Appendix-B LTE NB-IoT Band 71

Effective (Isotropic) Radiated Power Output Data for NB1

Test Result

Band	OpMode	SCS	BW	Modulation	Channel	Tones	Power (dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133124	1@0	21.36	20.87	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133124	1@0	21.35	20.86	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133124	1@47	21.35	20.86	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133124	1@47	21.35	20.86	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133297	1@0	21.23	20.74	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	21.23	20.74	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133297	1@47	21.15	20.66	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	21.13	20.64	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133470	1@0	21.76	21.27	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133470	1@0	21.73	21.24	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133470	1@47	21.67	21.18	34.77	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133470	1@47	21.65	21.16	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133124	1@0	21.20	20.71	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133124	1@0	21.21	20.72	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133124	1@11	21.16	20.67	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133124	1@11	21.17	20.68	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133297	1@0	21.18	20.69	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	21.20	20.71	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133297	1@11	21.10	20.61	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	21.11	20.62	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133470	1@0	20.80	20.31	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133470	1@0	20.82	20.33	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133470	1@11	20.71	20.22	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133470	1@11	20.73	20.24	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133124	3@3	20.00	19.51	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	3@3	19.98	19.49	34.77	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133470	3@3	20.91	20.42	34.77	PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

Peak-to-Average Ratio(CCDF) for NB1

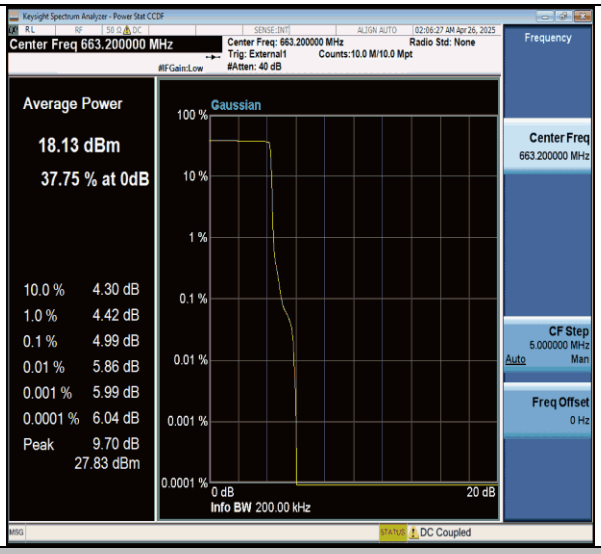
Test Result

Band	OpMode	SCS	BW	Modulation	Channel	Tones	Result (dBm)	Limit (dBm)	Verdict
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133124	1@0	4.59	<=13	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133124	1@47	4.99	<=13	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	4.63	<=13	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	4.98	<=13	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133470	1@0	4.58	<=13	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133470	1@47	5.05	<=13	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133124	1@0	6.52	<=13	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133124	1@11	7.02	<=13	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	6.56	<=13	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	7.05	<=13	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133470	1@0	6.55	<=13	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133470	1@11	7.05	<=13	PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

