

Appendix A

Volume Control Test Data and Plots

For Report No.: SUCR250100002801

The DUT shall have at least one volume control setting that will produce a conversational gain of ≥ 6 .

Verdict: Pass.

1.1 For codecs with bit rate, check the bit rate with the worst conversational gain

Codec	Codec Bitrate (kbps)	Conv. Gain(dB)							
		WCDMA B4		LTE B4		NR n78		802.11 b	
		2N	8N	2N	8N	2N	8N	2N	8N
AMR-NB	4.75	8.12	12.33	8.22	12.20	7.46	11.27	7.66	11.82
	5.15	8.36	12.37	8.24	12.21	7.62	11.30	7.77	11.91
	5.90	8.32	12.39	8.43	12.47	7.74	11.41	8.08	12.00
	6.70	8.82	12.59	8.54	12.50	7.86	11.70	8.31	12.22
	7.40	8.93	12.78	8.61	12.69	7.96	11.80	8.41	12.23
	7.95	8.98	12.76	8.71	12.67	8.10	11.82	8.33	12.27
	10.20	9.07	12.90	8.77	12.74	8.11	11.93	8.50	12.34
	12.20	9.21	12.99	8.95	12.91	8.34	12.12	8.60	12.52
AMR-WB	6.60	9.37	13.03	8.77	12.80	8.38	12.22	8.46	12.44
	8.85	9.51	13.40	9.25	13.21	8.68	12.70	8.90	12.96
	12.65	9.59	13.42	8.92	12.86	8.41	12.44	8.62	12.61
	14.25	9.66	13.47	8.95	12.87	8.37	12.40	8.64	12.59
	15.85	9.71	13.51	8.86	12.89	8.40	12.35	8.67	12.45
	18.25	9.63	13.46	9.01	12.88	8.43	12.32	8.65	12.54
	19.85	9.67	13.54	9.00	12.92	8.46	12.37	8.62	12.59
	23.05	9.68	13.50	9.01	13.05	8.42	12.35	8.75	12.50
	23.85	9.70	13.52	9.01	12.84	8.44	12.42	8.53	12.54
EVS-NB	5.90	N/A		8.08	12.12	6.25	10.41	7.64	11.64
	7.20			8.14	12.18	7.54	11.54	7.80	11.68
	8.0			8.24	12.35	7.57	11.61	8.14	12.01
	9.6			8.43	12.39	7.66	11.66	8.21	12.16
	13.20			8.43	12.53	7.78	11.84	8.27	11.97
	16.40			8.65	12.69	7.78	11.86	8.64	12.14
	24.4			8.65	12.55	8.07	12.10	8.59	13.63
EVS-WB	5.90			8.60	12.75	6.75	10.95	8.28	12.13
	7.20			8.64	12.78	8.08	12.12	8.57	12.28
	8.0			8.61	12.83	8.09	12.14	8.60	12.38
	9.6			8.96	13.01	8.10	12.21	8.63	12.26
	13.20			8.97	13.12	8.49	12.39	8.69	12.28
	16.40			9.23	13.23	8.37	12.38	9.19	12.78
	24.4			9.27	13.14	8.60	12.60	8.96	12.61

1.2 For codecs with bit rate, tested only bit rate with the worst conversational gain

Air Interface	Band	Limit (dB)	Conv. Gain(dB)					
			FR V1		FR V2		HR V1	
			2N	8N	2N	8N	2N	8N
GSM	850	6	8.64	12.35	9.12	12.83	8.86	12.68
	1900	6	8.60	12.39	9.09	12.27	8.83	12.78

Air Interface	Band	Limit (dB)	Conv. Gain(dB)							
			AMR NB (4.7kbps)		AMR WB (6.6kbps)		EVS NB (5.9kbps)		EVS WB (5.9kbps)	
			2N	8N	2N	8N	2N	8N	2N	8N
WCDMA	B2	6	8.38	12.33	9.42	13.10	N/A			
	B4	6	8.12	12.33	9.37	13.03				
	B5	6	8.28	12.27	9.33	13.05				
LTE	B 2	6	8.31	11.97	9.04	13.01	8.32	12.15	8.70	12.20
	B 4	6	8.22	12.20	8.77	12.80	8.08	12.12	8.60	12.75
	B 5	6	8.38	12.33	9.16	13.07	8.57	12.40	9.00	12.67
	B 7	6	8.38	12.37	9.18	13.14	8.37	12.13	9.03	12.34
	B 12	6	8.30	12.27	9.42	13.11	8.56	12.10	8.95	12.62
	B 13	6	8.40	12.10	9.17	13.10	8.35	12.26	8.89	12.45
	B 14	6	8.39	12.07	9.42	13.02	8.39	12.19	8.93	12.47
	B 17	6	8.30	12.08	9.21	13.05	8.53	12.21	8.85	12.50
	B 25	6	8.28	12.17	9.24	12.96	8.56	12.34	8.78	12.60
	B 26	6	8.39	12.23	9.29	13.04	8.35	12.27	8.93	12.52
	B 38	6	8.36	12.14	9.28	13.17	8.57	12.27	9.21	12.66
	B 41	6	8.38	12.10	9.18	13.06	8.39	12.05	8.84	12.53
	B 42	6	8.36	12.12	9.33	12.86	8.43	12.11	8.83	12.41
	B 48	6	8.24	12.04	9.26	12.97	8.31	11.96	8.89	12.35
	B 66	6	8.27	11.92	9.18	12.93	8.25	12.04	9.04	12.55
	B 71	6	8.12	11.98	9.14	13.09	8.27	12.15	8.88	12.47
FR1	N2	6	8.31	12.05	9.21	13.12	8.33	11.95	8.72	12.48
	N5	6	8.29	11.99	9.33	13.16	8.49	12.30	9.13	12.47
	N7	6	8.25	12.10	9.34	13.27	8.39	12.04	9.19	12.42
	N41	6	8.41	12.15	9.32	13.06	8.43	12.08	8.88	12.54
	N48	6	8.29	11.94	9.25	13.09	8.28	11.98	8.92	12.57
	N66	6	8.28	11.92	9.27	13.02	8.29	12.15	8.98	12.71
	N71	6	8.22	11.95	9.17	12.94	8.33	12.04	8.91	12.41
	N78	6	7.46	11.27	8.38	12.22	6.25	10.41	6.75	10.95
WLAN-2.4G	802.11b	6	7.66	11.82	8.46	12.44	7.64	11.64	8.28	12.13
	802.11g	6	7.92	11.86	8.74	12.60	8.38	12.20	8.84	11.96
	802.11n	6	7.96	11.69	8.89	12.51	8.22	12.14	8.85	12.02
	802.11ac	6	7.99	11.89	8.90	12.60	8.08	11.92	8.75	12.00
WLAN-5G	802.11a	6	7.57	11.27	8.75	12.60	7.97	11.44	8.62	12.25

	802.11n	6	7.42	11.13	8.36	12.55	7.78	11.59	8.31	12.27
	802.11ac	6	7.60	11.46	8.52	12.48	7.95	11.74	8.34	12.02

The noise power shall ≥ 20 when tested over the range of 1/3 octave band center frequencies.

Verdict: Pass

2.1 Distortion Test Result for EVS-NB 24.4 kbps and LTE

Center Freq	Limit	PN-SDNR(dB)									
		LTE Band 2		LTE Band 4		LTE Band 5		LTE Band 7		LTE Band 12	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
400	20	36.46	36.65	36.85	37.07	36.62	36.72	34.41	33.26	32.75	35.87
500		36.30	36.56	36.71	36.42	27.54	36.37	36.02	37.14	35.86	35.82
630		36.86	37.99	38.01	39.66	35.46	38.15	28.92	27.37	26.97	28.20
800		37.04	32.19	38.29	38.31	34.07	38.07	26.04	27.96	37.43	36.56
1000		38.98	35.16	40.57	40.78	35.93	39.98	37.15	41.49	38.23	40.65
1250		34.00	34.92	34.60	34.34	34.08	33.92	34.07	34.23	34.13	33.98
1600		38.30	40.91	39.73	40.00	40.77	39.64	38.86	41.64	39.02	40.13
2000		39.77	33.25	34.76	41.44	41.45	41.31	39.11	42.53	36.98	38.16
2500		37.81	31.47	41.48	33.67	39.72	34.24	38.67	35.33	39.05	29.45
3150		34.28	32.35	39.78	33.35	39.00	34.92	36.57	34.04	36.29	29.97

Center Freq	Limit	PN-SDNR(dB)									
		LTE Band 13		LTE Band 14		LTE Band 25		LTE Band 26		LTE Band 17	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
400	20	36.64	36.77	33.00	33.73	36.00	36.65	33.14	34.17	36.54	33.89
500		29.22	37.05	35.62	36.24	30.00	28.41	30.18	28.31	28.10	37.25
630		27.46	39.53	27.50	27.13	26.71	39.84	28.06	29.03	38.31	28.27
800		37.76	38.28	34.43	30.53	26.10	38.63	35.50	38.55	28.43	37.02
1000		38.35	42.25	35.51	40.23	35.74	41.72	36.49	41.58	40.12	39.73
1250		34.70	34.02	30.38	33.26	28.52	34.31	31.17	33.38	33.98	33.34
1600		40.65	40.98	36.70	39.23	29.59	40.07	29.91	41.32	40.10	38.59
2000		40.79	41.77	37.14	41.89	36.40	43.58	37.47	43.34	36.96	40.36
2500		41.26	34.16	39.13	35.16	38.49	35.81	37.57	35.29	34.57	33.13
3150		38.93	34.83	37.47	36.38	37.13	36.37	33.16	35.75	34.70	34.00

Center Freq	Limit	PN-SDNR(dB)									
		LTE Band 38		LTE Band 41		LTE Band 42		LTE Band 48		LTE Band 66	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
400	20	32.75	34.65	33.15	34.38	31.95	36.91	37.34	37.06	36.56	33.55
500		35.75	28.60	29.67	30.00	26.63	37.86	36.49	37.81	36.18	28.76
630		26.61	28.87	26.70	39.96	26.85	40.13	30.96	40.17	27.79	30.48
800		34.76	37.77	24.81	37.51	28.31	37.51	38.56	37.24	27.42	37.41
1000		35.43	39.23	39.33	41.29	31.15	40.76	39.80	40.06	31.84	41.45
1250		30.31	33.08	34.34	33.10	29.13	34.19	34.22	34.03	31.02	33.22
1600		28.79	41.75	40.98	41.07	28.53	41.73	36.04	41.81	37.49	40.09
2000		36.84	43.35	40.48	43.36	39.39	43.34	40.72	43.34	36.51	43.58
2500		38.69	32.16	40.43	34.42	37.25	32.46	38.16	32.61	39.14	33.65
3150		35.62	33.24	35.64	35.15	32.96	33.88	39.48	33.65	36.57	35.17

Center Freq	Limit	PN-SDNR(dB)	
		LTE Band 71	
		2N	8N
400	20	33.60	32.92
500		28.45	36.87
630		38.07	37.07
800		38.90	35.54
1000		39.28	36.63
1250		30.24	37.91
1600		40.57	38.03
2000		41.12	33.14
2500		41.23	34.04
3150		39.92	30.74

2.2 Distortion Test Result for EVS-NB 24.4 kbps and FR1

Center Freq	Limit	PN-SDNR(dB)									
		FR1 n2		FR1 n5		FR1 n7		FR1 n41		FR1 n48	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
400	20	37.36	36.50	37.15	35.41	35.84	37.50	37.48	36.81	36.66	36.96
500		35.73	29.29	36.62	36.58	35.54	36.81	37.10	37.04	36.85	36.93
630		38.10	28.46	31.33	36.44	38.38	36.00	35.73	39.12	36.06	38.72
800		30.16	37.17	37.84	34.24	38.05	38.75	30.90	39.05	36.32	39.13
1000		38.15	33.72	28.21	36.44	38.16	40.27	29.26	38.84	35.64	40.43
1250		34.30	34.29	31.83	30.81	34.69	34.70	30.01	32.48	30.34	35.13
1600		40.51	39.82	29.60	38.72	39.72	40.92	38.31	33.25	37.01	42.35
2000		41.19	42.96	41.34	38.25	40.66	41.99	37.78	40.83	36.98	42.23
2500		41.67	36.19	38.77	33.83	41.27	35.24	40.25	32.62	35.98	31.70
3150		40.10	37.37	40.83	35.53	40.08	36.16	39.23	30.95	35.97	34.15

