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**Title:** Addendum to COMSAT Experiments 4&5 Report:  
Results for second realization of Experiment 4A

**Source\*:** COMSAT Laboratories

## Summary

This document contains the data for a rerun of Experiment 4A for the Spanish language using a corrected version of the presentation sequences in Annex F.4 of the SMG11 "Test Plan for the AMR Specification for the AMR-NS Selection Phase" (Tdoc 288/99). For other information, please see Tdoc SMG11/S4 421/99.

## Comments on results

Table 4(c) is a new table with the condition number-ordered data. Table 5(a) contains a revised version of the one in Tdoc SMG11/S4 421/99, which is grouped by impairment type and sorted in decreasing CMOS value. Table 6 contains a revised summary of HSD criterion comparisons for Ideal Noise Suppression in Experiments 4&5. Finally, Table 7 contains a summary presentation of rank-order for the NS candidates. Only data relative to Experiment 4A has been modified.

The three main changes for the observations in Tdoc SMG11/S4 421/99 are:

- Using the HSD criterion, NS 3 and 5 were equally preferred in Experiment 4A to AMR without NS for street noise. Under the Dunnet criterion, only NS 5 was equivalent to AMR without NS under street noise. For babble noise, both HSD and Dunnet indicate that NS 2, 3, 4, and 5 were equally preferred to AMR without NS.
- As regards the ideal noise suppression scores, 7 and 10 dB cases were also equally preferred in the low SNR, 5.9 kbit/s, car noise case.
- As regards the overall rank order of the NS candidates, NS candidate 4 was not ranked as many times in the higher rank order positions. Again, statistical significance is not considered in this table.

The overall conclusion remained the same: "The rank-orders observed for the six NS solutions studied in Experiments 4 and 5 were summarized, irrespective of statistical significance in differences. Overall, NS 6 held the highest-ranking position in 8 out of 9 cases. NS 1, 2, and 4 also showed up in the upper ranking positions, with a small advantage towards NS 4. Alternatively, NS 3 and 5 most of the time occupied the lower ranking positions."

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**Table 4(c) [NEW]**

CMOS and standard deviation for COMSAT's Experiment 4A (second realization)

<b>Cnd.</b>	<b>Noise/SNR/Rate</b>	<b>Reference</b>	<b>Processed Codec/Ideal NS</b>	<b>Votes</b>	<b>Y(all)</b>	<b>SD(all)</b>	<b>+95%</b>	<b>-95%</b>
1	Car/6dB/12.2	AMR	AMR	192	-0.052	0.848	0.068	-0.172
2	Street/9dB/12.2	AMR	AMR	192	0.026	0.912	0.155	-0.103
3	Babble/9dB/12.2	AMR	AMR	192	0.010	0.927	0.141	-0.121
4	Car/6dB	MNRU-16	MNRU-12	64	-0.500	1.054	-0.242	-0.758
4'	Street/9dB	MNRU-16	MNRU-12	64	-0.734	1.073	-0.472	-0.997
4''	Babble/9dB	MNRU-16	MNRU-12	64	-0.359	0.932	-0.131	-0.588
5	Car/6dB	Direct	MNRU-12	64	-1.547	1.458	-1.190	-1.904
5'	Street/9dB	Direct	MNRU-12	64	-1.484	1.260	-1.176	-1.793
5''	Babble/9dB	Direct	MNRU-12	64	-0.953	1.385	-0.614	-1.292
6	Car/6dB/12.2	AMR	AMR/4 dB	192	0.266	0.919	0.396	0.136
7	Car/6dB/12.2	AMR	AMR/7 dB	192	0.599	1.003	0.741	0.457
8	Car/6dB/12.2	AMR	AMR/10 dB	192	0.672	1.131	0.832	0.512
9	Street/9dB/12.2	AMR	AMR/4 dB	192	0.198	0.956	0.333	0.063
10	Street/9dB/12.2	AMR	AMR/7 dB	192	0.359	1.039	0.506	0.212
11	Street/9dB/12.2	AMR	AMR/10 dB	192	0.620	1.119	0.778	0.461
12	Babble/9dB/12.2	AMR	AMR/4 dB	192	0.182	1.050	0.331	0.034
13	Babble/9dB/12.2	AMR	AMR/7 dB	192	0.276	1.108	0.433	0.119
14	Babble/9dB/12.2	AMR	AMR/10 dB	192	0.490	1.219	0.662	0.317
15	Car/6dB/12.2	AMR	AMR/NS1	192	0.479	1.189	0.647	0.311
16	Car/6dB/12.2	AMR	AMR/NS2	192	0.641	1.135	0.801	0.480
17	Car/6dB/12.2	AMR	AMR/NS3	192	0.531	1.058	0.681	0.382
18	Car/6dB/12.2	AMR	AMR/NS4	192	0.615	1.147	0.777	0.452
19	Car/6dB/12.2	AMR	AMR/NS5	192	0.411	1.159	0.575	0.248
20	Car/6dB/12.2	AMR	AMR/NS6	192	0.672	1.054	0.821	0.523
21	Street/9dB/12.2	AMR	AMR/NS1	192	0.495	1.093	0.649	0.340
22	Street/9dB/12.2	AMR	AMR/NS2	192	0.505	1.171	0.671	0.340
23	Street/9dB/12.2	AMR	AMR/NS3	192	0.349	0.964	0.485	0.213
24	Street/9dB/12.2	AMR	AMR/NS4	192	0.495	1.224	0.668	0.322
25	Street/9dB/12.2	AMR	AMR/NS5	192	0.177	0.987	0.317	0.038
26	Street/9dB/12.2	AMR	AMR/NS6	192	0.604	1.310	0.790	0.419
27	Babble/9dB/12.2	AMR	AMR/NS1	192	0.406	1.098	0.562	0.251
28	Babble/9dB/12.2	AMR	AMR/NS2	192	0.219	1.075	0.371	0.067
29	Babble/9dB/12.2	AMR	AMR/NS3	192	0.271	1.092	0.425	0.116
30	Babble/9dB/12.2	AMR	AMR/NS4	192	0.240	1.056	0.389	0.090
31	Babble/9dB/12.2	AMR	AMR/NS5	192	0.141	1.031	0.287	-0.005
32	Babble/9dB/12.2	AMR	AMR/NS6	192	0.510	1.126	0.670	0.351