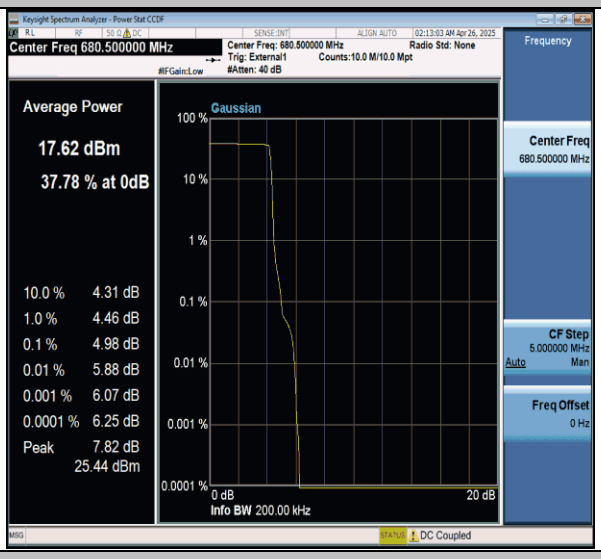
Test Graphs

Band71-0.18-QPSK-133124-PASS

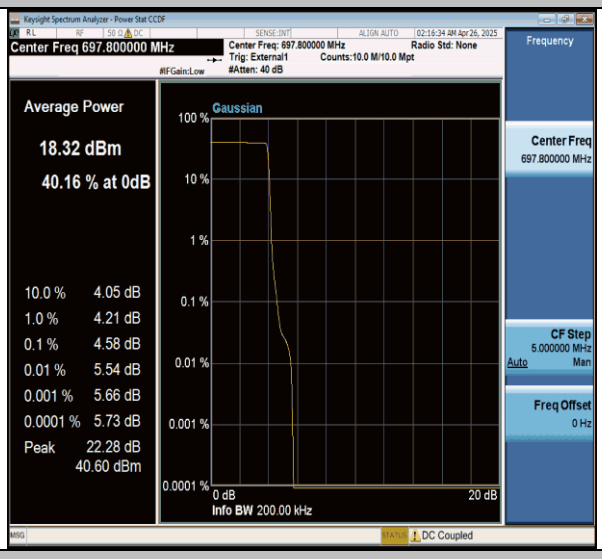


Band71-0.18-QPSK-133124-PASS

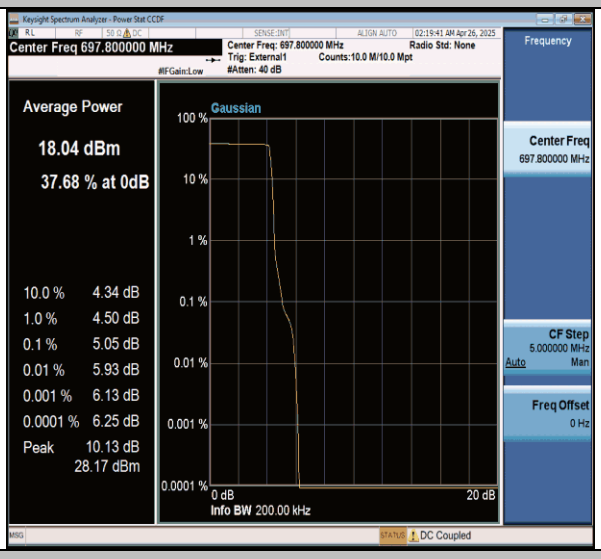
Band71-0.18-QPSK-133297-PASS



Band71-0.18-QPSK-133297-PASS



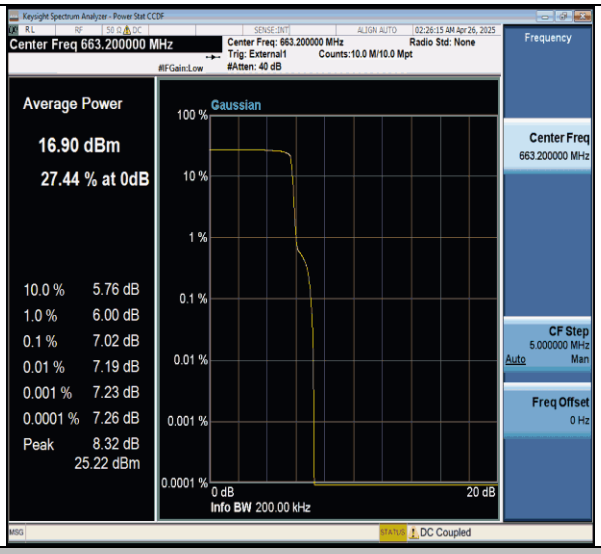
Band71-0.18-QPSK-133470-PASS



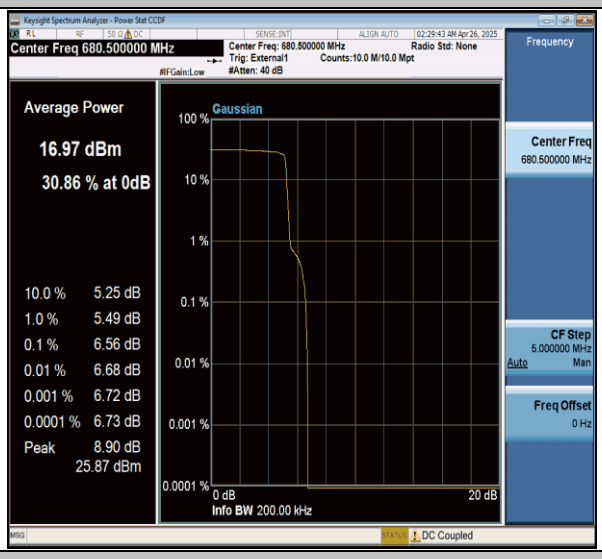
Band71-0.18-QPSK-133470-PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

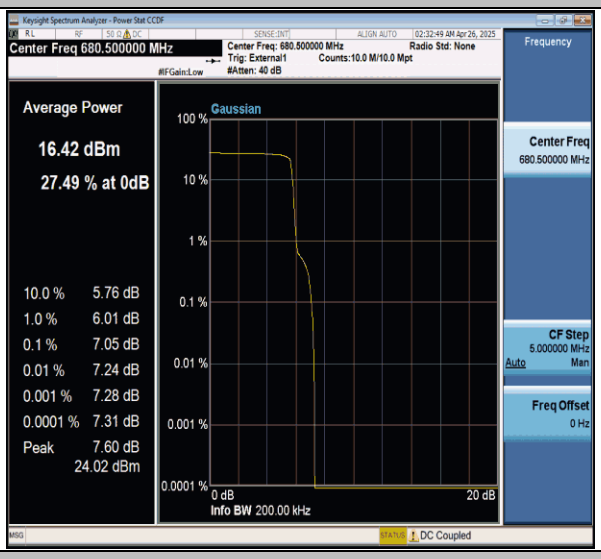
Band71-0.18-QPSK-133124-PASS



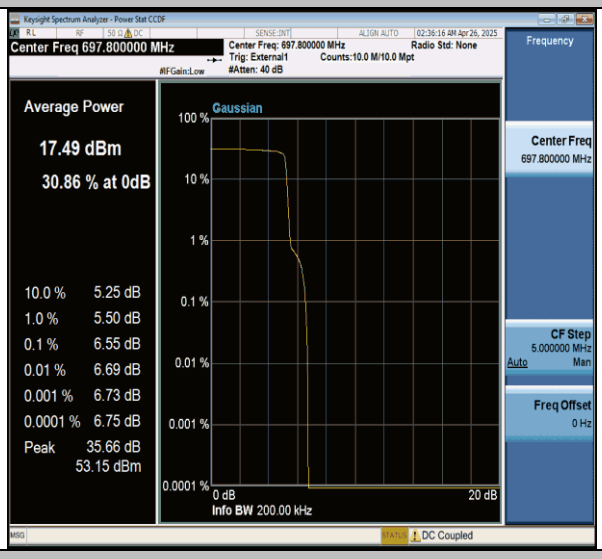
Band71-0.18-QPSK-133124-PASS



Band71-0.18-QPSK-133297-PASS



Band71-0.18-QPSK-133297-PASS



Band71-0.18-QPSK-133470-PASS

Band71-0.18-QPSK-133470-PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

Emission Bandwidth for NB1

Test Result

Band	OpMode	SCS	BW	Modulation	Channel	Tones	OBW(MHz)	EBW(MHz)	Verdict
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133124	1@0	0.17689	0.1942	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133124	1@0	0.17749	0.1936	PASS
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133297	1@0	0.17777	0.1950	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	0.17687	0.1946	PASS
Band71	Stand-Alone	3.75kHz	0.18	BPSK	133470	1@0	0.17683	0.1936	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133470	1@0	0.17732	0.1925	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133124	1@0	0.11901	0.1131	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133124	1@0	0.12039	0.1294	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133124	12@0	0.19527	0.2254	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133124	12@0	0.18827	0.2139	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133297	1@0	0.12015	0.1142	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	0.12730	0.1028	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133297	12@0	0.19441	0.2254	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	12@0	0.19267	0.2215	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133470	1@0	0.12122	0.1125	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133470	1@0	0.12281	0.1140	PASS
Band71	Stand-Alone	15kHz	0.18	BPSK	133470	12@0	0.19471	0.2240	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133470	12@0	0.19270	0.2108	PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