Center Freq	Limit	PN-SDNR(dB)					
		FR1 n66		FR1 n71		FR1 n78	
		2N	8N	2N	8N	2N	8N
400	20	36.32	37.09	35.02	37.26	37.95	37.63
500		36.34	34.14	32.21	37.61	37.02	37.16
630		27.14	39.44	35.15	38.84	38.68	40.57
800		29.81	38.73	29.48	38.72	38.06	39.35
1000		35.20	39.67	36.70	42.28	39.94	39.85
1250		29.20	33.95	31.21	34.69	34.49	34.09
1600		34.05	38.93	34.71	35.31	34.51	38.84
2000		36.81	41.60	31.74	43.33	41.87	44.02
2500		40.09	37.35	40.68	33.00	42.72	42.89
3150		38.55	38.10	34.42	32.84	38.49	40.74

2.3 Distortion Test Result for EVS-NB 24.4 kbps and WLAN

Center Freq	Limit	PN-SDNR(dB)									
		2.4G - 802.11b		2.4G - 802.11g		2.4G - 802.11n		2.4G - 802.11ac		5G - 802.11a	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
400	20	35.52	34.87	32.15	31.97	37.18	34.53	38.35	37.54	37.50	37.46
500		33.53	36.29	37.23	36.40	36.27	37.98	36.27	28.66	36.72	36.03
630		31.18	38.18	27.54	27.25	37.10	35.01	29.27	31.96	39.28	36.64
800		33.76	38.88	39.60	35.99	34.43	37.29	38.72	32.21	30.89	35.20
1000		29.76	37.59	31.70	36.42	38.22	39.57	33.19	31.40	38.07	35.03
1250		30.88	32.88	28.84	26.35	33.14	29.87	33.78	30.14	29.50	32.19
1600		38.38	41.27	30.21	30.04	33.49	37.69	42.10	29.15	27.47	37.77
2000		41.30	42.04	32.85	31.67	39.72	34.92	31.50	41.99	41.60	38.03
2500		34.91	31.07	33.11	31.83	39.10	30.56	36.91	29.62	39.68	28.45
3150		34.72	32.16	37.81	31.10	39.67	34.90	41.38	34.18	40.98	30.94

Center Freq	Limit	PN-SDNR(dB)			
		5G - 802.11n		5G - 802.11ac	
		2N	8N	2N	8N
400	20	37.26	34.71	37.52	38.34
500		33.72	35.30	37.41	35.54
630		24.20	39.14	26.38	31.72
800		29.97	34.74	31.41	33.56
1000		38.64	27.09	29.06	37.39
1250		28.42	28.88	34.93	32.22
1600		26.92	30.13	37.24	37.08
2000		33.16	31.55	38.34	33.64
2500		35.50	31.69	38.14	29.29
3150		35.33	31.59	41.03	33.87

2.4 Distortion Test Result for EVB-WB 24.4 kbps and LTE

Center Freq	Limit	PN-SDNR(dB)									
		LTE Band 2		LTE Band 4		LTE Band 5		LTE Band 7		LTE Band 12	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
250	20	33.37	34.49	34.53	33.55	34.70	33.08	31.88	34.48	33.12	33.77
315		34.30	34.30	33.88	34.27	35.05	35.16	33.34	35.14	34.98	34.81
400		36.48	36.15	35.12	36.05	35.77	36.10	35.41	35.71	36.40	36.16
500		35.76	35.44	33.52	34.23	33.59	36.83	32.79	34.62	35.03	34.14
630		37.28	37.71	38.20	36.98	38.26	38.66	35.64	35.72	37.73	37.69
800		36.62	38.01	37.64	38.06	35.76	34.39	32.92	33.01	38.49	37.13
1000		39.79	41.97	39.55	40.17	39.87	40.74	37.93	30.48	39.89	35.80
1250		28.92	29.92	35.05	34.92	28.12	25.56	27.84	34.70	34.58	26.39
1600		25.41	32.32	41.01	39.47	40.72	23.98	41.04	23.16	25.43	40.20
2000		38.42	40.24	41.45	41.23	41.72	26.73	23.60	23.56	25.01	23.34
2500		33.44	21.40	34.55	21.45	33.03	22.74	31.48	21.98	33.59	21.88
3150		33.47	26.28	32.81	25.12	32.46	25.54	31.90	25.63	32.60	24.95
4000		27.53	22.07	30.94	25.32	29.58	25.41	31.04	25.62	29.66	24.98
5000		36.52	25.11	33.91	26.94	33.91	25.58	35.37	25.22	34.27	25.96

Center Freq	Limit	PN-SDNR(dB)									
		LTE Band 13		LTE Band 14		LTE Band 25		LTE Band 26		LTE Band 17	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
250	20	33.69	33.42	33.91	32.00	34.10	34.31	34.13	34.22	33.82	34.20
315		24.16	35.45	34.52	33.30	35.31	34.67	35.12	34.94	35.00	33.43
400		36.44	35.68	36.62	35.74	36.65	36.31	36.22	36.10	35.76	32.28
500		33.26	36.13	35.71	36.19	34.26	36.21	36.02	36.54	36.55	31.59
630		36.82	38.49	37.87	36.02	35.66	36.32	37.18	36.23	37.41	33.49
800		33.62	32.46	37.53	37.23	37.71	38.84	37.38	38.72	37.97	34.00
1000		39.97	40.50	39.10	38.65	39.82	31.64	39.39	40.67	39.70	33.57
1250		30.56	24.63	33.69	34.43	26.55	34.45	23.89	34.23	22.94	24.14
1600		40.82	26.59	39.15	39.41	39.14	40.62	23.57	25.32	40.38	23.28
2000		26.99	42.24	39.62	40.41	40.18	41.23	21.08	28.28	40.72	37.82
2500		36.44	22.21	36.02	21.81	31.75	24.24	32.59	23.18	35.75	21.72
3150		31.80	25.67	34.33	25.73	33.96	25.56	34.00	25.96	31.62	25.38
4000		25.52	23.86	31.19	25.74	23.83	22.08	24.78	25.94	27.24	25.69
5000		33.86	26.03	36.79	25.80	36.99	25.56	36.67	28.43	35.88	26.01

Center Freq	Limit	PN-SDNR(dB)									
		LTE Band 38		LTE Band 41		LTE Band 42		LTE Band 48		LTE Band 66	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
250	20	34.55	34.95	34.10	34.43	34.77	35.18	33.35	35.04	34.70	34.25
315		35.33	35.33	34.77	34.20	34.51	34.44	34.70	35.26	35.42	35.00
400		35.76	36.64	37.40	37.05	35.10	36.91	37.37	36.23	37.51	35.33
500		35.91	34.86	34.67	36.98	34.07	37.12	34.76	34.28	36.29	34.48
630		37.19	37.88	37.17	37.74	35.94	37.83	37.28	37.19	37.70	37.99
800		37.87	33.52	37.37	39.35	35.27	32.87	37.49	34.34	34.57	34.05
1000		31.18	41.47	31.04	31.09	29.85	41.42	40.10	41.28	32.97	40.31
1250		34.18	23.99	34.38	34.67	27.96	24.11	34.51	23.82	25.48	26.61
1600		40.40	40.24	25.69	39.98	39.94	40.06	27.29	24.76	27.47	22.60
2000		39.54	40.04	39.73	23.78	39.28	39.72	22.76	39.62	40.16	40.73
2500		32.89	22.52	32.00	20.82	32.26	21.04	30.80	20.66	29.78	22.19
3150		29.53	25.66	29.87	25.15	30.17	25.65	32.29	24.39	33.04	25.83
4000		24.09	24.45	29.88	24.65	24.66	21.94	27.18	24.52	30.75	25.84
5000		29.43	25.16	33.48	27.65	37.66	25.34	31.61	25.23	30.64	26.12

Center Freq	Limit	PN-SDNR(dB)	
		LTE Band 71	
		2N	8N
250	20	34.02	34.44
315		34.71	35.10
400		36.49	36.35
500		36.02	35.02
630		36.23	33.31
800		32.97	33.84
1000		36.30	38.98
1250		24.98	22.59
1600		30.47	38.91
2000		27.71	21.83
2500		31.54	20.83
3150		31.65	24.23
4000		26.69	22.65
5000		33.39	25.16

2.5 Distortion Test Result for EVS-WB 24.4 kbps and FR1

Center Freq	Limit	PN-SDNR(dB)									
		FR1 n2		FR1 n5		FR1 n7		FR1 n41		FR1 n48	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
250	20	34.52	34.22	34.23	34.31	33.29	35.08	34.87	34.68	35.68	33.21
315		35.76	34.36	35.04	34.76	35.94	36.55	34.68	34.30	34.96	35.83
400		36.08	35.11	35.60	35.91	35.80	38.00	35.71	35.38	36.82	36.84
500		33.49	34.46	34.40	35.57	34.00	34.67	35.94	35.85	35.89	36.32
630		37.62	38.01	35.64	36.12	35.93	36.34	36.01	36.12	36.85	39.41
800		35.89	37.78	33.85	35.02	34.90	36.26	34.33	34.67	37.64	37.97
1000		31.69	27.61	35.88	36.56	37.14	37.24	34.54	36.37	41.48	42.77
1250		25.88	24.73	29.45	30.05	34.60	30.31	29.79	30.03	34.57	33.67
1600		40.76	40.99	37.15	37.66	29.83	41.44	37.37	34.22	39.09	41.55
2000		40.25	32.91	37.11	36.60	41.05	25.94	37.00	32.24	42.34	38.29
2500		31.44	22.46	37.17	21.48	39.46	34.05	34.84	20.90	35.77	20.98
3150		30.73	27.89	34.14	25.08	38.79	34.20	31.96	24.23	33.09	24.78
4000		24.15	23.33	30.57	23.83	38.09	31.74	28.77	22.78	29.74	23.29
5000		30.19	24.50	35.01	24.80	32.62	34.75	32.54	24.37	33.18	23.90

Center Freq	Limit	PN-SDNR(dB)					
		FR1 n66		FR1 n71		FR1 n78	
		2N	8N	2N	8N	2N	8N
250	20	34.58	33.00	34.44	34.39	36.56	36.07
315		34.91	35.30	34.23	33.93	35.57	35.48
400		35.85	36.63	36.39	35.91	37.52	36.04
500		34.63	34.34	35.29	35.37	33.21	37.29
630		34.96	39.37	35.89	36.17	38.76	38.92
800		34.21	39.35	33.90	34.67	34.04	38.29
1000		34.31	42.97	34.38	35.69	31.16	41.29
1250		30.72	34.27	29.51	29.92	35.14	32.03
1600		34.19	39.85	33.18	37.46	27.34	41.23
2000		34.00	37.91	37.02	36.28	24.12	42.12
2500		34.55	21.01	34.21	21.55	35.22	29.17
3150		33.21	24.54	32.05	25.19	39.33	36.56
4000		29.29	21.91	29.30	23.52	38.75	28.78
5000		33.68	26.60	32.61	24.88	40.92	29.90

