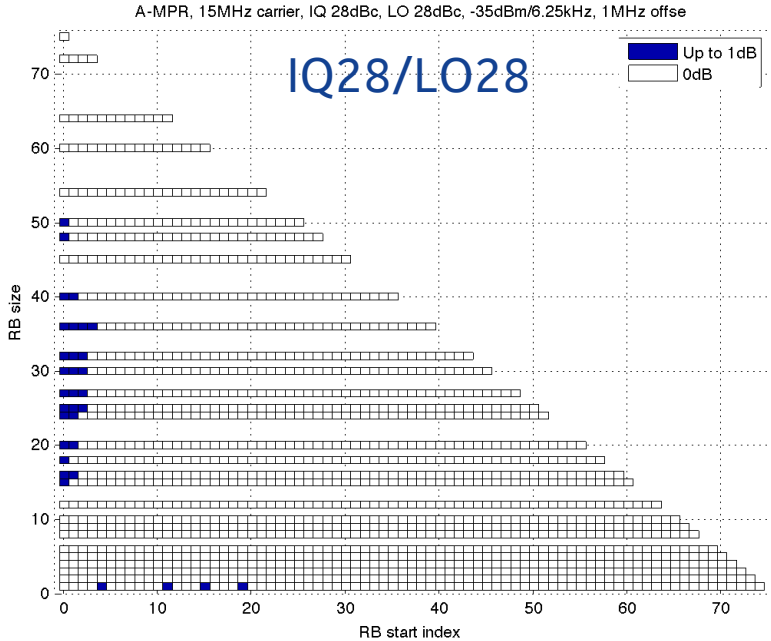
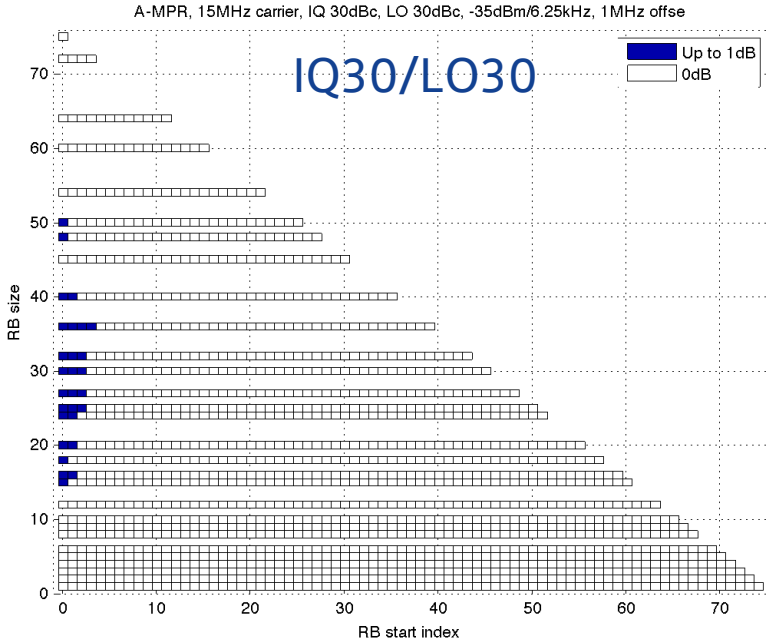
A-MPR, 15MHz carrier –35dBm/6.25kHz, 1MHz offset









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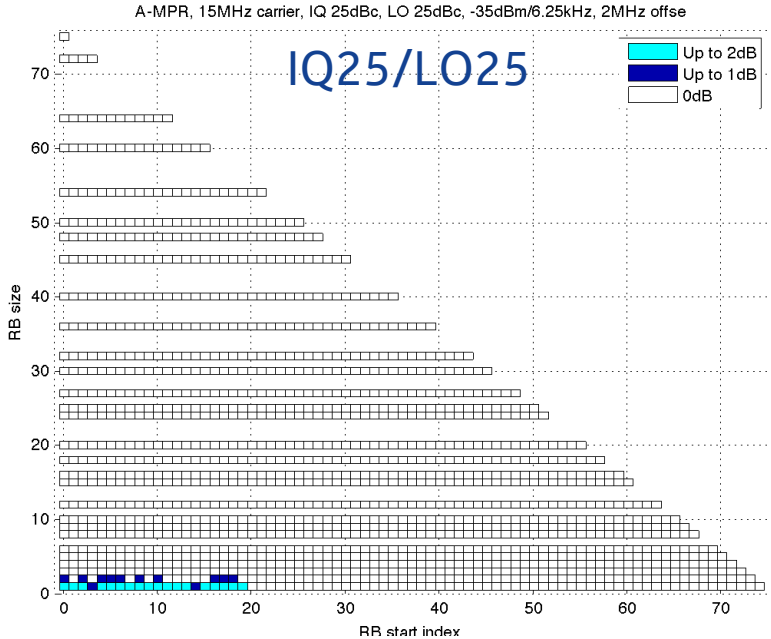
