Proposal on the analysis of MM tests

NTT

NTT's Proposal (1/2)

A) Removing common conditions from the analysis

The reason why we added common conditions across the tests was simply to normalize the subjective scores for removing the effects of the quality balance in different experiments, if such effects exist.

On the other hand, including these conditions in the performance analysis will bias the results in such a way that models that perform well for these common conditions may be unnecessarily highly evaluated.

Therefore, NTT proposes to remove these conditions out of the performance analysis.

NTT's Proposal (2/2)

B) Condition-base analysis

If we look at the correlation coefficients, it is not better than 0.84. We do not think that these values are not necessarily sufficient.

As for PESQ, which is recommended and widely used as an objective speech quality measure and gives a cross-correlation of 0.956 with the subjective MOS, it is basically recommended to use it on a per-condition basis, rather than a per-sample basis, due to the lack of performance in estimating quality of each speech sample (R = 0.926).

Per-sample analysis is only allowed in live field network testing, in which we need to test uncontrolled time varying transmission channels.

Data analysis (1/2)

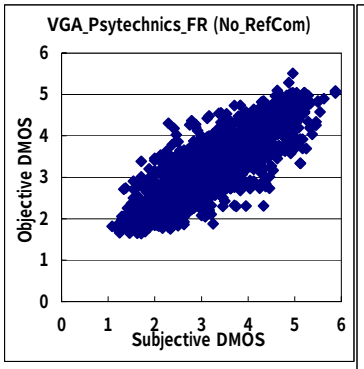
VGA	NoRef.		A) NoRefCom.		B) Condition	
	Corr.	RMSE	Corr.	RMSE	Corr.	RMSE
Psytechnics_FR	0.808	0.570	0.801	0.554	0.900	0.281
Spirent_FR.exe	0.662	0.737	0.702	0.665	0.806	0.402
OPTICOM_FR	0.811	0.565	0.798	0.549	0.903	0.254
Yonsei_VGA_FR	0.788	0.598	0.760	0.599	0.859	0.351
NTT	0.782	0.608	0.778	0.583	0.879	0.305
Yonsei_VGA_RR010k	0.798	0.584	0.782	0.576	0.878	0.330
Yonsei_VGA_RR064k	0.797	0.585	0.781	0.577	0.876	0.333
Yonsei_VGA_RR128k	0.797	0.584	0.781	0.577	0.876	0.333
PSNRbyNTT	0.746	0.653	0.713	0.660	0.849	0.359

CIF	NoRef.		A) NoRefCom.		B) Condition	
	Corr.	RMSE	Corr.	RMSE	Corr.	RMSE
Psytechnics_FR	0.830	0.524	0.840	0.494	0.924	0.257
Spirent_FR.exe	0.672	0.691	0.677	0.663	0.773	0.431
OPTICOM_FR	0.804	0.556	0.824	0.509	0.926	0.252
Yonsei_CIF_FR	0.790	0.575	0.815	0.520	0.925	0.255
NTT	0.779	0.587	0.819	0.522	0.920	0.268
Symmetricom_CIF_FR	0.714	0.656	0.728	0.619	0.784	0.421
KDDI_CIF_FR	0.636	0.707	0.687	0.642	0.774	0.427
Yonsei_CIF_RR010k	0.786	0.573	0.809	0.525	0.885	0.315
Yonsei_CIF_RR064k	0.787	0.572	0.809	0.524	0.886	0.313
PSNRbyNTT	0.758	0.616	0.761	0.596	0.878	0.316

Data analysis (2/2)

QCIF	NoRef.		A) NoRefCom.		B) Condition	
	Corr.	RMSE	Corr.	RMSE	Corr.	RMSE
Psytechnics_FR	0.846	0.494	0.851	0.479	0.933	0.258
Spirent_FR.exe	0.672	0.699	0.731	0.637	0.828	0.404
OPTICOM_FR	0.833	0.525	0.853	0.485	0.944	0.233
Yonsei_QCIF_FR	0.786	0.578	0.839	0.496	0.922	0.245
NTT	0.819	0.548	0.853	0.498	0.951	0.245
KDDI_QCIF_FR	0.738	0.639	0.803	0.559	0.821	0.396
Yonsei_QCIF_RR010k	0.784	0.587	0.811	0.517	0.921	0.251
Yonsei_QCIF_RR064k	0.800	0.566	0.864	0.463	0.934	0.234
PSNRbyNTT	0.715	0.659	0.753	0.614	0.858	0.332