2.6 Distortion Test Result for EVB-WB 24.4 kbps and WLAN

Center Freq	Limit	PN-SDNR(dB)									
		2.4G - 802.11b		2.4G - 802.11g		2.4G - 802.11n		2.4G - 802.11ac		5G - 802.11a	
		2N	8N	2N	8N	2N	8N	2N	8N	2N	8N
250	20	35.35	35.43	31.55	35.56	35.06	36.00	35.52	34.93	36.45	27.62
315		34.59	34.47	35.68	35.58	35.81	36.32	34.13	34.25	35.75	33.17
400		34.29	36.52	34.00	36.63	36.41	36.47	34.84	35.74	35.42	35.66
500		32.86	36.84	33.57	37.47	32.12	36.85	33.64	31.53	37.16	36.05
630		35.87	38.33	33.26	39.17	34.44	36.80	34.23	34.03	37.13	34.99
800		37.14	37.49	31.77	39.22	35.38	34.88	29.38	33.46	36.56	36.57
1000		32.10	32.62	30.99	31.93	25.61	29.09	31.97	36.59	39.94	32.29
1250		24.54	28.87	30.20	25.62	21.22	23.40	25.95	23.68	33.35	28.29
1600		37.42	31.85	22.05	27.23	28.28	38.12	33.36	33.47	41.12	33.64
2000		28.77	34.15	36.93	24.83	24.93	27.16	23.18	32.44	41.03	32.51
2500		30.06	20.51	30.31	20.01	30.37	23.54	32.00	20.35	31.29	23.81
3150		28.93	22.33	28.75	22.71	29.48	25.46	30.21	25.26	29.54	23.22
4000		26.84	21.92	28.90	22.02	24.75	25.11	29.35	22.71	28.53	22.03
5000		32.18	23.83	33.42	25.47	35.23	24.74	29.58	24.88	32.12	26.66

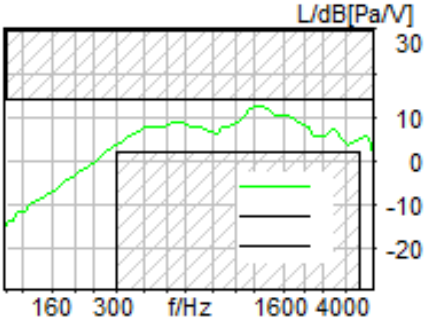
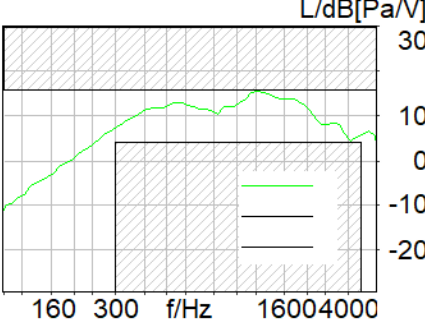
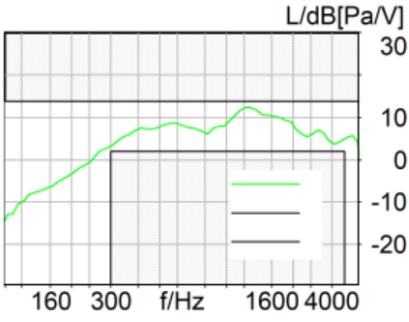
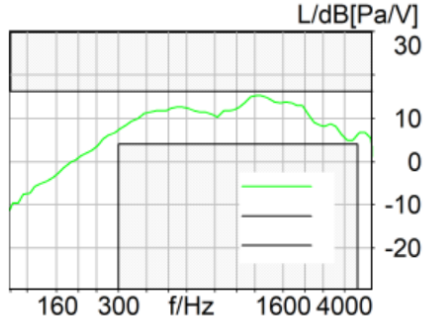
Center Freq	Limit	PN-SDNR(dB)			
		5G - 802.11n		5G - 802.11ac	
		2N	8N	2N	8N
250	20	34.53	32.54	32.78	34.23
315		35.61	35.00	36.67	35.92
400		37.15	35.50	37.70	36.80
500		37.35	30.58	34.28	37.39
630		38.46	36.78	38.67	38.59
800		38.11	35.84	37.75	39.40
1000		36.54	36.65	41.72	43.01
1250		26.64	23.44	33.62	29.74
1600		33.82	32.50	39.18	41.95
2000		27.15	33.24	41.25	37.42
2500		29.47	21.72	28.34	21.73
3150		28.33	23.04	28.17	24.22
4000		26.72	21.61	29.30	22.59
5000		32.27	25.17	33.47	25.48

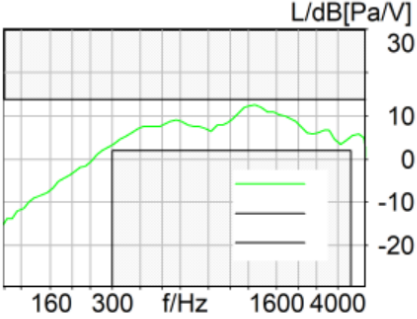
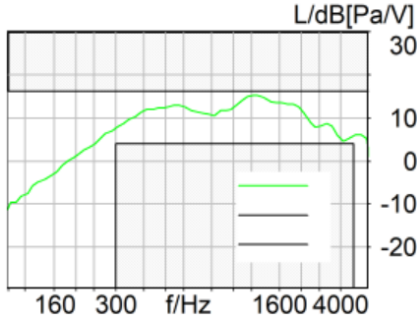
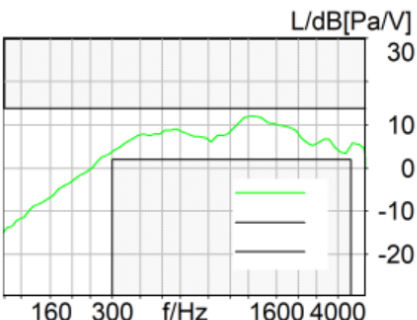
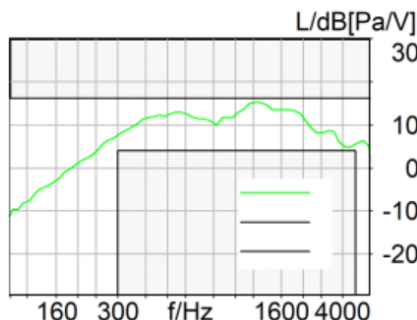
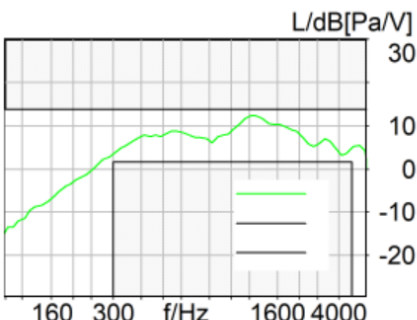
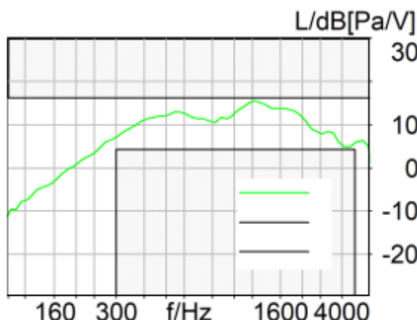
The receive frequency response shall be measured at the DRP in 1/12 octave bands. After translation to the FF, it shall fall between the applicable upper and lower limits.

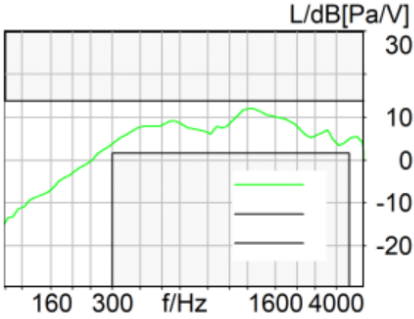
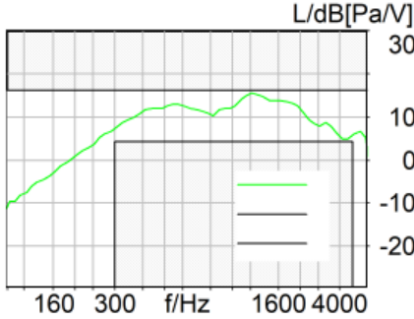
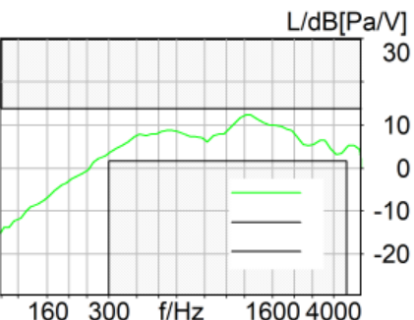
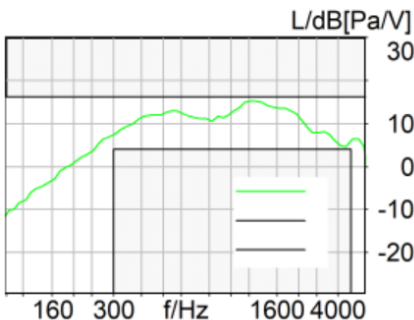
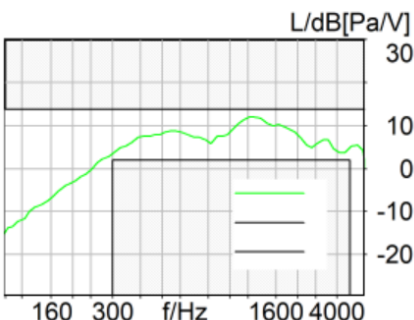
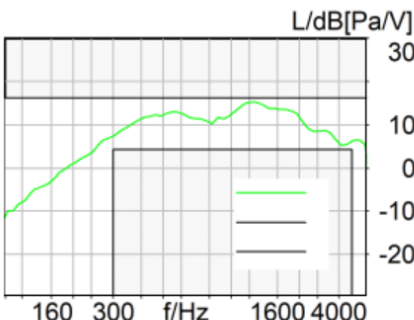
Volume Control: Max, LRP: FF

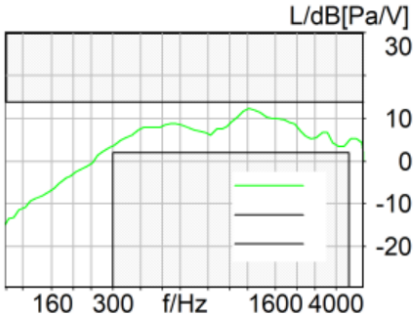
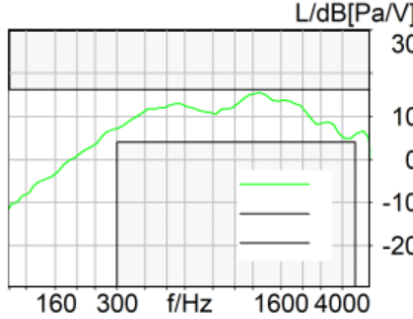
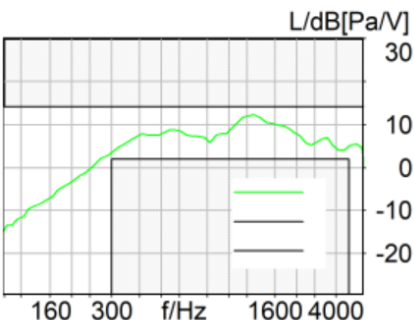
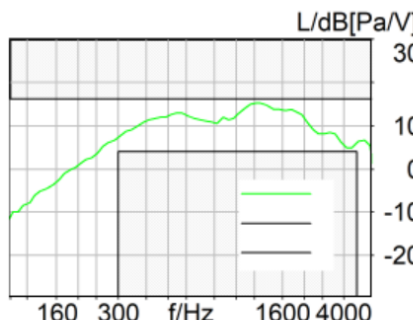
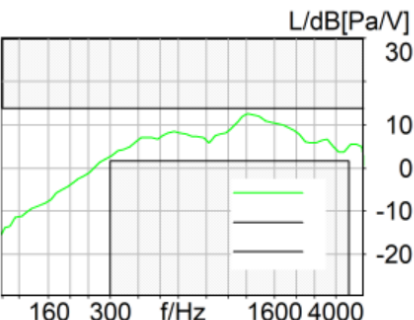
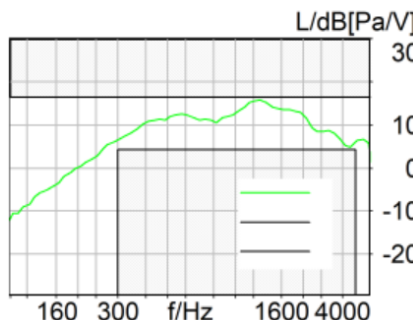
Verdict: Pass