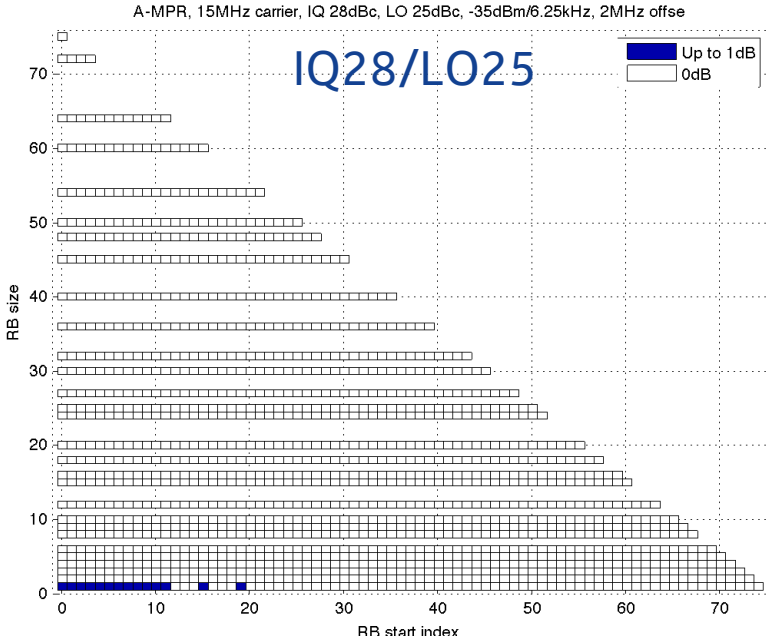
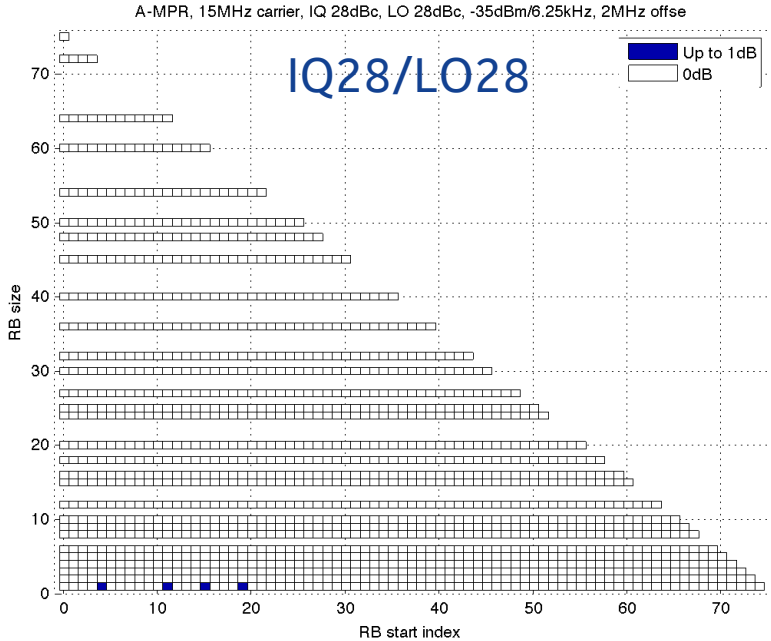
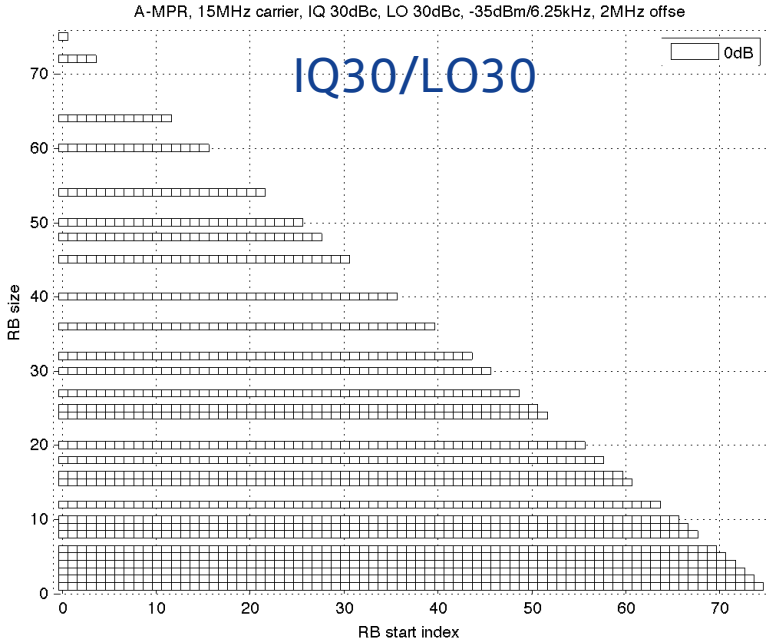
A-MPR, 15MHz carrier –35dBm/6.25kHz, 2MHz offset









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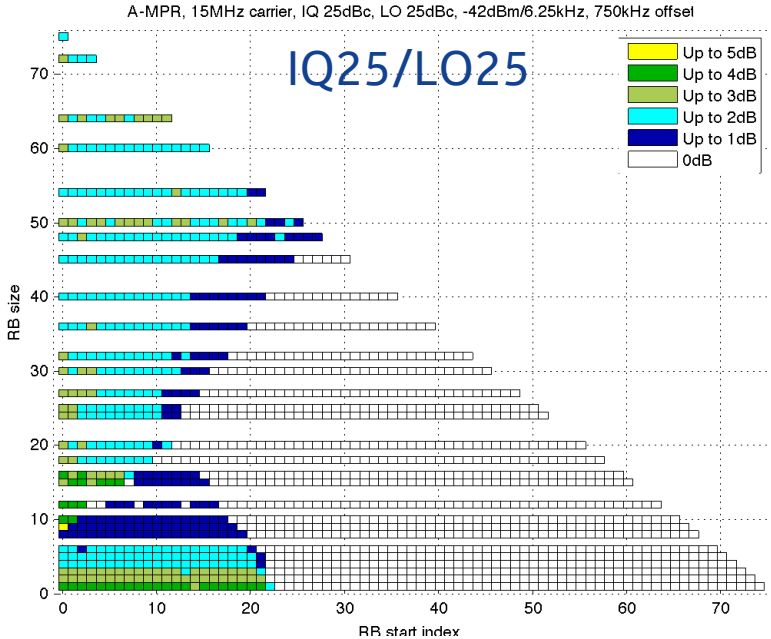