VGA Graphs: A)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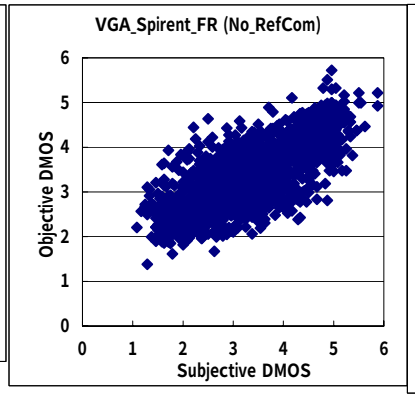
Subjective DMOS
0 1 2 3 4 5 6


VGA_Spirent_FR (No_RefCom)
Objective DMOS
Subjective DMOS
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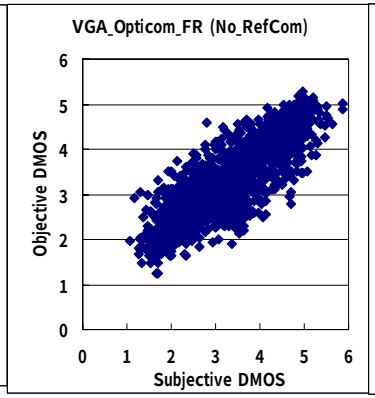
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Objective DMOS
Subjective DMOS
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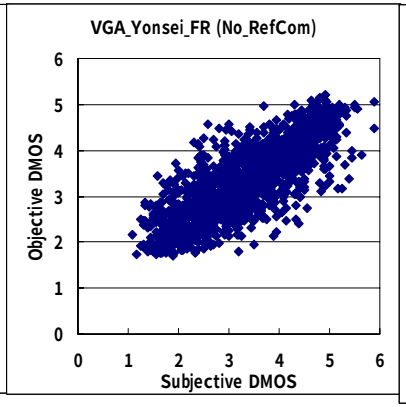
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Objective DMOS
Subjective DMOS
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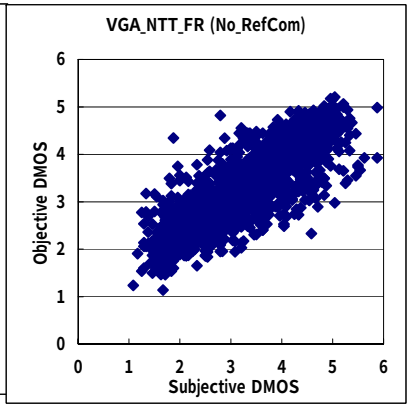
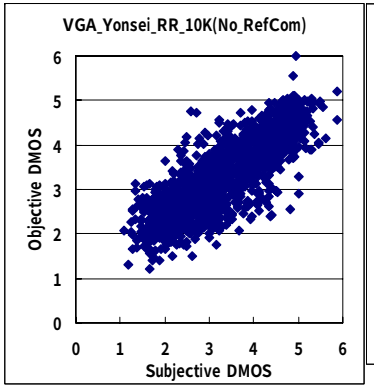

