

# Satellite simulator questionnaire

- A satellite simulator questionnaire was sent out to European, North American and Asian stations on November 30, 2006
- Reasons for questionnaire:
  - Coordinated satellite simulator measurements to prevent “unknown” signals on transponders and to make more effective use of satellite simulator measurements
- Answers from 7 stations: NIST, USNO, PTB, OP, VSL, TL and SP



## Questions asked

1. Station id?
2. Do you have a SATSIM? If Yes, what type?
3. How do you presently use it?
  - What kind of delay measurements are you performing, and
  - during which epochs?
  - Please be as detailed as possible!
4. Any general comments on coordinated SATSIM-measurements?



# Answers

Station	Type of simulator	Measurements	Comments
OP	Own design developed at LNE-SYRTE	The differential delay 0.5(Tx-Rx) is measured 12 times/day during 6 minutes each time between OH:30:00 to OH:35:59	-
PTB	None	-	Suggests 3 minutes slots per configuration, i.e.6 measurement will occupy 18 minutes during odd hours
VSL	Own design developed at VSL	6 measurements (30s) at OH:09: 90 seconds using code 2 and 90 seconds clean carrier, Rx-Tx during EH:00 and EH:30	-
SP	Timetech SATSIM	The differential delay I measured 12 times/day using 6 configurations, each 5 minutes long during odd hours from OH:30:00 to OH:59:59	-
USNO	2 Ku-band Timetech	Not started	-
NIST	None	-	-
TL	Timetech SATSIM	Occasionally, currently no measurements on SATRE equipment	-

## How do we proceed? Discussion ! Suggestions ?

- Dirk Piester (PTB) suggests a 3-minute slot / configuration during the odd hours. The six measurements will occupy 18 minutes. Keep measurement time for SATSIM down.
- VSL measures Rx-Tx and Rx-path during EH00-EH:01(06) and EH30-EH:31(36) , i.e. during the regular schedule. Use of CC for SATSIM measurements.
- Not all stations measure all configurations each measurement epoch, but this suggestion will identify a specific time slot for a specific configuration -> We know what kind of signals that are or could be in the air.
- Does each measurement configuration need the same integration time?
- Change of the observation schedule can open up space for SATSIM. Are CC sessions (120s) still needed ?