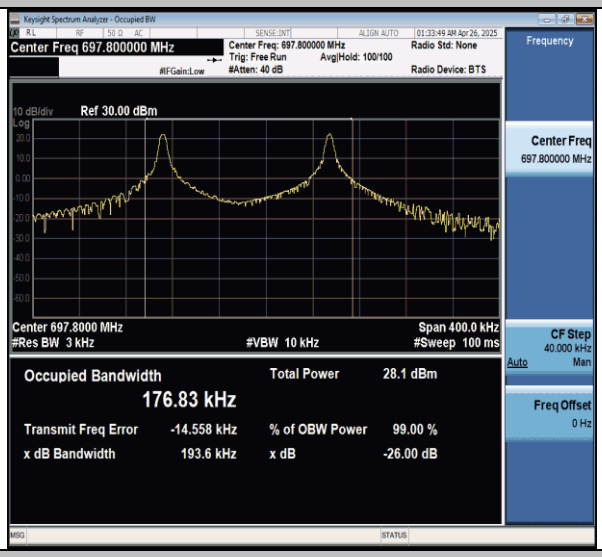
Test Graphs

Band71-0.18-BPSK-133124-PASS

Band71-0.18-QPSK-133124-PASS

Band71-0.18-BPSK-133297-PASS

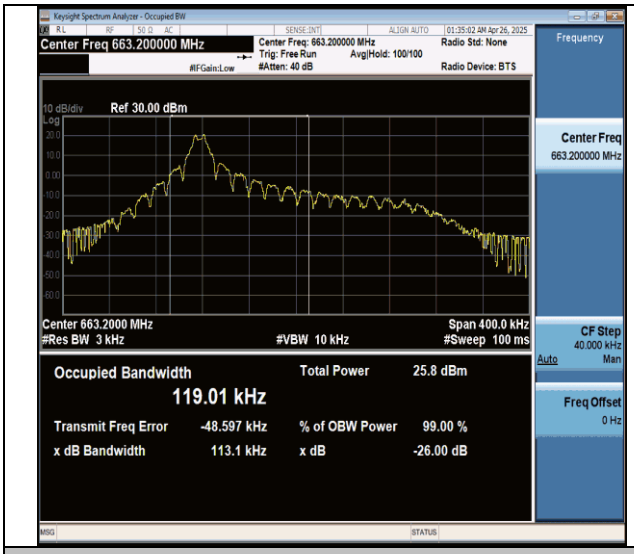
Band71-0.18-QPSK-133297-PASS



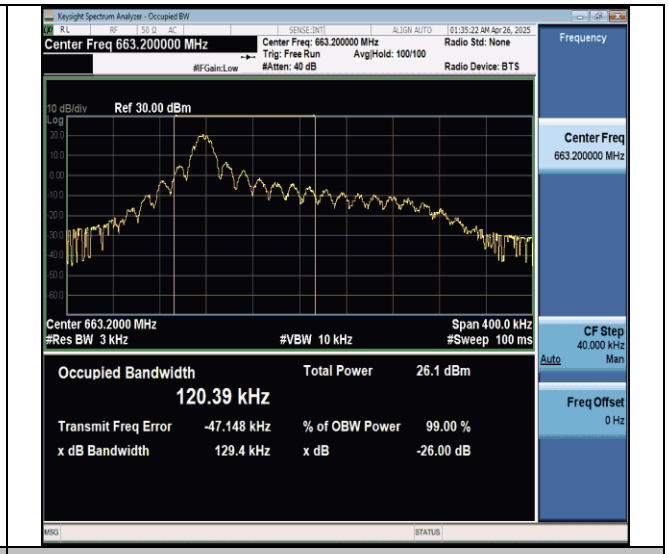
Band71-0.18-BPSK-133470-PASS