VGA_NTT_FR (No_RefCom)
Objective DMOS
Subjective DMOS
0 1 2 3 4 5 6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Subjective DMOS
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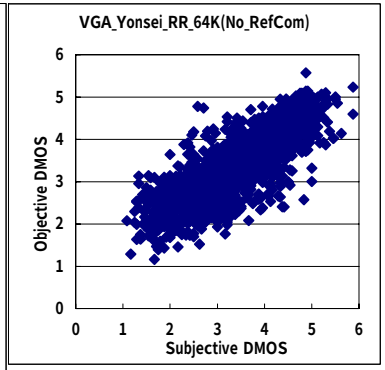
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Subjective DMOS
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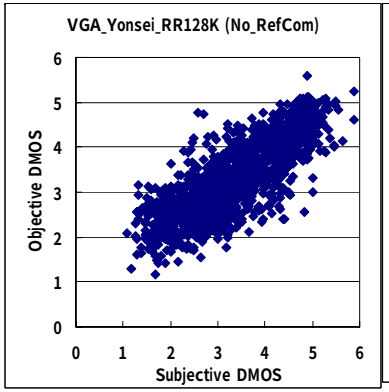
VGA_Yonsei_RR128K (No_RefCom)
Objective DMOS
Subjective DMOS
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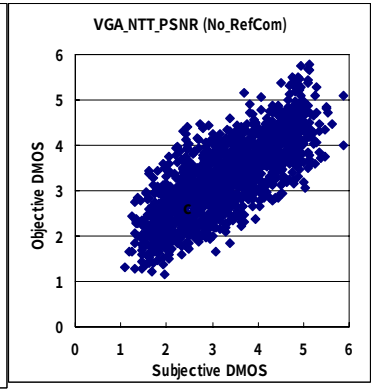
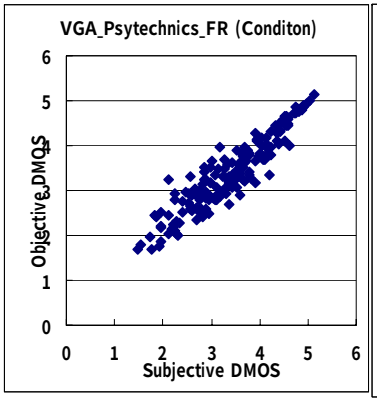
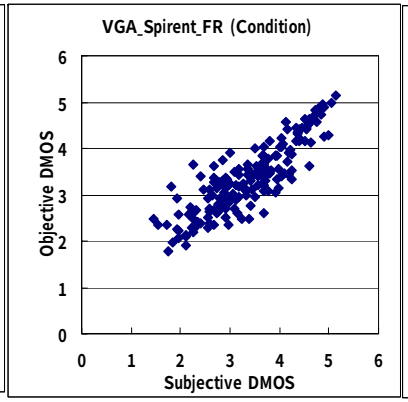
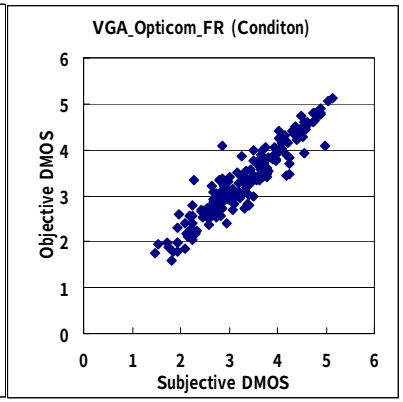
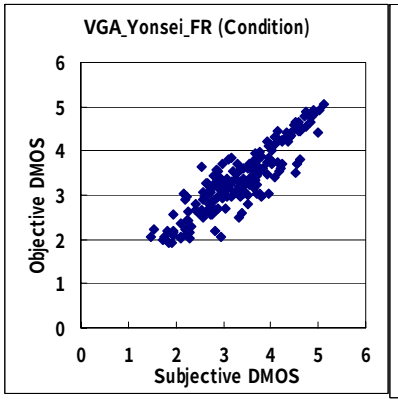

VGA_NTT_PSNR (No_RefCom)
Objective DMOS
Subjective DMOS
0 1 2 3 4 5 6

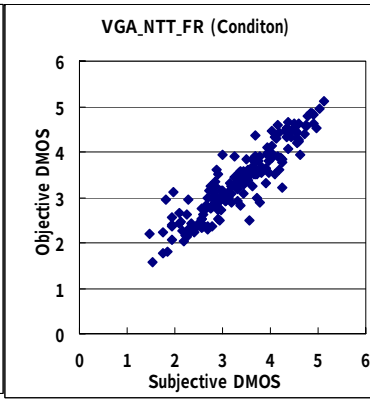
VGA Graphs: B)