First hhmmss UTC	Last hhmmss UTC	Action	Length s	OP		NPL		VSL		SP		PTB		OCA		IEN		ROA		TUG		CH		IPQ		L11		NIST		USNO			
				TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX
				a	b	c	d	e	f	i	k	m	n	p	q	g	h																
				EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR		
0:00:00	0:00:59	Prep.time	60	CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC			
0:01:00	0:02:59	CC	120	CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC			
0:03:00	0:03:59	Prep.time	60	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	6	6	7	7		
0:04:00	0:05:59	CAL	120	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	6	6	7	7		
0:06:00	0:06:59	Prep.time	60	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	6	6	7	7		
0:07:00	0:08:59	Ranging	120	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	6	6	7	7		
		U/D link		EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR		
0:09:00	0:09:59	Prep.time	60	0	1	1	0	2	3	3	2	4	5	5	4	6	7	7	6	8	9	9	8	10	11	11	10	6	7	7	6		
0:10:00	0:11:59	Measure	120	0	1	1	0	2	3	3	2	4	5	5	4	6	7	7	6	8	9	9	8	10	11	11	10	6	7	7	6		
0:12:00	0:12:59	Prep.time	60	0	2	1	3	2	0	3	1	4	6	5	7	6	4	7	5	8	10	9	11	10	8	11	9	6		7			
0:13:00	0:14:59	Measure	120	0	2	1	3	2	0	3	1	4	6	5	7	6	4	7	5	8	10	9	11	10	8	11	9	6		7			
0:15:00	0:15:59	Prep.time	60	0	3	1	2	2	1	3	0	4	7	5	6	6	5	7	4	8	11	9	10	10	9	11	8	6		7			
0:16:00	0:17:59	Measure	120	0	3	1	2	2	1	3	0	4	7	5	6	6	5	7	4	8	11	9	10	10	9	11	8	6		7			
		U/D link		EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	
0:18:00	0:18:59	Prep.time	60	0	4	1	5	2	6	3	7	4	0	5	1	6	2	7	3	0		1		2	6	3	7	6	2	7	3		
0:19:00	0:20:59	Measure	120	0	4	1	5	2	6	3	7	4	0	5	1	6	2	7	3	0		1		2	6	3	7	6	2	7	3		
0:21:00	0:21:59	Prep.time	60	0	5	1	4	2	7	3	6	4	1	5	0	6	3	7	2	0		1		2	7	3	6	6	3	7	2		
0:22:00	0:23:59	Measure	120	0	5	1	4	2	7	3	6	4	1	5	0	6	3	7	2	0		1		2	7	3	6	6	3	7	2		
0:24:00	0:24:59	Prep.time	60	0	6	1	7	2	4	3	5	4	2	5	3	6	0	7	1	0	6	1	7	2	3		6	0	7	1			
0:25:00	0:26:59	Measure	120	0	6	1	7	2	4	3	5	4	2	5	3	6	0	7	1	0	6	1	7	2	3		6	0	7	1			
0:27:00	0:27:59	Prep.time	60	0	7	1	6	2	5	3	4	4	3	5	2	6	1	7	0	0	7	1	6	2	3		6	1	7	0			
0:28:00	0:29:59	Measure	120	0	7	1	6	2	5	3	4	4	3	5	2	6	1	7	0	0	7	1	6	2	3		6	1	7	0			
		U/D link		TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA		
0:30:00	0:30:59	Prep.time	60	CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC			
0:31:00	0:32:59	CC	120	CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC		CC			
		U/D link		TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR		
0:33:00	0:33:59	Prep.time	60	0	7	1		2		3	6	4	0	5	3	6	2	7	1	0	4	1	7	2	6	3	5	6	3	7	0		
0:34:00	0:35:59	Measure	120	0	7	1		2		3	6	4	0	5	3	6	2	7	1	0	4	1	7	2	6	3	5	6	3	7	0		
0:36:00	0:36:59	Prep.time	60	0	6	1	7	2		3	6	4	1	5	0	6	3	7	2	0	5	1	4	2	7	3	6	6	0	7	1		
0:37:00	0:38:59	Measure	120	0	6	1	7	2		3	6	4	1	5	0	6	3	7	2	0	5	1	4	2	7	3	6	6	0	7	1		
0:39:00	0:39:59	Prep.time	60	0		1	6	2	7	3		4	2	5	1	6	0	7	3	0	6	1	5	2	4	3	7	6	1	7	2		
0:40:00	0:41:59	Measure	120	0		1	6	2	7	3		4	2	5	1	6	0	7	3	0	6	1	5	2	4	3	7	6	1	7	2		
0:42:00	0:42:59	Prep.time	60	0		1		2	6	3	7	4	3	5	2	6	1	7	0	0	7	1	6	2	5	3	4	6	2	7	3		
0:43:00	0:44:59	Measure	120	0		1		2	6	3	7	4	3	5	2	6	1	7	0	0	7	1	6	2	5	3	4	6	2	7	3		
		U/D link		EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	TRA	TRA	TRA	TRA	TRA	TRA	TRA	TRA	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR		
0:45:00	0:45:59	Prep.time	60	0	4	1	7	2	6	3	5	4	7	5	6	6		7		4	0	5	3	6	2	7	1	6	5	7	4		
0:46:00	0:47:59	Measure	120	0	4	1	7	2	6	3	5	4	7	5	6	6		7		4	0	5	3	6	2	7	1	6	5	7	4		
0:48:00	0:48:59	Prep.time	60	0	5	1	4	2	7	3	6	4	6	5	7	6		7		4	1	5	0	6	3	7	2	6	4	7	5		
0:49:00	0:50:59	Measure	120	0	5	1	4	2	7	3	6	4	6	5	7	6		7		4	1	5	0	6	3	7	2	6	4	7	5		
0:51:00	0:51:59	Prep.time	60	0	6	1	5	2	4	3	7	4		5		6	6	7	7	4	2	5	1	6	0	7	3	6	6	7	7		
0:52:00	0:53:59	Measure	120	0	6	1	5	2	4	3	7	4		5		6	6	7	7	4	2	5	1	6	0	7	3	6	6	7	7		
0:54:00	0:54:59	Prep.time	60	0	7	1	6	2	5	3	4	4		5		6	7	7	6	4	3	5	2	6	1	7	0	6	7	7	6		
0:55:00	0:56:59	Measure	120	0	7	1	6	2	5	3	4	4		5		6	7	7	6	4	3	5	2	6	1	7	0	6	7	7	6		
		U/D link		EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	
0:57:00	0:57:59	Prep.time	60	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	6	6	7	7		
0:58:00	0:59:59	CAL	120	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	6	6	7	7		

TWSTFTschedule.htm



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