RTCA Special Committee 209

Working Group #1

Mode S Transponder MOPS Development/Maintenance

Meeting #1

RTCA, Washington DC
3 – 5 April 2007

Honeywell Response to Action Item 6-3
Transponder Reply Rate Capabilities

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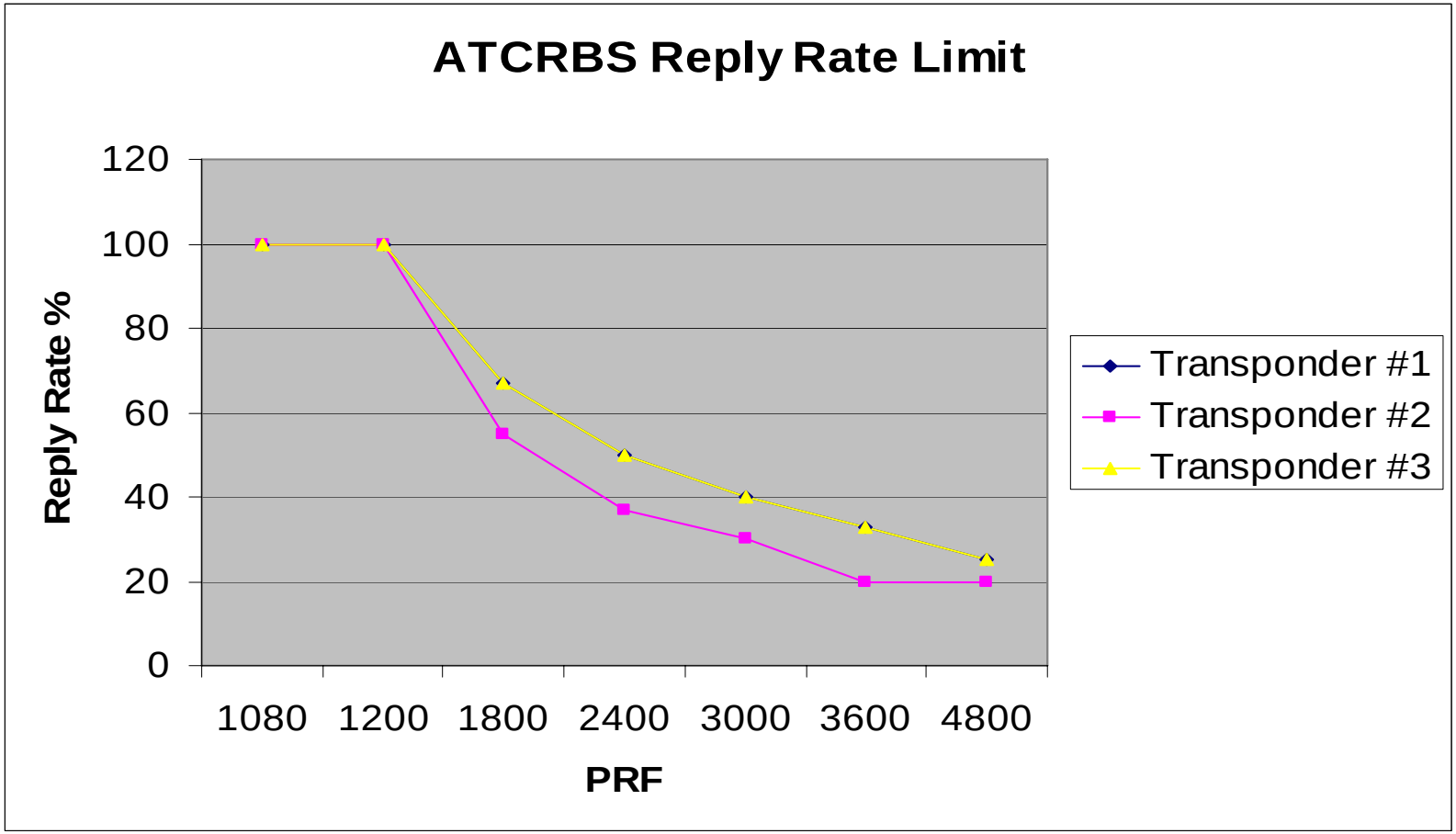
SUMMARY

This Working Paper summarizes the Honeywell response to SC-209 Action Item 6-3 requesting the testing of the company transponders for reply rate capabilities.

Honeywell Transponder ATCRBS Rate Limit

PRF vs. Rate Limit%

Transponder #1			Transponder #2			Transponder #3, #4, #5		
% selected value	PRF	Reply Rate %	% selected value	PRF	Reply Rate %	% selected value	PRF	Reply Rate %
90	1260	100	90	1215	100	90	1080	100
100	**1400**	**100**	**100**	**1350**	**100**	**100**	**1200**	**100**
150	2100	67	150	2025	55	150	1800	67
200	2800	50	200	2700	37	200	2400	50
250	3500	40	250	3375	30	250	3000	40
300	4200	33	300	4075	20	300	3600	33
400	5600	25	400	5400	20	400	4800	25


ATCRBS Reply Rate Limit
Reply Rate %
120
100
80
60
40
20
0
1080
1200
1800
2400
3000
3600
4800
PRF
Transponder #1
Transponder #2
Transponder #3

Honeywell Transponder ATCRBS Rate Limit

- Honeywell transponders do not reduce sensitivity when 90% of the selected value is exceeded.
- When PRF is increased beyond the selected value (e.g., 1200), it servos sensitivity until actual reply equals the selected value.
- A reduction of sensitivity by about 10 dB allows the transponders to throw away excess interrogations and generate uniform replies.

Honeywell Transponder ATCRBS Rate Limit

- Honeywell transponders DO NOT meet the requirement of 30 dB sensitivity reduction when reply rate exceeds 150% of the selected value.
- Testing of 30 dB sensitivity reduction would be difficult with the test equipments available today.