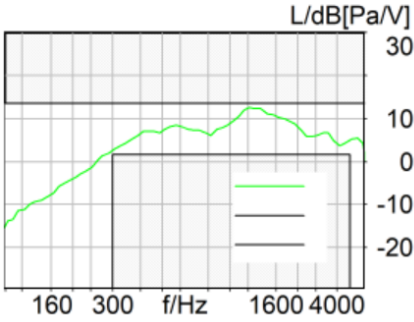
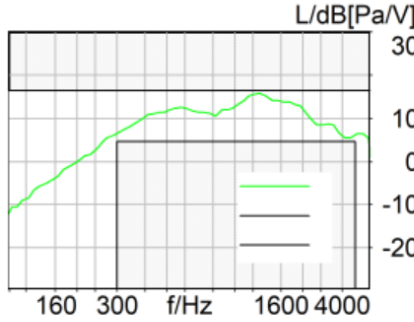
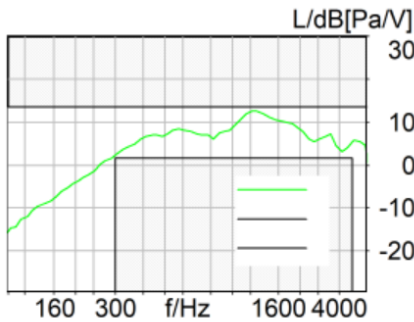
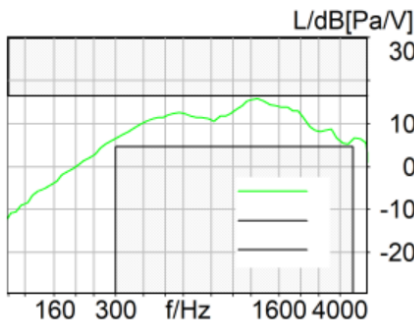
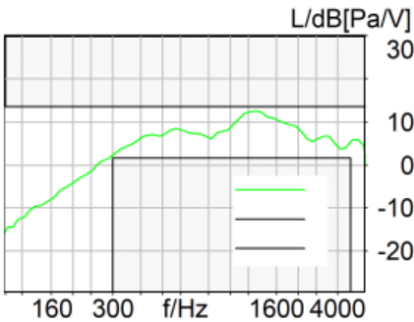
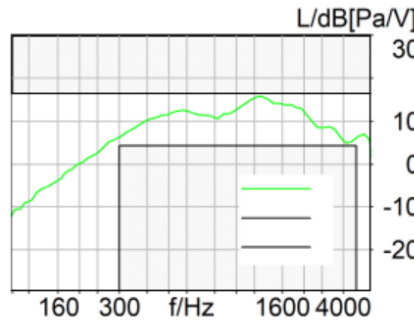
3.1 Frequency Response Graph for EVS-NB 24.4 kbps and LTE

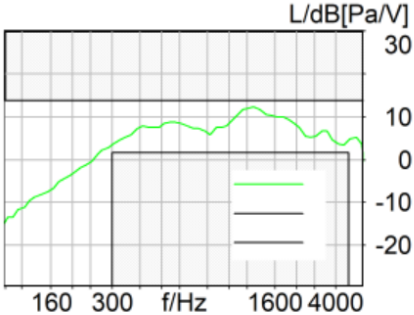
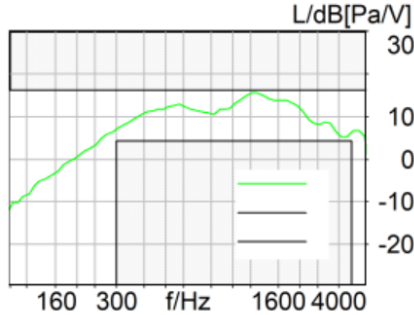
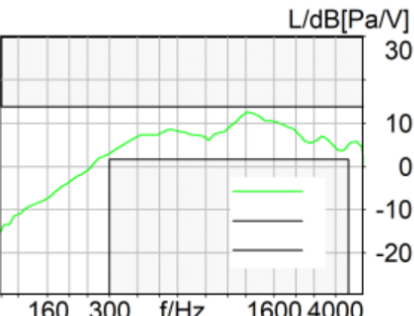
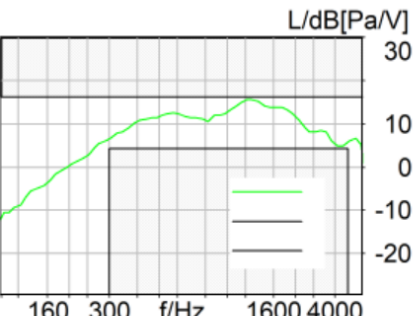
LTE Band	Frequency Response	
	2N	8N
Band 2	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.61 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.29 dB at 1216.1 Hz Ok
Band 4	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.52 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.69 dB at 3058.6 Hz Ok

Band 5	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.44 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.61 dB at 1216.1 Hz Ok
Band 7	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.71 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.74 dB at 1216.1 Hz Ok
Band 12	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.45 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.69 dB at 1216.1 Hz Ok

Band 13	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.56 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.71 dB at 3058.6 Hz Ok
Band 14	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.49 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.65 dB at 3245.6 Hz Ok
Band 25	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.74 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.90 dB at 1285.9 Hz Ok

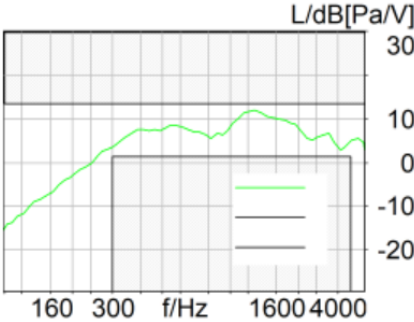
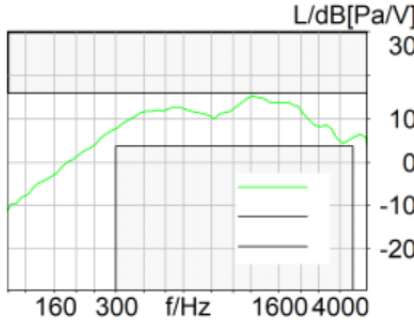
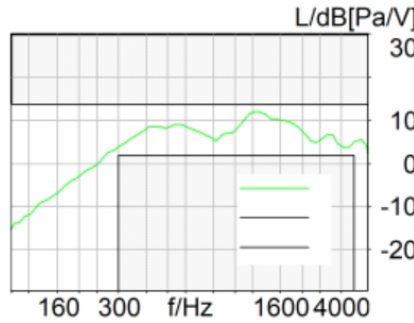
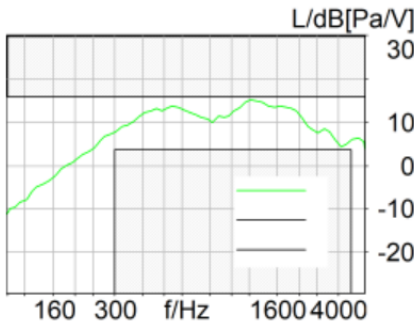
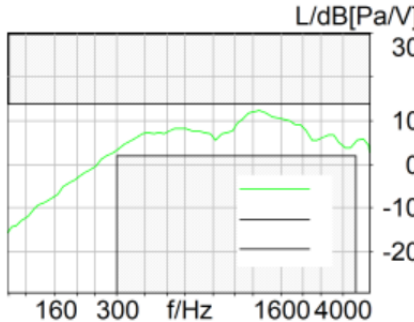
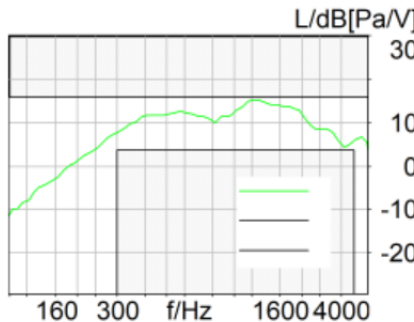
Band 26	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.53 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.67 dB at 1285.9 Hz Ok
Band 17	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.74 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.79 dB at 1285.9 Hz Ok
Band 38	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.18 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.57 dB at 3245.6 Hz Ok

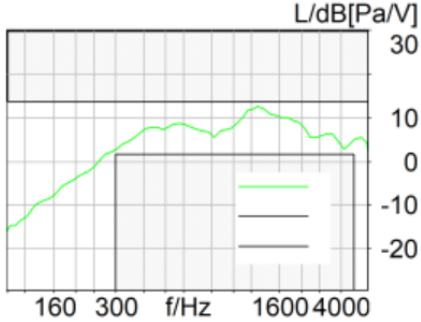
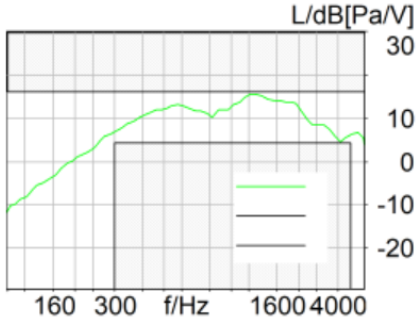
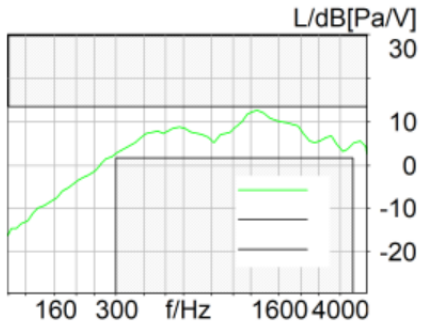
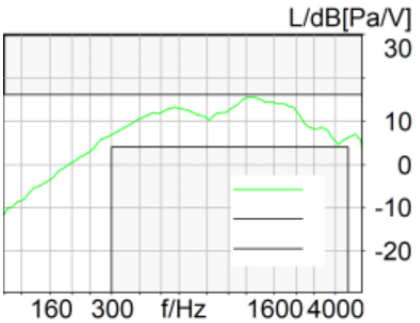
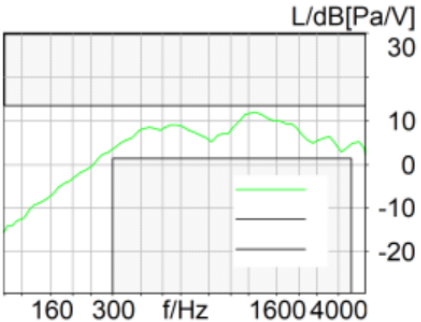
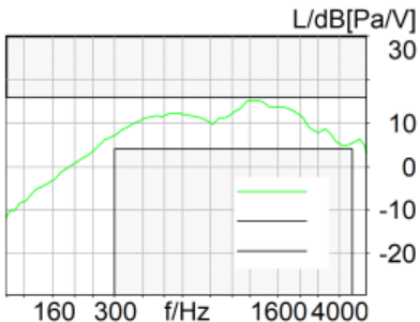
Band 41	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.12 dB at 1216.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.83 dB at 1285.9 Hz Ok
Band 42	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.97 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.68 dB at 3245.6 Hz Ok
Band 48	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.89 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.56 dB at 1285.9 Hz Ok