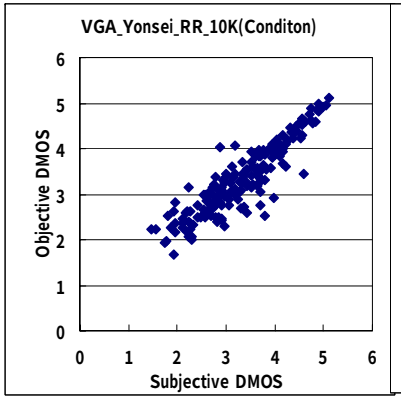

VGA_Psytechnics_FR (Conditon)
Objective DMOS
Subjective DMOS

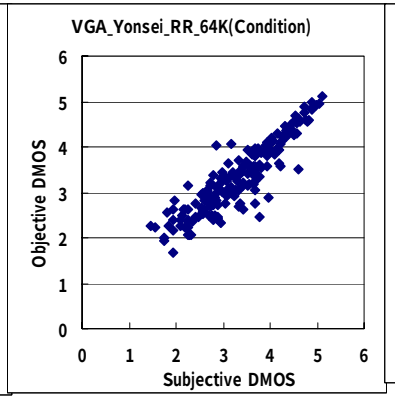

VGA_Spirent_FR (Condition)
Objective DMOS
Subjective DMOS

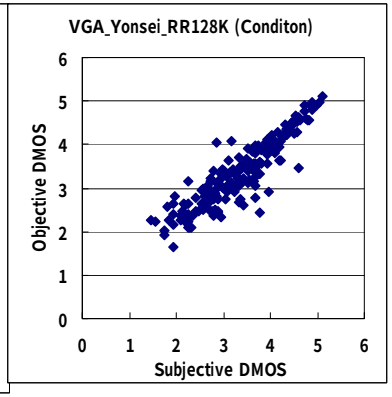

VGA_Opticom_FR (Conditon)
Objective DMOS
Subjective DMOS

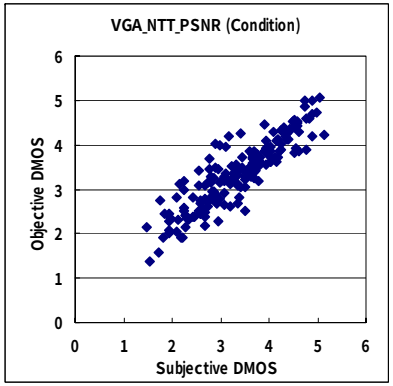

VGA_Yonsei_FR (Condition)
Objective DMOS
Subjective DMOS


VGA_NTT_FR (Conditon)
Objective DMOS