**Table 5(a) [REVISED]**

Sorted CMOS presentation organized by impairment for COMSAT Experiment 4A (second realization)

Cnd.	Noise/SNR/Rate	A x B	Votes	Y(all)	+95%	-95%	t	HSD	D
4"	Babble/9dB	MNRU16 x MNRU12	64	-0.359	-0.131	-0.588			
4	Car/6dB	MNRU16 x MNRU12	64	-0.500	-0.242	-0.758			
4'	Street/9dB	MNRU16 x MNRU12	64	-0.734	-0.472	-0.997			N/A
5	Car/6dB	Direct x MNRU12	64	-0.953	-0.614	-1.292			
5"	Babble/9dB	Direct x MNRU12	64	-1.484	-1.176	-1.793			
5'	Street/9dB	Direct x MNRU12	64	-1.547	-1.190	-1.904			
8	Car/6dB/12.2	AMR x AMR/10 dB	192	0.672	0.832	0.512			>
20	Car/6dB/12.2	AMR x AMR/NS6	192	0.672	0.821	0.523			>
16	Car/6dB/12.2	AMR x AMR/NS2	192	0.641	0.801	0.480			>
18	Car/6dB/12.2	AMR x AMR/NS4	192	0.615	0.777	0.452			>
7	Car/6dB/12.2	AMR x AMR/7 dB	192	0.599	0.741	0.457			>
17	Car/6dB/12.2	AMR x AMR/NS3	192	0.531	0.681	0.382			>
15	Car/6dB/12.2	AMR x AMR/NS1	192	0.479	0.647	0.311			>
19	Car/6dB/12.2	AMR x AMR/NS5	192	0.411	0.575	0.248			>
6	Car/6dB/12.2	AMR x AMR/4 dB	192	0.266	0.396	0.136			>
1	Car/6dB/12.2	AMR x AMR	192	-0.052	0.068	-0.172			.
11	Street/9dB/12.2	AMR x AMR/10 dB	192	0.620	0.778	0.461			>
26	Street/9dB/12.2	AMR x AMR/NS6	192	0.604	0.790	0.419			>
22	Street/9dB/12.2	AMR x AMR/NS2	192	0.505	0.671	0.340			>
21	Street/9dB/12.2	AMR x AMR/NS1	192	0.495	0.649	0.340			>
24	Street/9dB/12.2	AMR x AMR/NS4	192	0.495	0.668	0.322			>
10	Street/9dB/12.2	AMR x AMR/7 dB	192	0.359	0.506	0.212			>
23	Street/9dB/12.2	AMR x AMR/NS3	192	0.349	0.485	0.213			>
9	Street/9dB/12.2	AMR x AMR/4 dB	192	0.198	0.333	0.063			=
25	Street/9dB/12.2	AMR x AMR/NS5	192	0.177	0.317	0.038			=
2	Street/9dB/12.2	AMR x AMR	192	0.026	0.155	-0.103			.
32	Babble/9dB/12.2	AMR x AMR/NS6	192	0.510	0.670	0.351			>
14	Babble/9dB/12.2	AMR x AMR/10 dB	192	0.490	0.662	0.317			>
27	Babble/9dB/12.2	AMR x AMR/NS1	192	0.406	0.562	0.251			>
13	Babble/9dB/12.2	AMR x AMR/7 dB	192	0.276	0.433	0.119			=
29	Babble/9dB/12.2	AMR x AMR/NS3	192	0.271	0.425	0.116			=
30	Babble/9dB/12.2	AMR x AMR/NS4	192	0.240	0.389	0.090			=
28	Babble/9dB/12.2	AMR x AMR/NS2	192	0.219	0.371	0.067			=
12	Babble/9dB/12.2	AMR x AMR/4 dB	192	0.182	0.331	0.034			=
31	Babble/9dB/12.2	AMR x AMR/NS5	192	0.141	0.287	-0.005			=
3	Babble/9dB/12.2	AMR x AMR	192	0.010	0.141	-0.121			.

**Table 6 [REVISED]:**

Summary of HSD criterion for Ideal Noise Suppression in Experiments 4&5

Noise Type	Ideal NS	Low SNR (6/9 dB)		High SNR (12/15 dB)	
		4A	5A	4B	5B
Car	10				
	7				
	4				
Street	10				
	7				
	4				
Babble	10				
	7				
	4				

**Table 7 [REVISED]:**

Summary presentation of rank-order for the NS candidates in Experiments 4&5

4A			4B			5A			5B		
Car	Street	Babble									
6	6	6	6	6	6	4	6	6	6	6	6
2	2	1	2	4	1	2	1	4	1	1	4
4	1	3	4	1	4	6	4	1	4	4	2
3	4	4	1	2	2	5	2	3	2	2	1
1	3	2	5	5	5	1	3	2	5	5	5
5	5	5	3	3	3	3	5	5	3	3	3