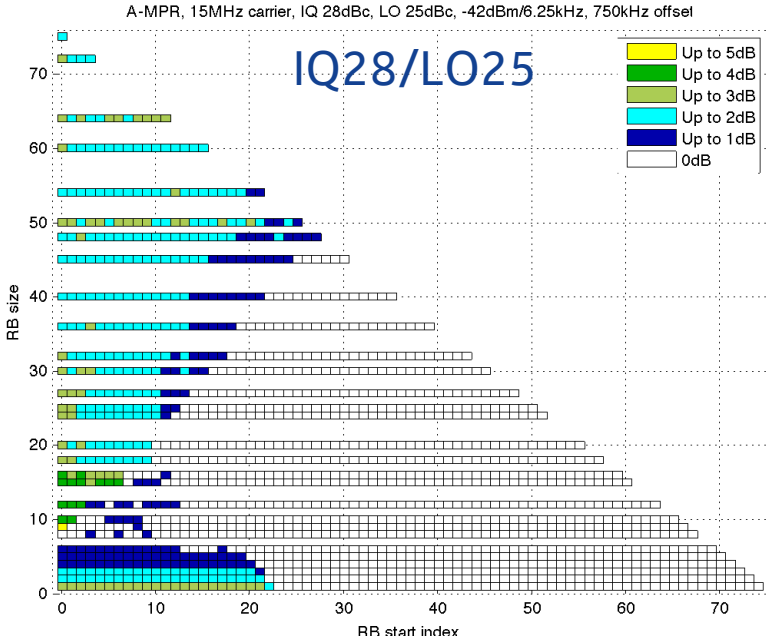
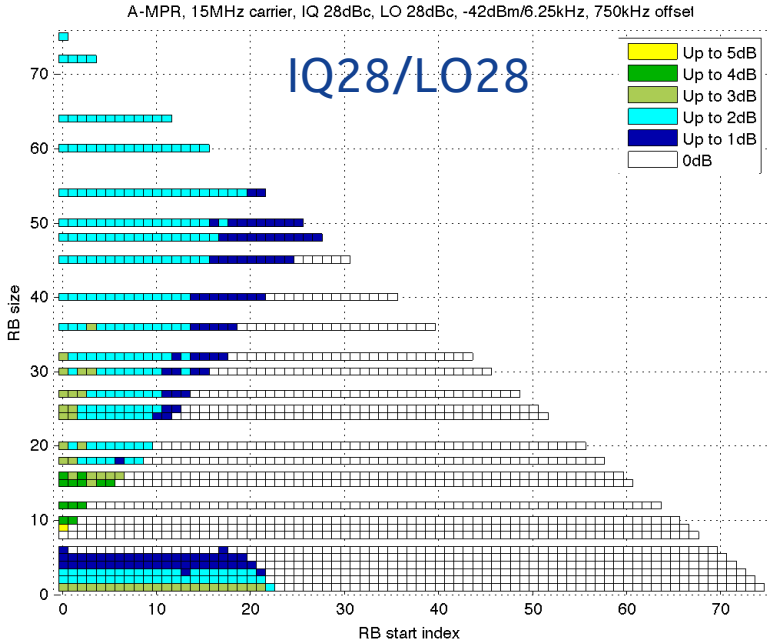
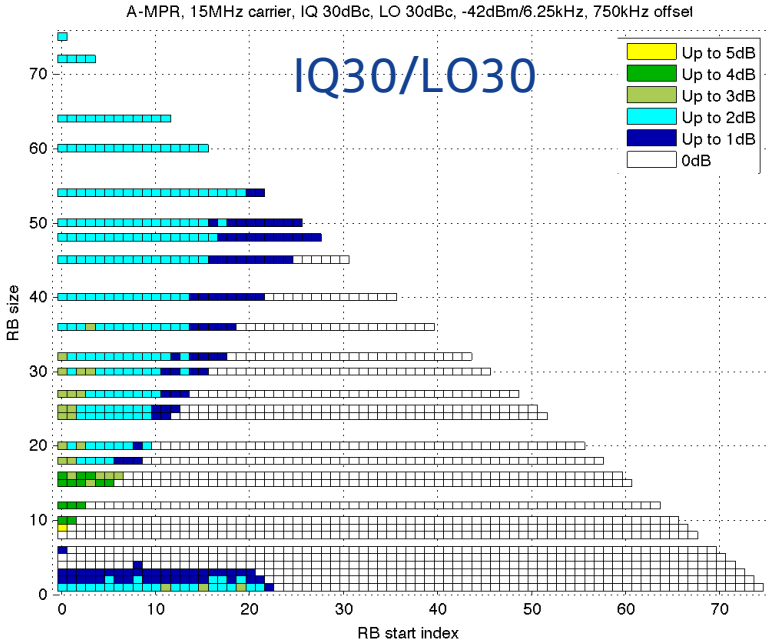
A-MPR, 15MHz carrier –42dBm/6.25kHz, 750kHz offset









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