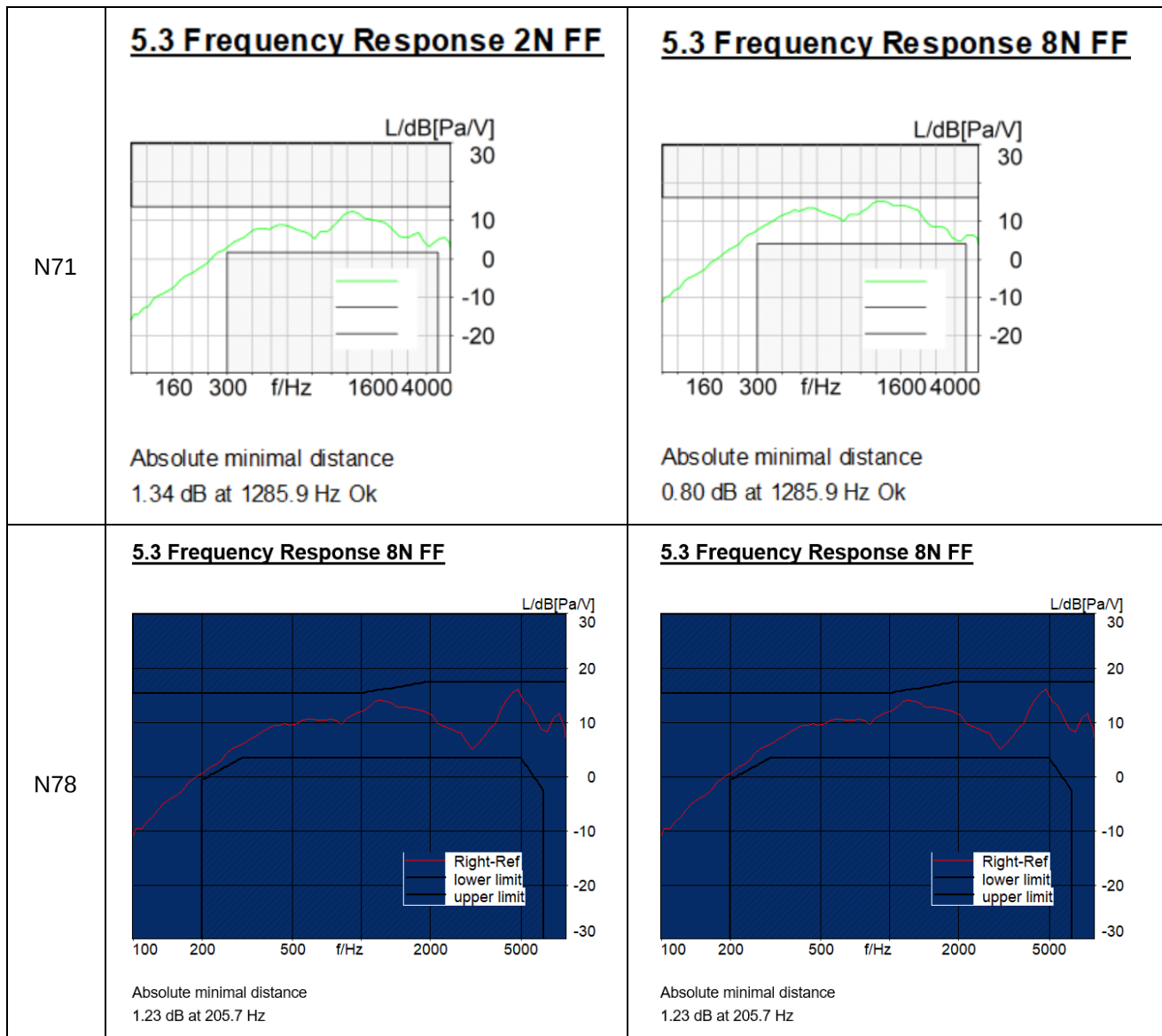
Band 66	5.3 Frequency Response 2N FF  Absolute minimal distance 1.57 dB at 1285.9 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.77 dB at 1285.9 Hz Ok
Band 71	5.3 Frequency Response 2N FF  Absolute minimal distance 1.21 dB at 1216.1 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.57 dB at 1285.9 Hz Ok

3.2 Frequency Response Graph for EVS-NB 24.4 kbps and FR1

FR1	Frequency Response	
Band	2N	8N

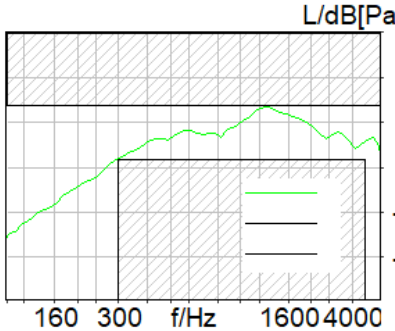
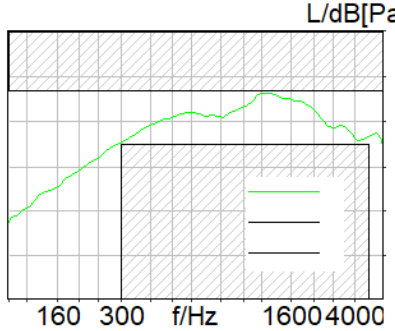
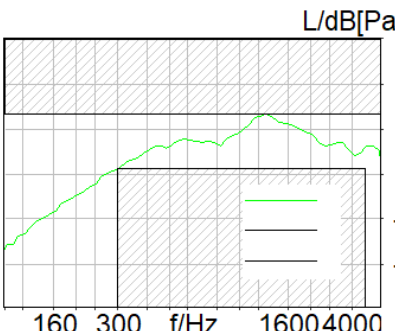
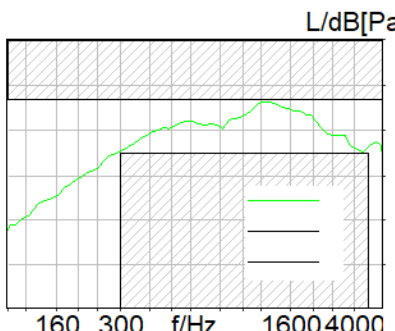
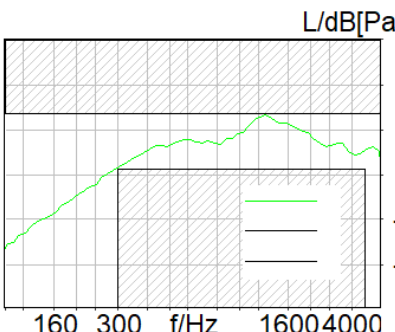
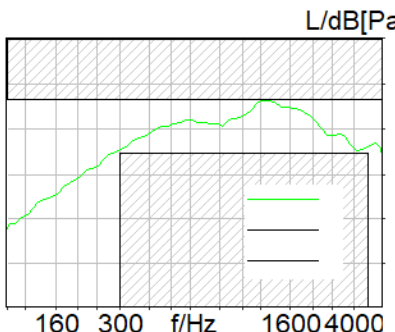
N2	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.42 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.54 dB at 1216.1 Hz Ok
N5	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.77 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.61 dB at 1216.1 Hz Ok
N7	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.60 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.45 dB at 1285.9 Hz Ok

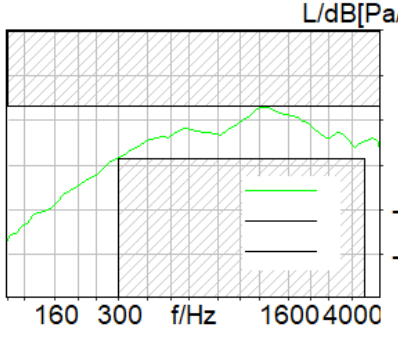
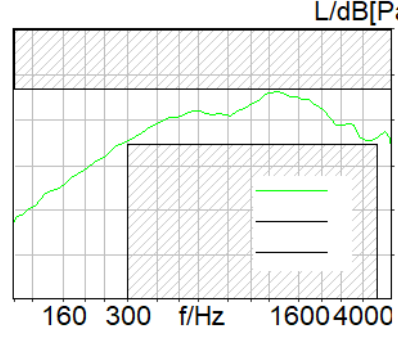
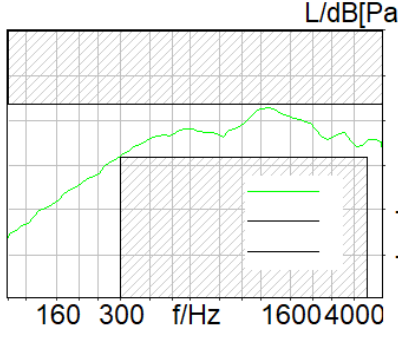
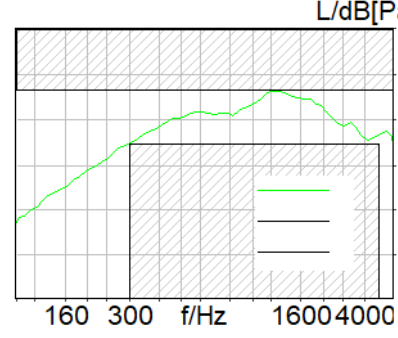
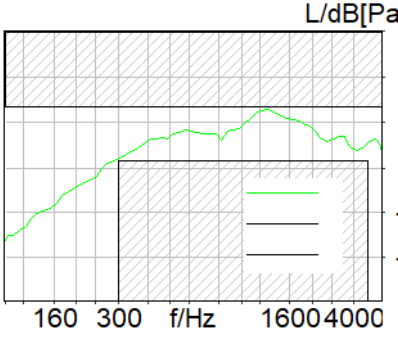
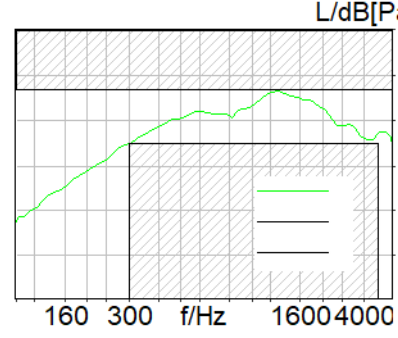
N41	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.17 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.51 dB at 1285.9 Hz Ok
N48	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.11 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.40 dB at 1216.1 Hz Ok
N66	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.37 dB at 1285.9 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.79 dB at 1285.9 Hz Ok

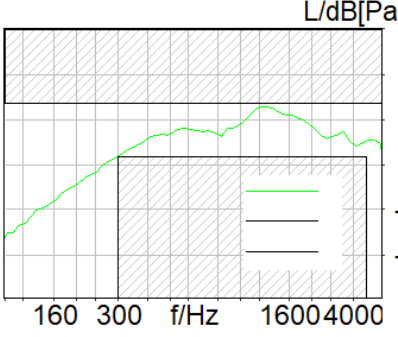
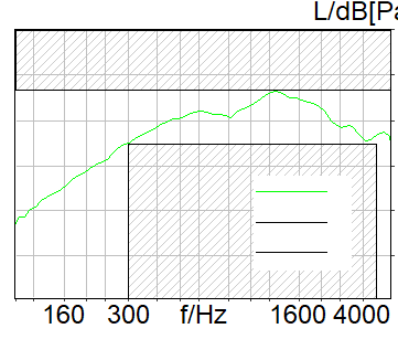


3.3 Frequency Response Graph for EVS-NB 24.4 kbps and WLAN

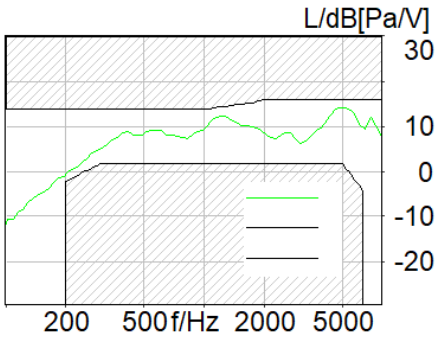
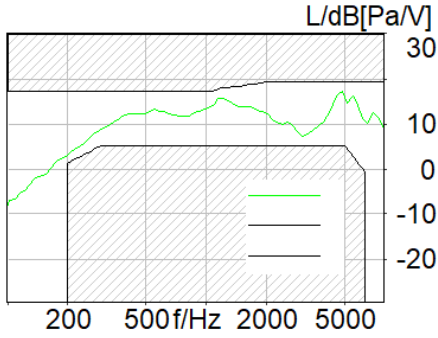
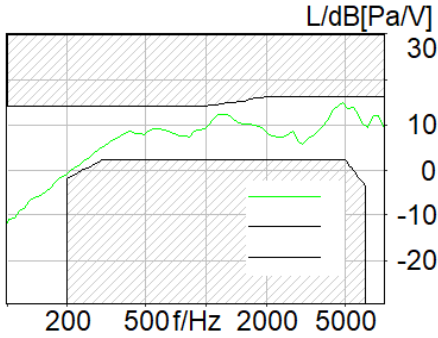
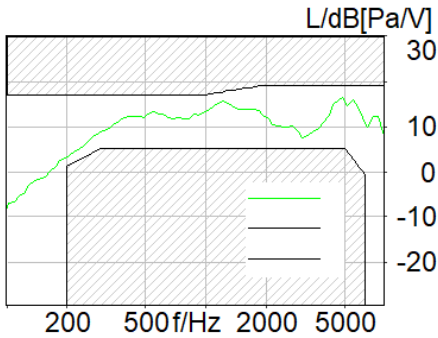
WLAN	Frequency Response	
Band	2N	8N