Subjective DMOS

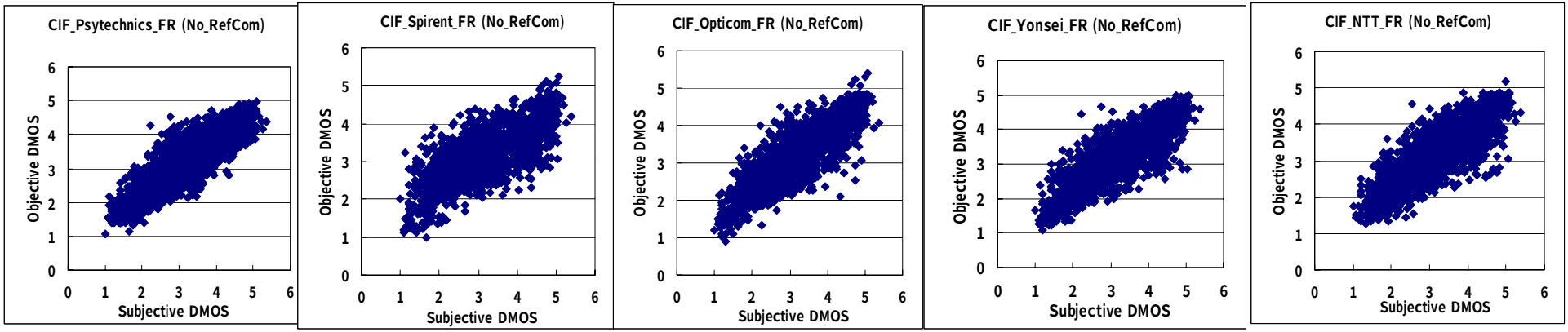

VGA_Yonsei_RR_10K(Conditon)
Objective DMOS
Subjective DMOS

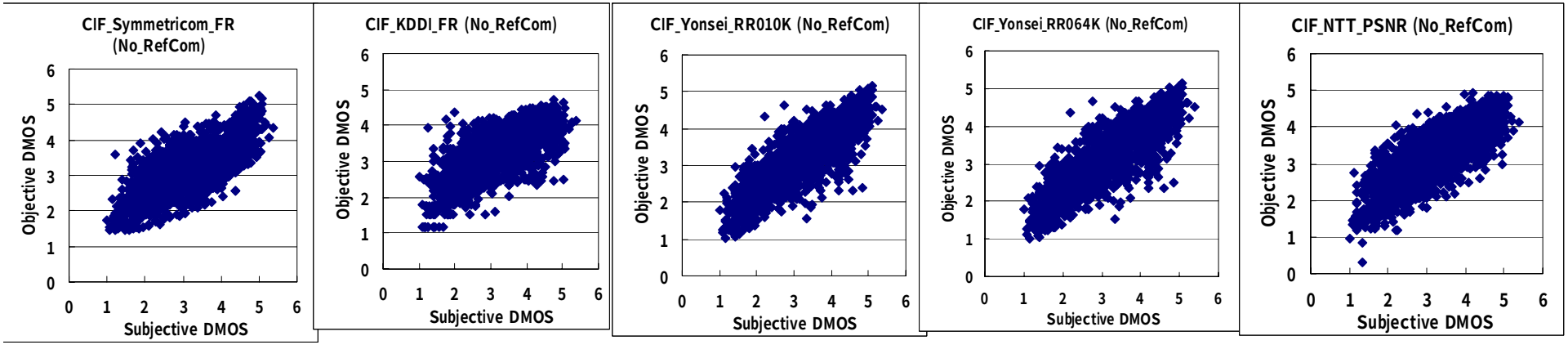

VGA_Yonsei_RR_64K(Condition)
Objective DMOS
Subjective DMOS


VGA_Yonsei_RR128K (Conditon)
Objective DMOS
Subjective DMOS

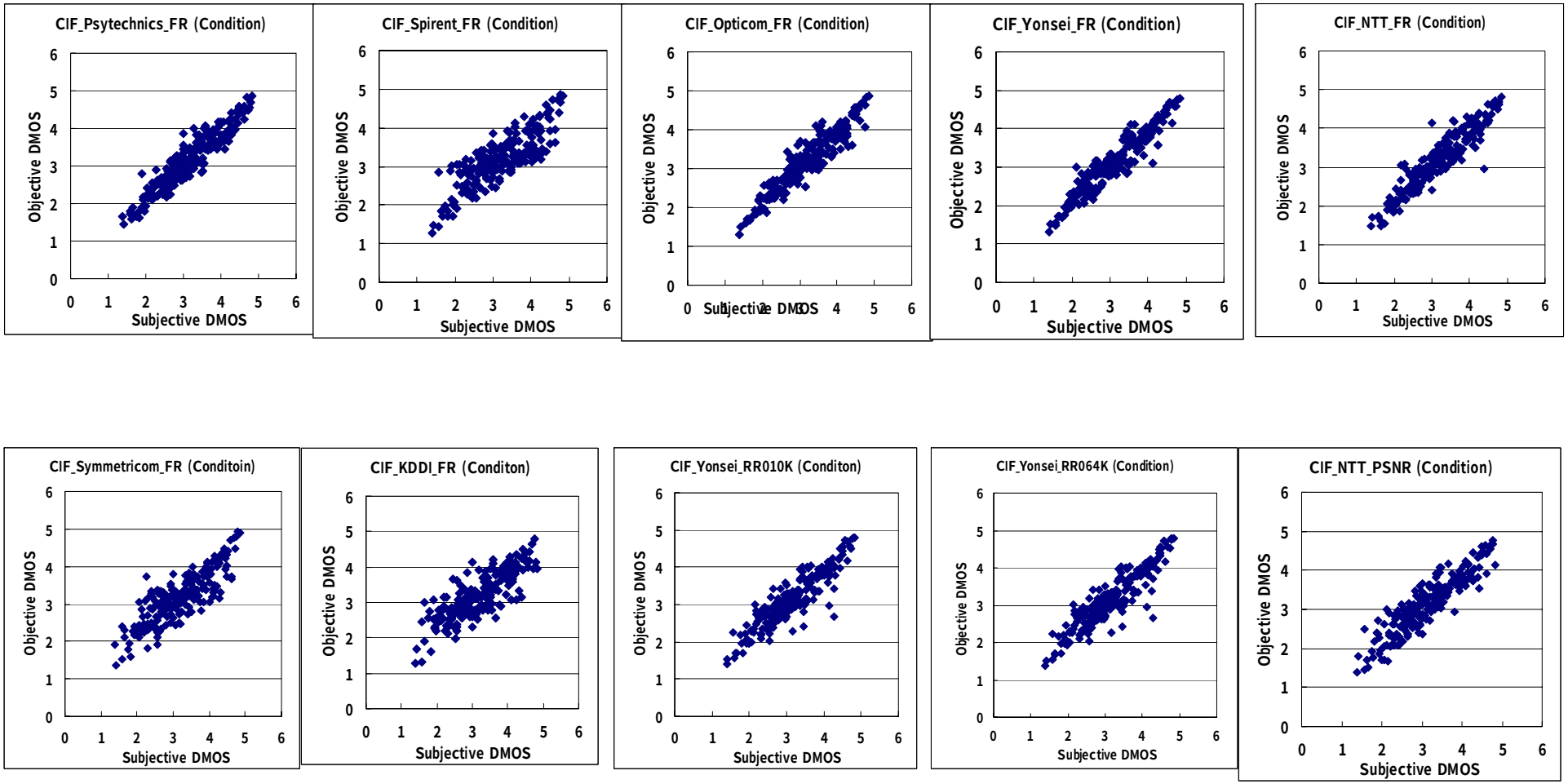

VGA_NTT_PSNR (Condition)
Objective DMOS
Subjective DMOS

CIF Graphs: A)

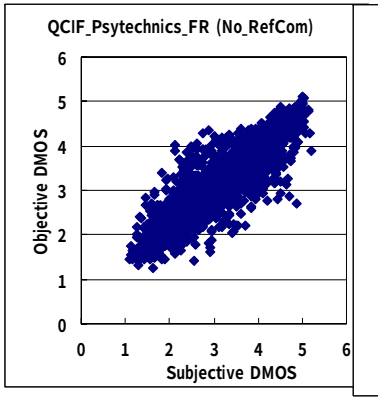