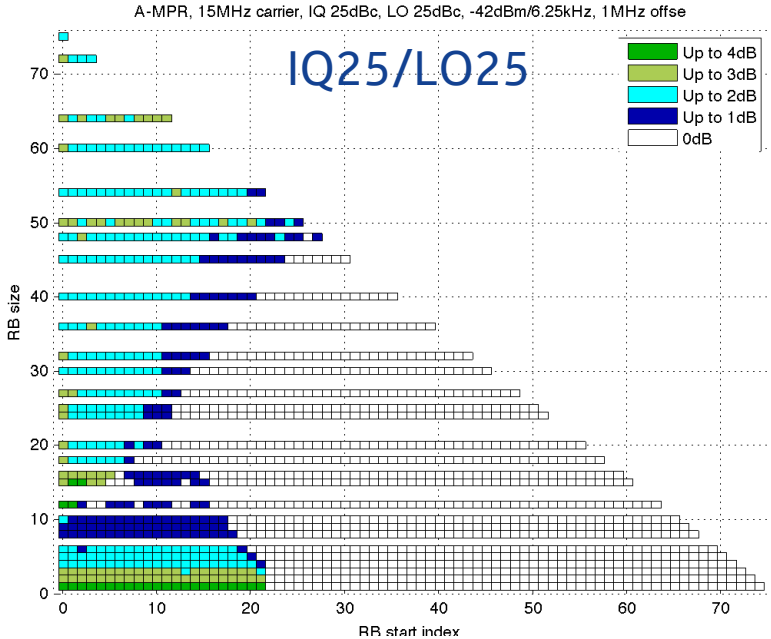
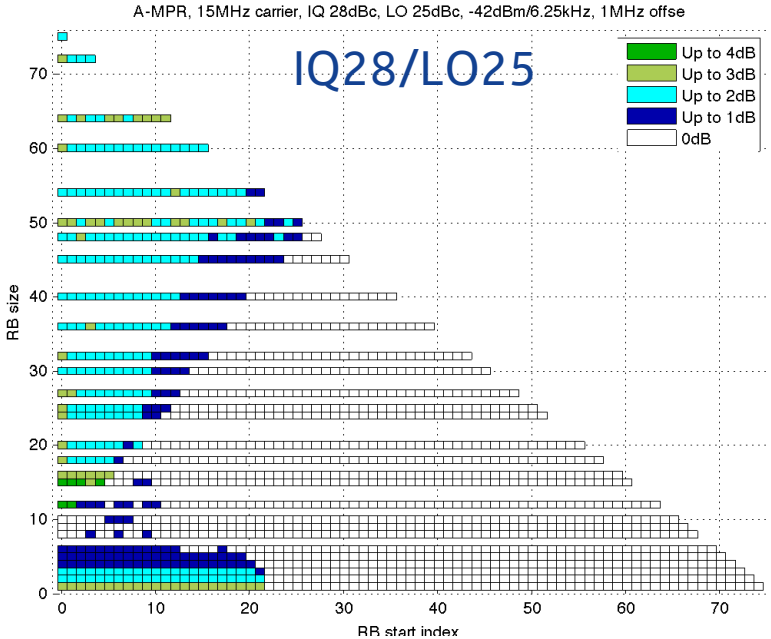
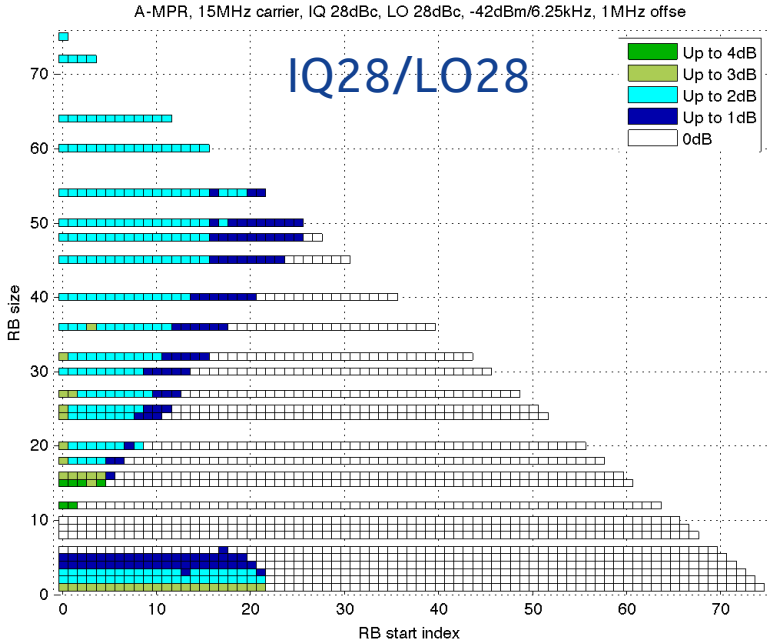
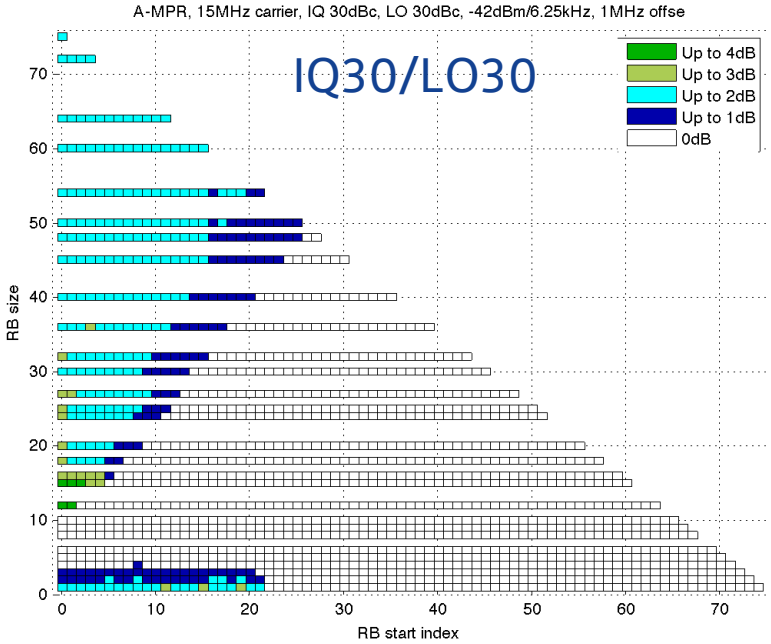
A-MPR, 15MHz carrier –42dBm/6.25kHz, 1MHz offset