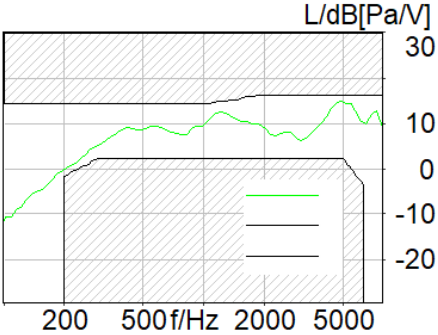
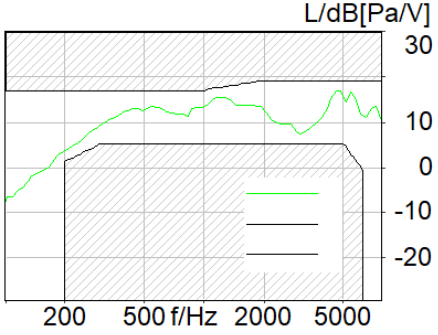
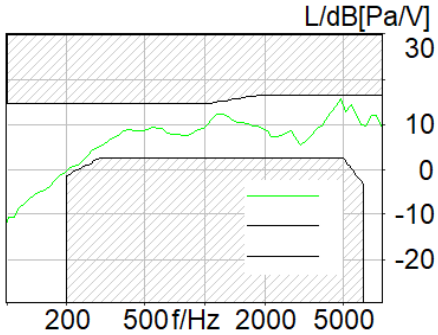
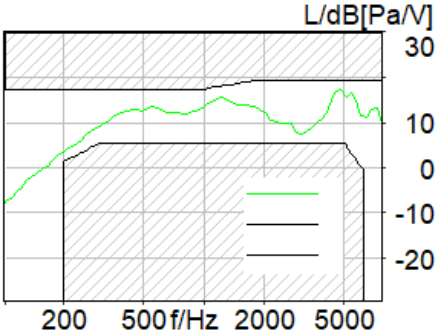
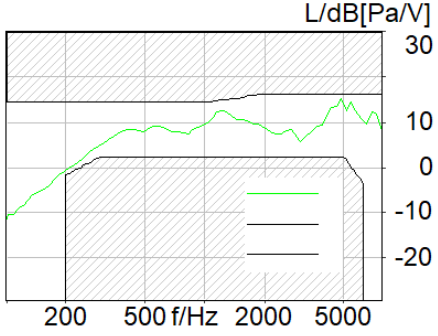
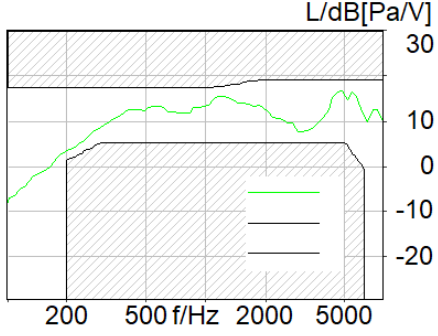
2.4G 802.11b	5.3 Frequency Response 2N FF  Absolute minimal distance 0.16 dB at 305.9 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.68 dB at 1285.9 Hz Ok
2.4G 802.11g	5.3 Frequency Response 2N FF  Absolute minimal distance 0.06 dB at 1285.9 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.56 dB at 1285.9 Hz Ok
2.4G 802.11n	5.3 Frequency Response 2N FF  Absolute minimal distance 0.22 dB at 305.9 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.49 dB at 1216.1 Hz Ok

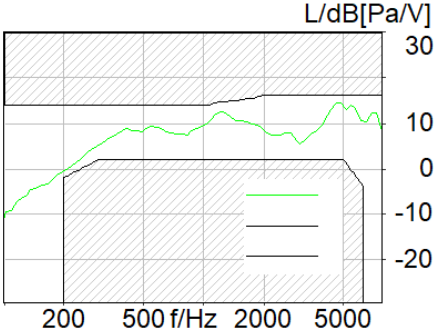
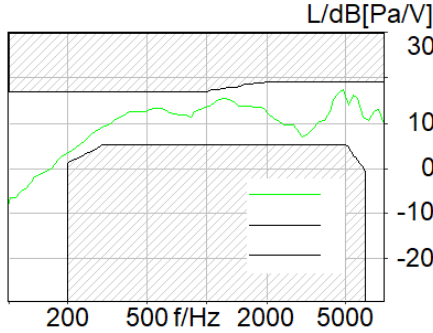
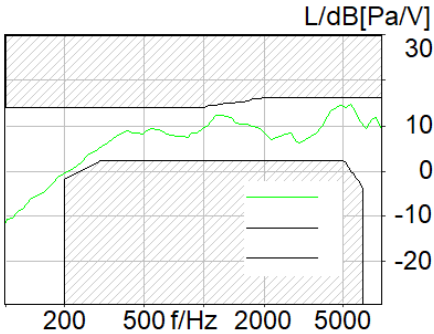
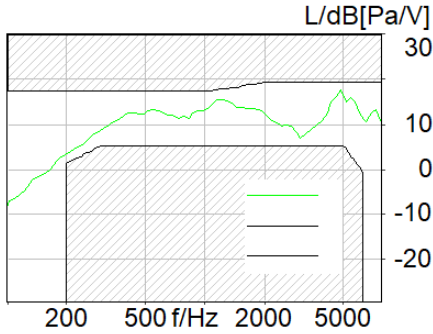
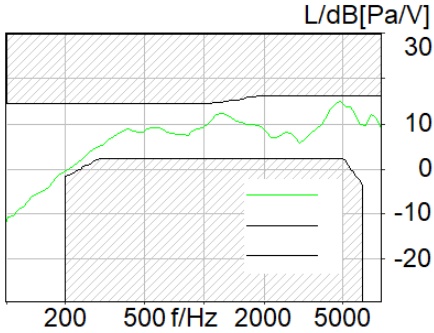
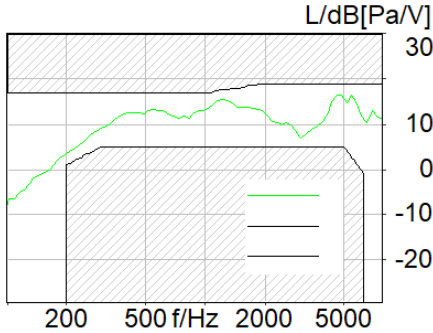
2.4G 802.11ac	5.3 Frequency Response 2N FF  Absolute minimal distance 0.25 dB at 1285.9 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.63 dB at 3245.6 Hz Ok
5G 802.11a	5.3 Frequency Response 2N FF  Absolute minimal distance 0.67 dB at 1285.9 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.36 dB at 1285.9 Hz Ok
5G 802.11n	5.3 Frequency Response 2N FF  Absolute minimal distance 0.50 dB at 1285.9 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 0.26 dB at 1285.9 Hz Ok

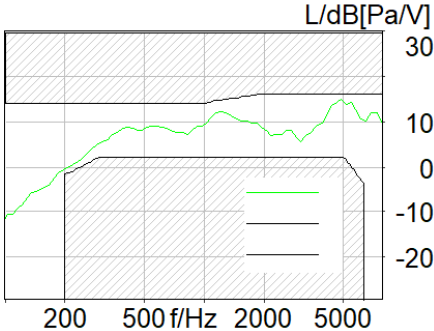
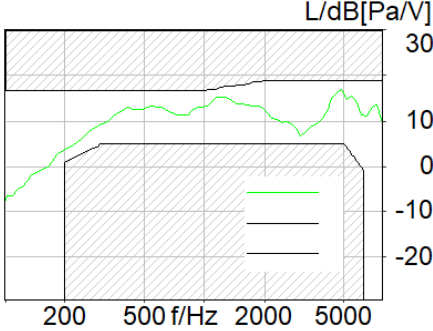
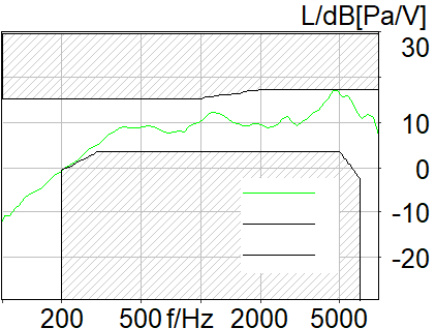
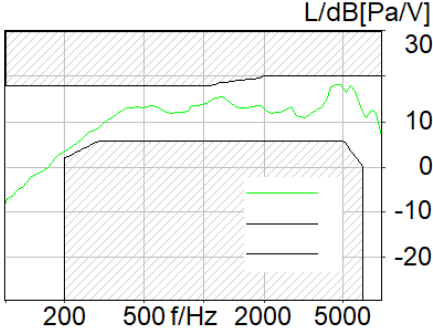
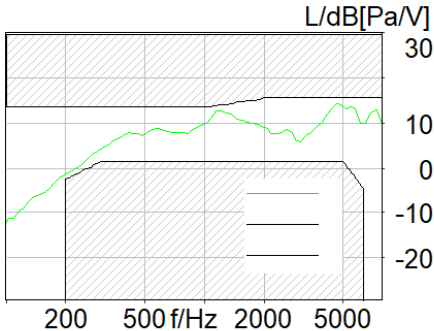
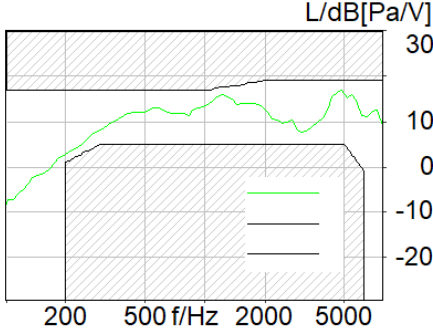
5G 802.11ac	5.3 Frequency Response 2N FF  The graph shows the frequency response for the 2N FF configuration. The x-axis represents frequency (f/Hz) on a logarithmic scale from 160 to 4000. The y-axis represents sound pressure level (L/dB[Pa/V]) from -20 to 30. A green curve shows the response, which rises from approximately -15 dB at 160 Hz to a peak of about 15 dB at 1285.9 Hz, then gradually declines. A shaded rectangular region highlights the area between 300 Hz and 1600 Hz, and between -10 dB and 10 dB. Below the graph, the text states: 'Absolute minimal distance 0.54 dB at 1285.9 Hz Ok'.	5.3 Frequency Response 8N FF  The graph shows the frequency response for the 8N FF configuration. The x-axis represents frequency (f/Hz) on a logarithmic scale from 160 to 4000. The y-axis represents sound pressure level (L/dB[Pa/V]) from -20 to 30. A green curve shows the response, which rises from approximately -15 dB at 160 Hz to a peak of about 15 dB at 1285.9 Hz, then gradually declines. A shaded rectangular region highlights the area between 300 Hz and 1600 Hz, and between -10 dB and 10 dB. Below the graph, the text states: 'Absolute minimal distance 0.26 dB at 1285.9 Hz Ok'.
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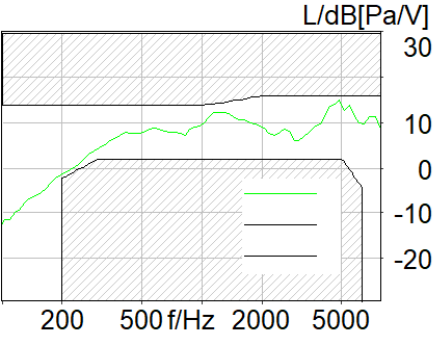
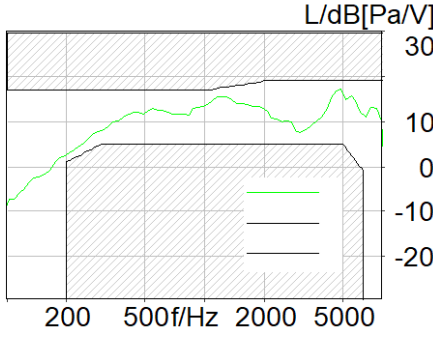
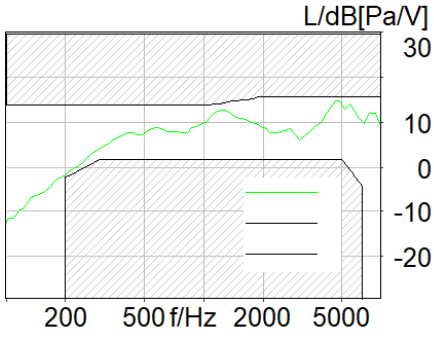
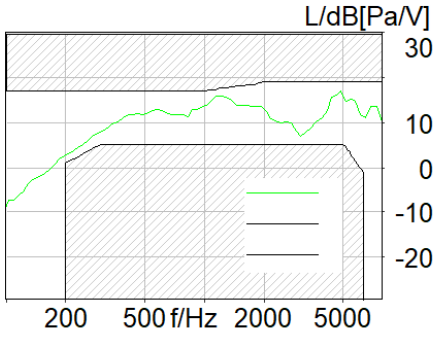
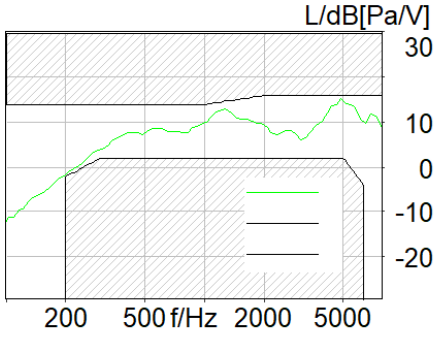
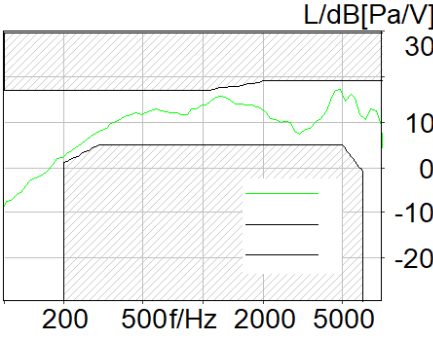
3.4 Frequency Response Graph for EVS-WB 24.4 kbps and LTE