CIF_Psytechnics_FR (No_RefCom)
CIF_Spirent_FR (No_RefCom)
CIF_Opticom_FR (No_RefCom)
CIF_Yonsei_FR (No_RefCom)
CIF_NTT_FR (No_RefCom)
Objective DMOS
Subjective DMOS
0 1 2 3 4 5 6

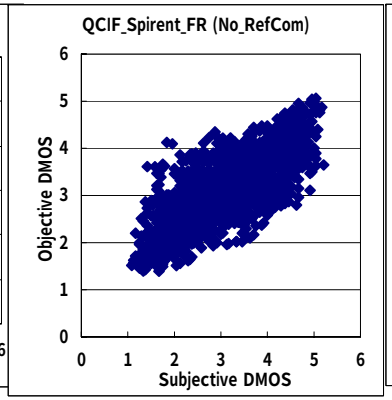

CIF_Symmetricom_FR (No_RefCom)
CIF_KDDI_FR (No_RefCom)
CIF_Yonsei_RR010K (No_RefCom)
CIF_Yonsei_RR064K (No_RefCom)
CIF_NTT_PSNR (No_RefCom)
Objective DMOS
Subjective DMOS
0 1 2 3 4 5 6

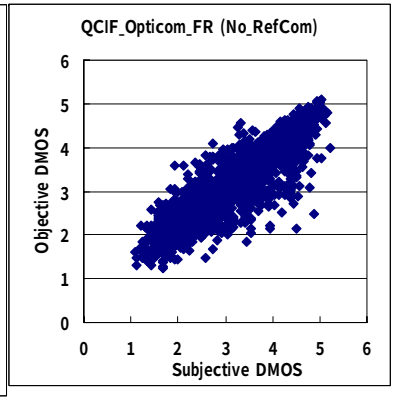
CIF Graphs: B)