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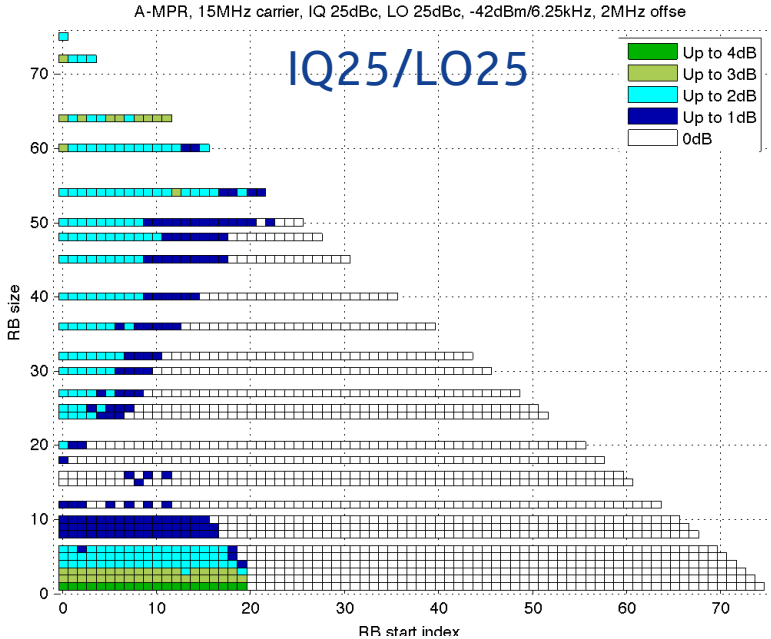
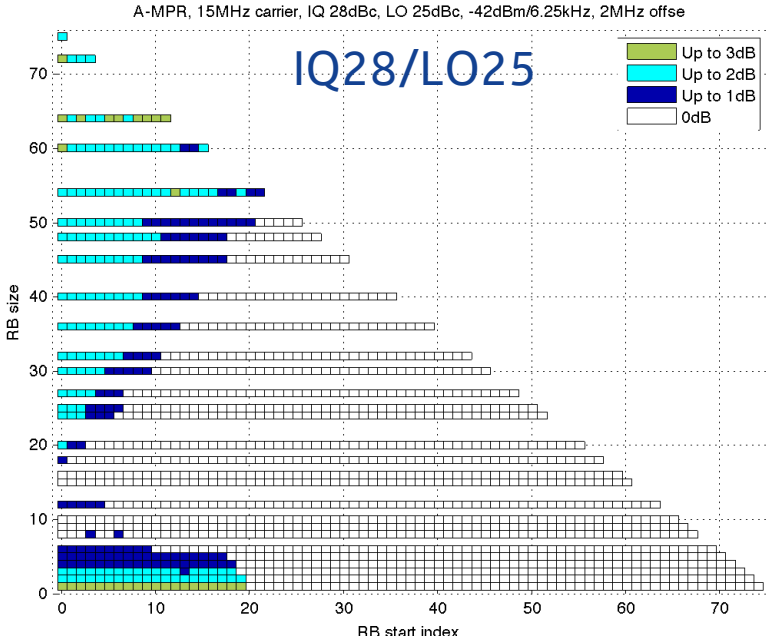
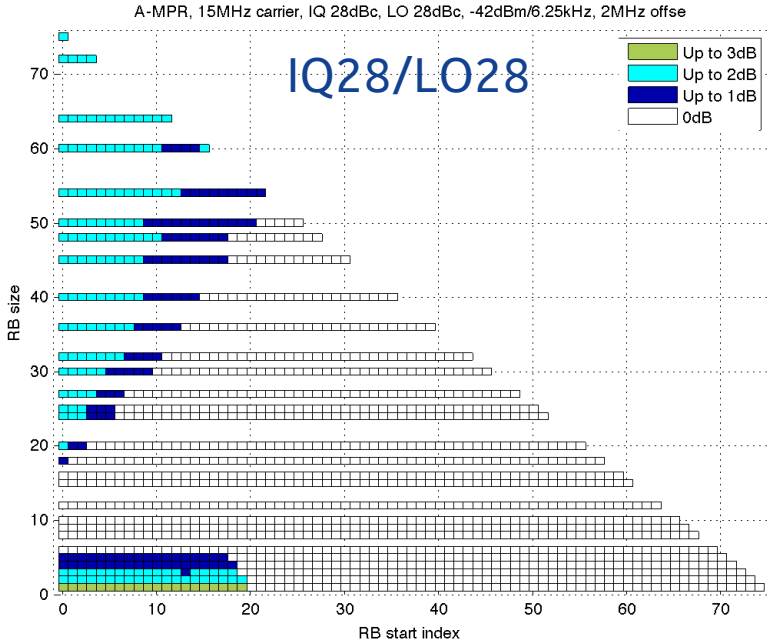
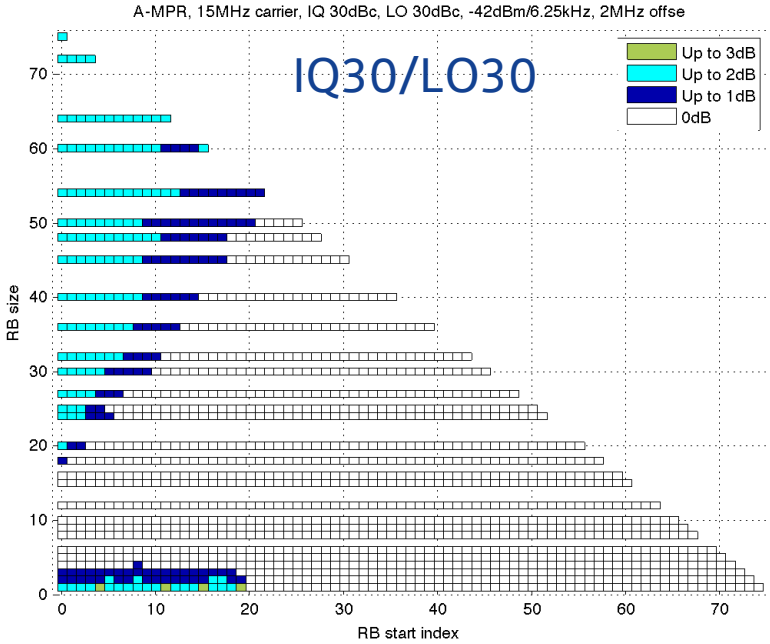
A-MPR, 15MHz carrier –42dBm/6.25kHz, 2MHz offset