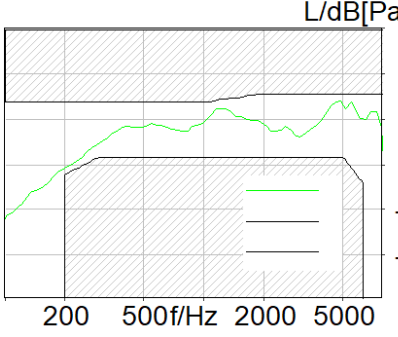
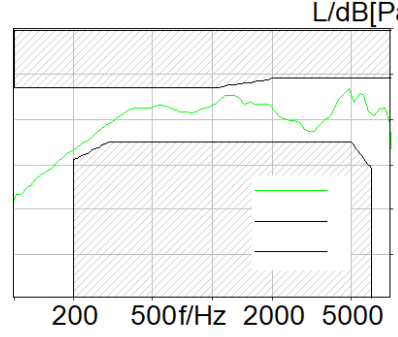
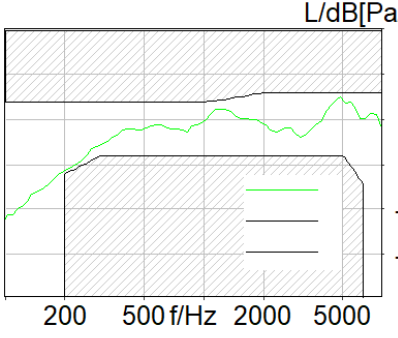
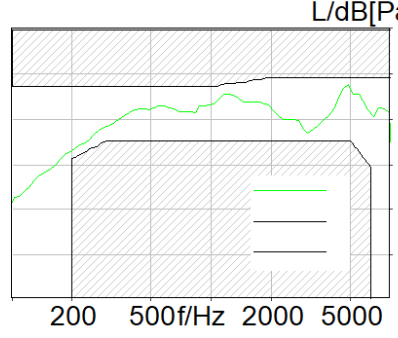
LTE Band	Frequency Response	
	2N	8N
Band 2	5.3 Frequency Response 2N FF  Absolute minimal distance 1.72 dB at 4870.0 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 2.05 dB at 4870.0 Hz Ok
Band 4	5.3 Frequency Response 2N FF  Absolute minimal distance 1.18 dB at 4870.0 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 2.20 dB at 205.7 Hz Ok

Band 5	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.48 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 2.09 dB at 4620.1 Hz Ok
Band 7	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.10 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.94 dB at 4870.0 Hz Ok
Band 12	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.11 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 2.15 dB at 1151.2 Hz Ok

Band 13	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.60 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.80 dB at 4870.0 Hz Ok
Band 14	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.39 dB at 5443.6 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.78 dB at 4870.0 Hz Ok
Band 25	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.37 dB at 205.7 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 2.00 dB at 1151.2 Hz Ok

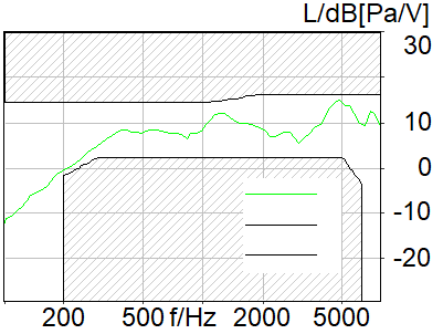
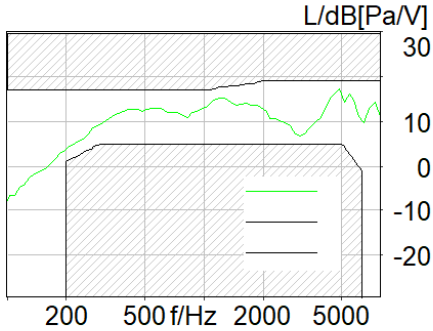
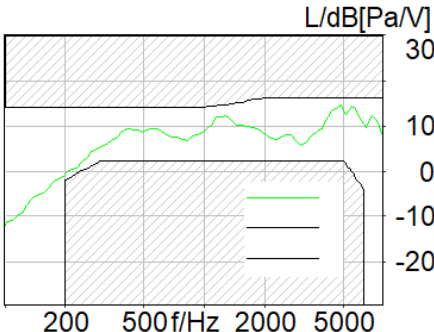
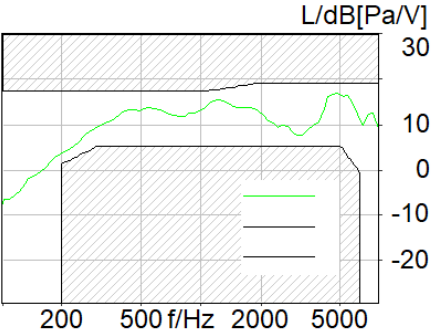
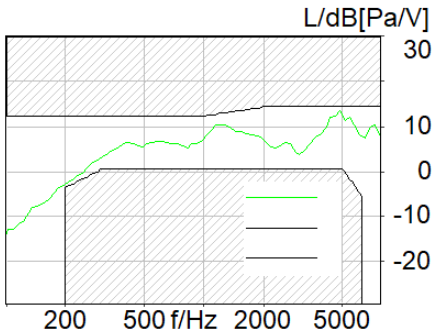
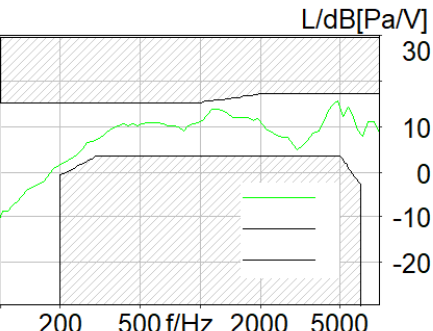
Band 26	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.27 dB at 205.7 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.70 dB at 4870.0 Hz Ok
Band 17	<u>5.3 Frequency Response 2N DF</u>  Absolute minimal distance 0.19 dB at 205.7 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.54 dB at 4870.0 Hz Ok
Band 38	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.19 dB at 4620.1 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.82 dB at 1151.2 Hz Ok

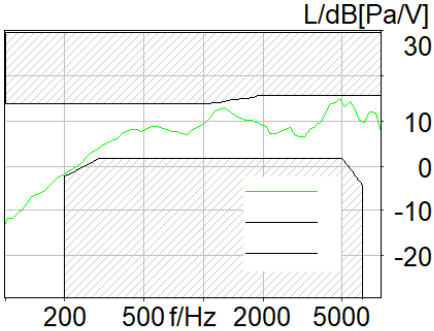
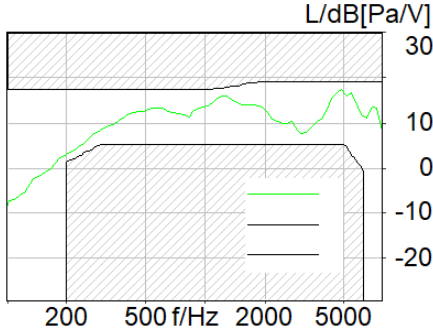
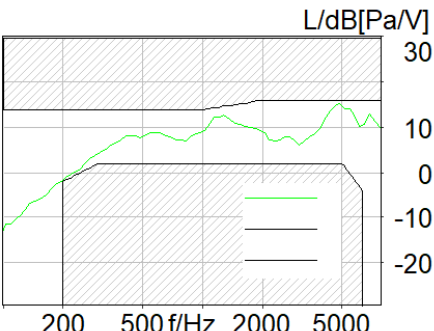
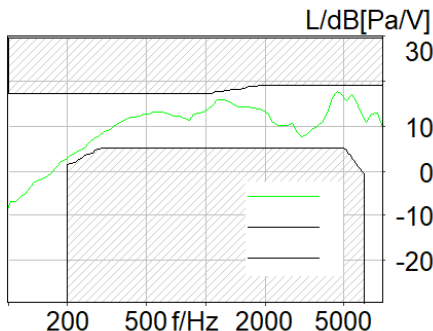
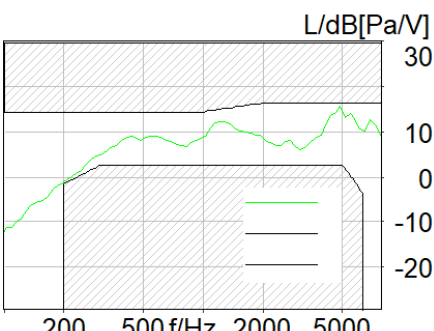
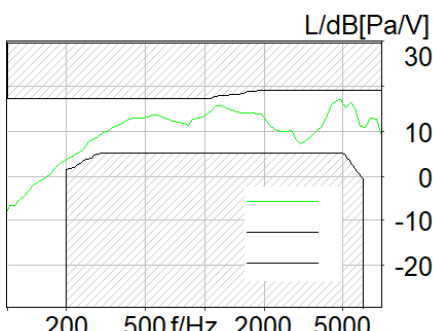
Band 41	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.79 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.81 dB at 4870.0 Hz Ok
Band 42	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.94 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.73 dB at 1151.2 Hz Ok
Band 48	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.65 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.70 dB at 4870.0 Hz Ok