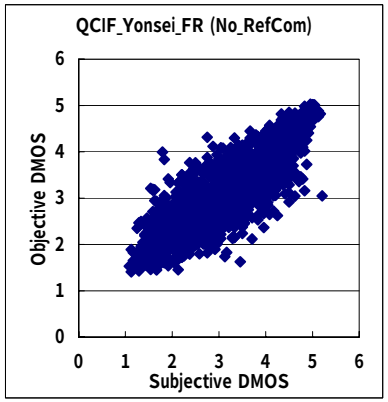

CIF_Psytechnics_FR (Condition)
CIF_Spirent_FR (Condition)
CIF_Opticom_FR (Condition)
CIF_Yonsei_FR (Condition)
CIF_NTT_FR (Condition)
CIF_Symmetricom_FR (Conditoin)
CIF_KDDI_FR (Conditon)
CIF_Yonsei_RR010K (Conditon)
CIF_Yonsei_RR064K (Condition)
CIF_NTT_PSNR (Condition)
Objective DMOS
Subjective DMOS
0 1 2 3 4 5 6

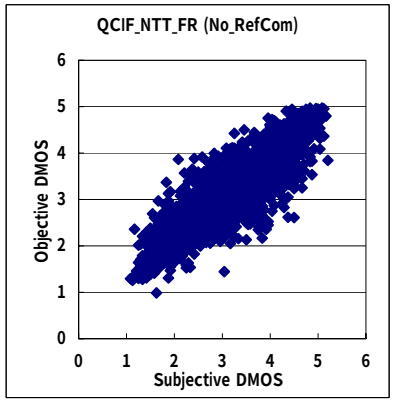
QCIF Graphs: A)

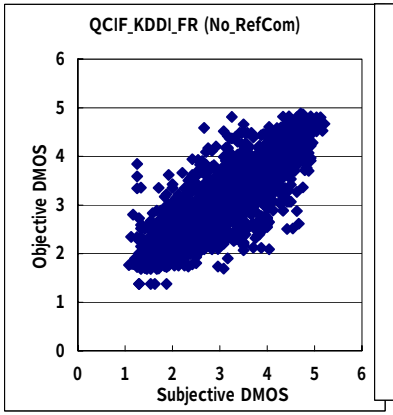


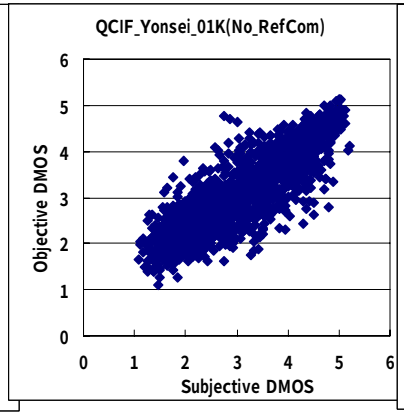


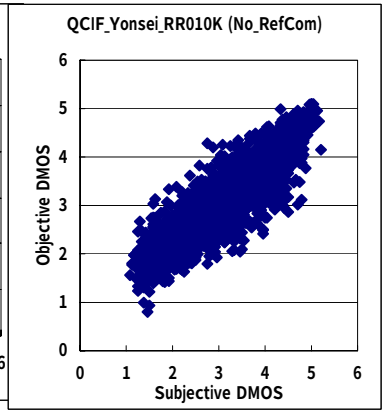


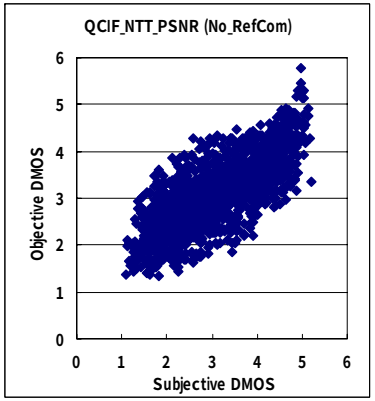












QCIF Graphs: B)