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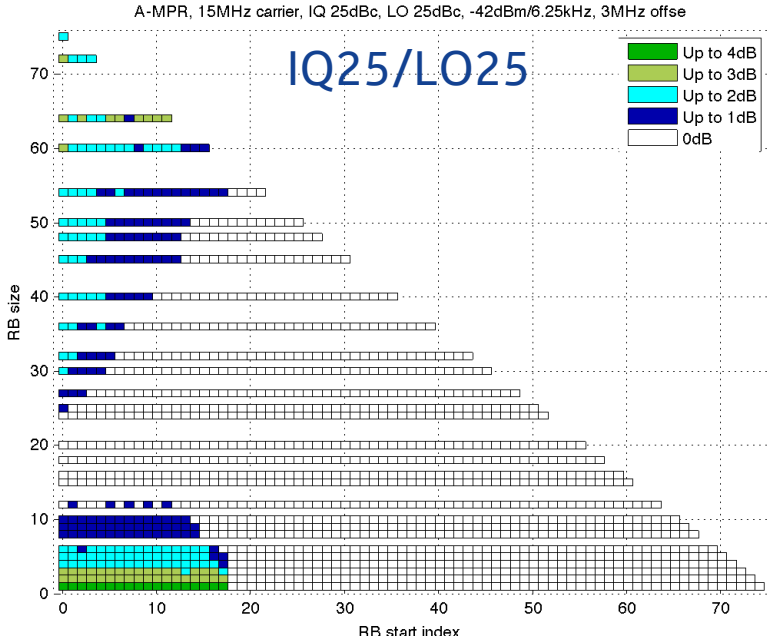
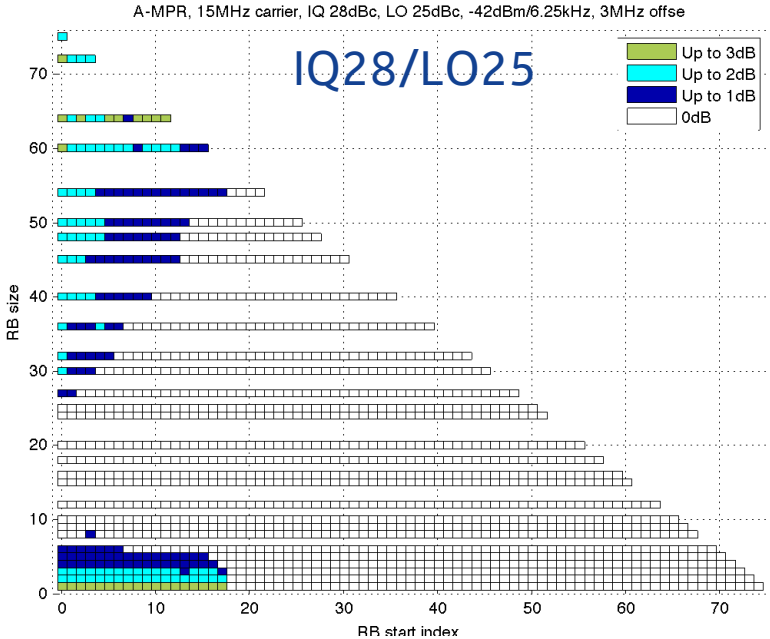
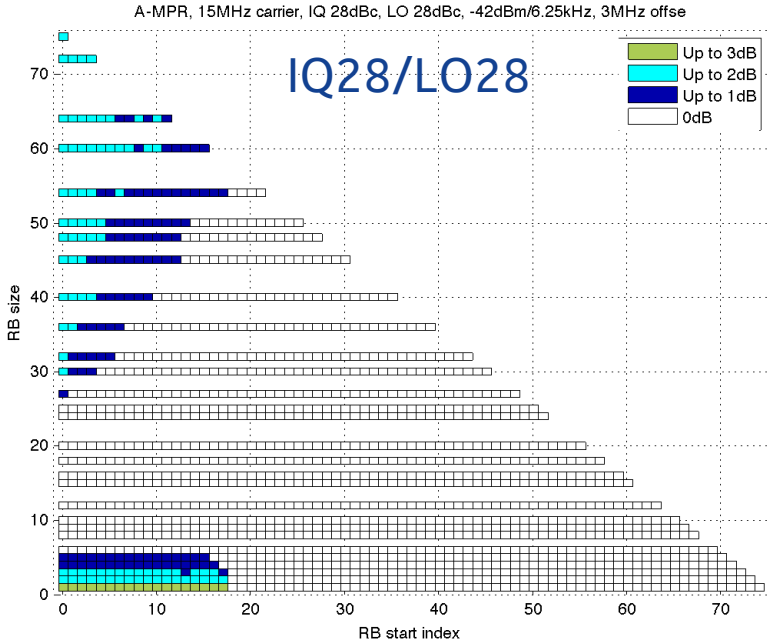
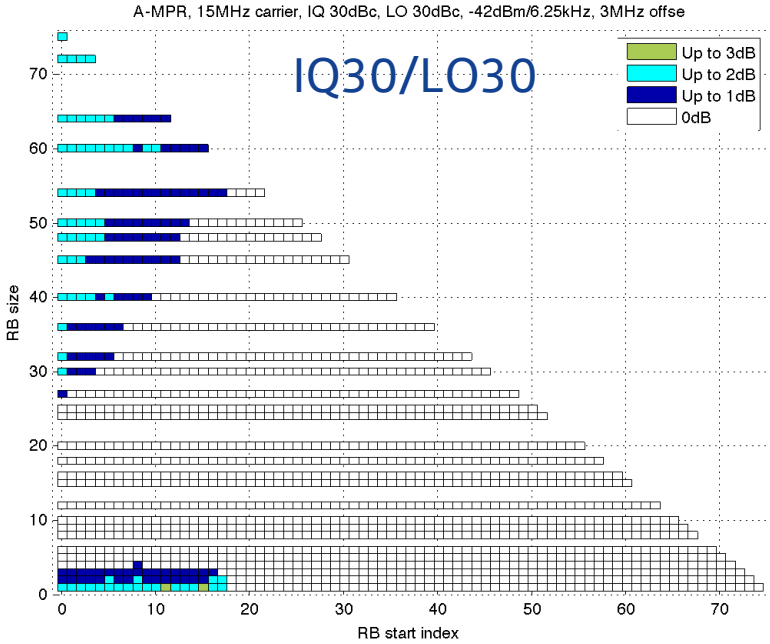
A-MPR, 15MHz carrier –42dBm/6.25kHz, 3MHz offset









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15MHz carrier
Minimum offsets for 0dB A-MPR

Offset (MHz)		Emission mask (dBm/6.25kHz)	
		–42	–35
Modulator IQ and LO suppression (dBc)	25/25	8MHz^{75RB} 13MHz^{1RB}	1.5MHz^{16RB} 13MHz^{1RB}
	28/25	8MHz^{75RB} 13MHz^{1RB}	1.5MHz^{16RB} 13MHz^{1RB}
	28/28	8MHz^{75RB} 13MHz^{1RB}	1.5MHz^{16RB} 13MHz^{1RB}
	30/30	8MHz^{75RB} 13MHz^{1RB}	1.5MHz^{16RB} ≤0.75MHz^{1RB}

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