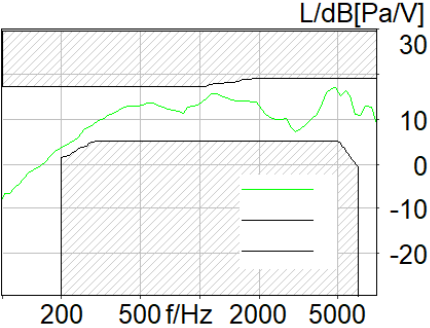
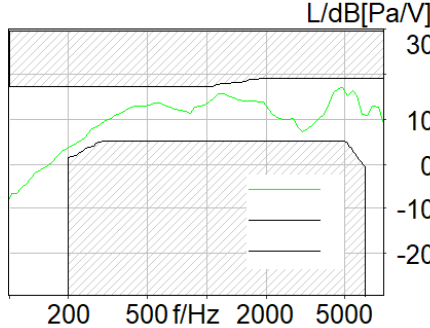
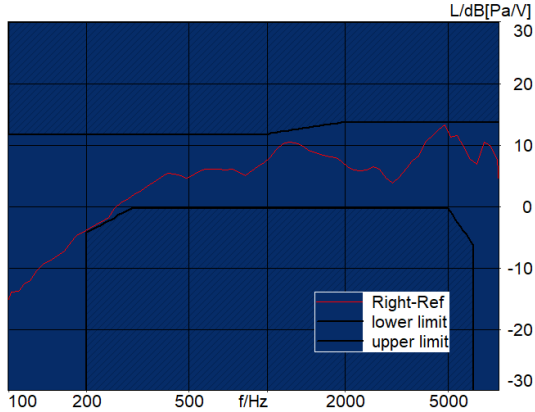
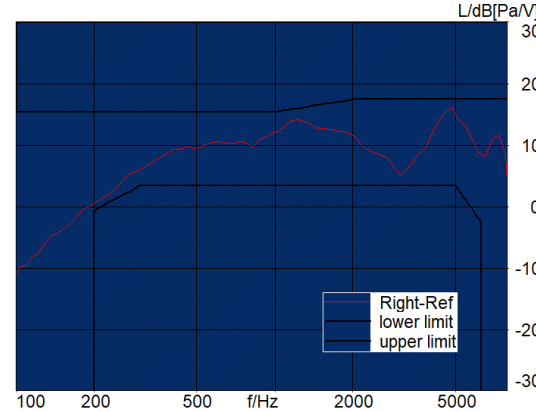
Band 66	5.3 Frequency Response 2N FF  Absolute minimal distance 1.49 dB at 4870.0 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 2.11 dB at 1151.2 Hz Ok
Band 71	5.3 Frequency Response 2N FF  Absolute minimal distance 0.82 dB at 4870.0 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 1.74 dB at 4870.0 Hz Ok

3.5 Frequency Response Graph for EVS-WB 24.4 kbps and FR1

FR1	Frequency Response	
Band	2N	8N

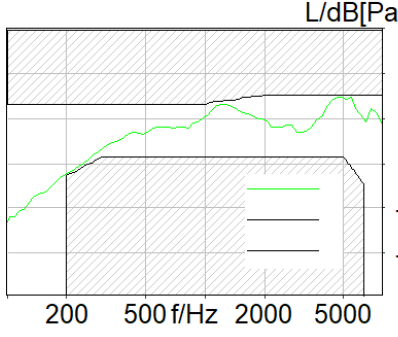
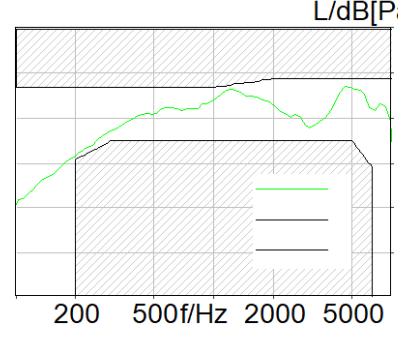
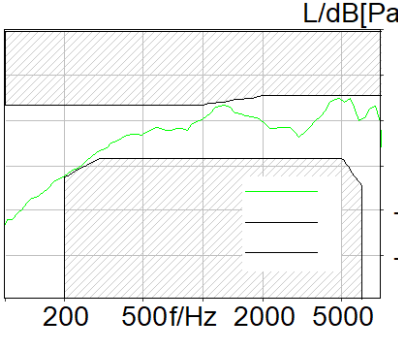
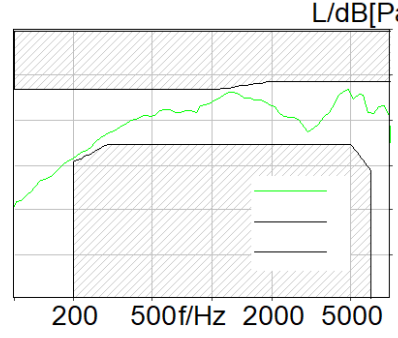
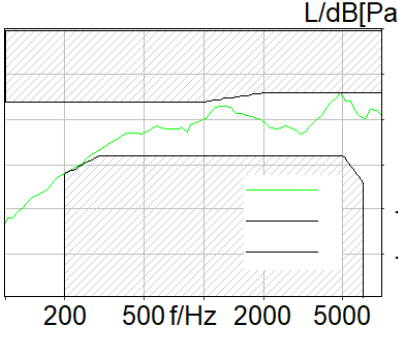
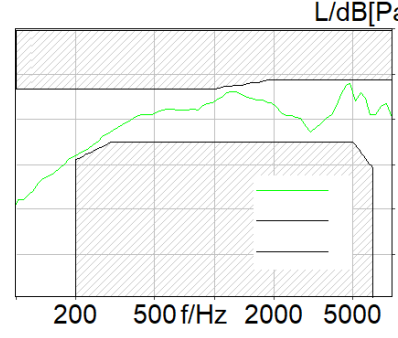
N2	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.27 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.78 dB at 4870.0 Hz Ok
N5	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 1.34 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 2.24 dB at 1151.2 Hz Ok
N7	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.93 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.75 dB at 4870.0 Hz Ok

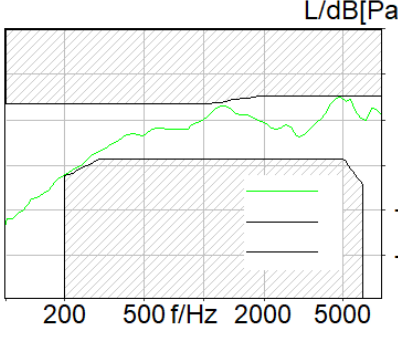
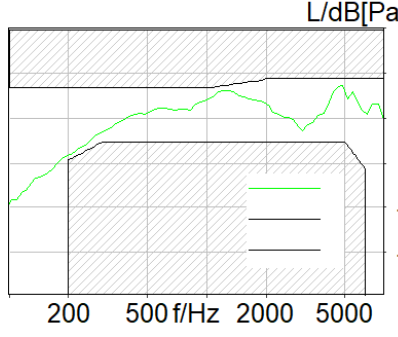
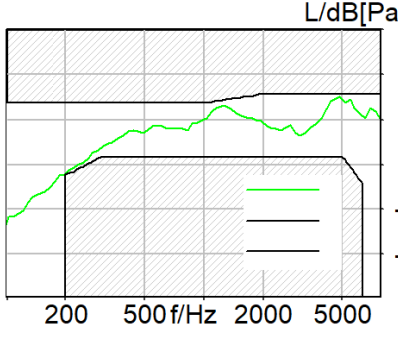
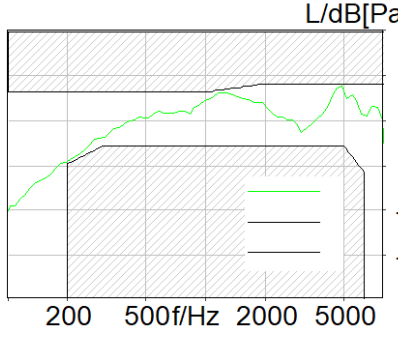
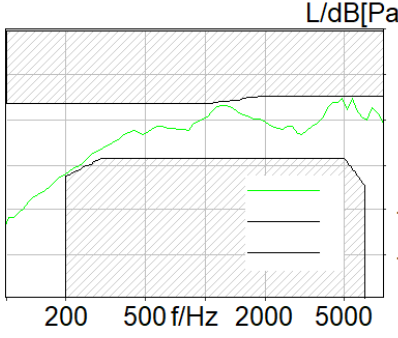
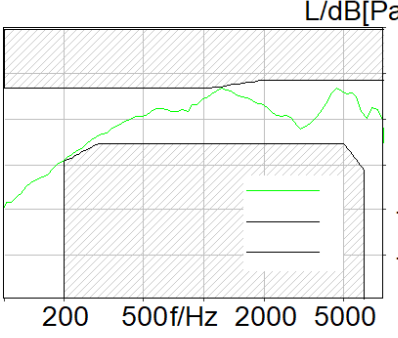
N41	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.76 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.83 dB at 1216.1 Hz Ok
N48	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.61 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.74 dB at 4620.1 Hz Ok
N66	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.69 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 2.14 dB at 4870.0 Hz Ok

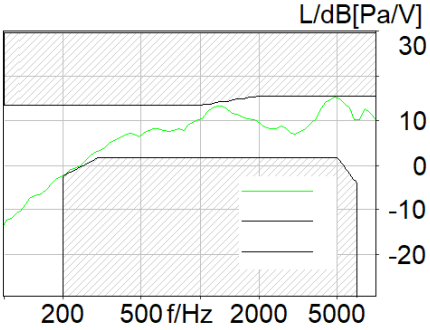
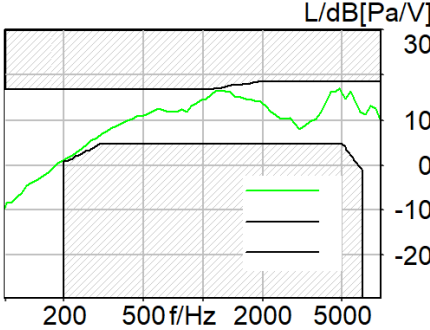
N71	5.3 Frequency Response 8N FF  Absolute minimal distance 2.14 dB at 4870.0 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 2.14 dB at 4870.0 Hz Ok
N78	5.3 Frequency Response 2N FF  Absolute minimal distance 0.41 dB at 205.7 Hz	5.3 Frequency Response 8N FF  Absolute minimal distance 1.23 dB at 205.7 Hz

3.6 Frequency Response Graph for EVS-WB 24.4 kbps and WLAN

WLAN	Frequency Response	
Band	2N	8N

2.4G 802.11b	5.3 Frequency Response 2N FF  Absolute minimal distance 0.54 dB at 4620.1 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 1.01 dB at 1216.1 Hz Ok
2.4G 802.11g	5.3 Frequency Response 2N FF  Absolute minimal distance 0.40 dB at 5443.6 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 1.02 dB at 1216.1 Hz Ok
2.4G 802.11n	5.3 Frequency Response 2N FF  Absolute minimal distance 0.11 dB at 4870.0 Hz Ok	5.3 Frequency Response 8N FF  Absolute minimal distance 1.07 dB at 205.7 Hz Ok

2.4G 802.11ac	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.49 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 1.06 dB at 1216.1 Hz Ok
5G 802.11a	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.61 dB at 4870.0 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.63 dB at 205.7 Hz Ok
5G 802.11n	<u>5.3 Frequency Response 2N FF</u>  Absolute minimal distance 0.71 dB at 5443.6 Hz Ok	<u>5.3 Frequency Response 8N FF</u>  Absolute minimal distance 0.60 dB at 1216.1 Hz Ok

	5.3 Frequency Response 2N FF	5.3 Frequency Response 8N FF
5G 802.11ac	 Absolute minimal distance 0.31 dB at 4870.0 Hz Ok	 Absolute minimal distance 0.64 dB at 1151.2 Hz Ok

---End of Report---