Band71-0.18-QPSK-133470-PASS

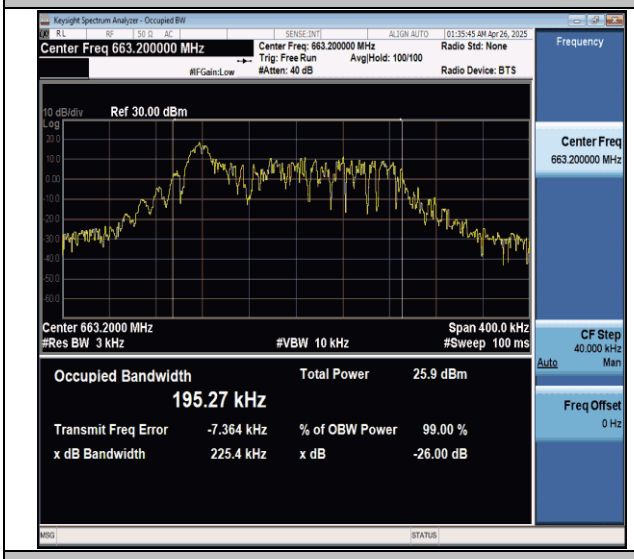
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.



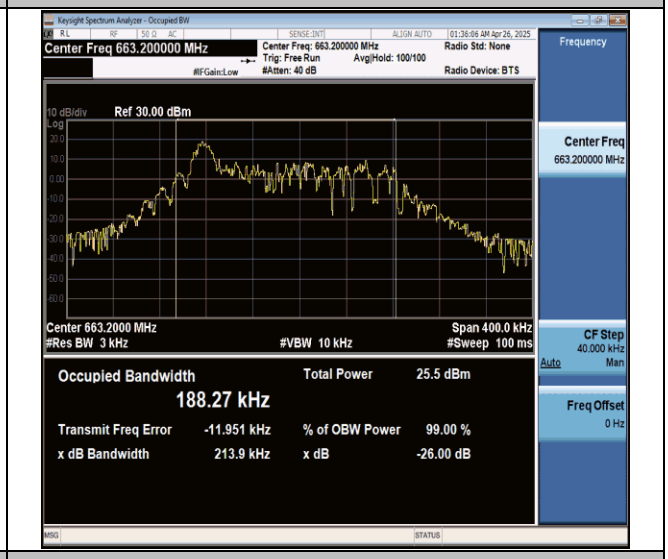
Band71-0.18-BPSK-133124-PASS



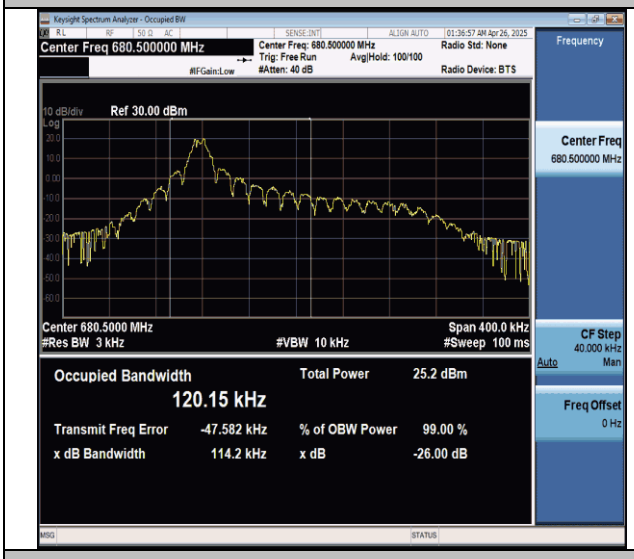
Band71-0.18-QPSK-133124-PASS



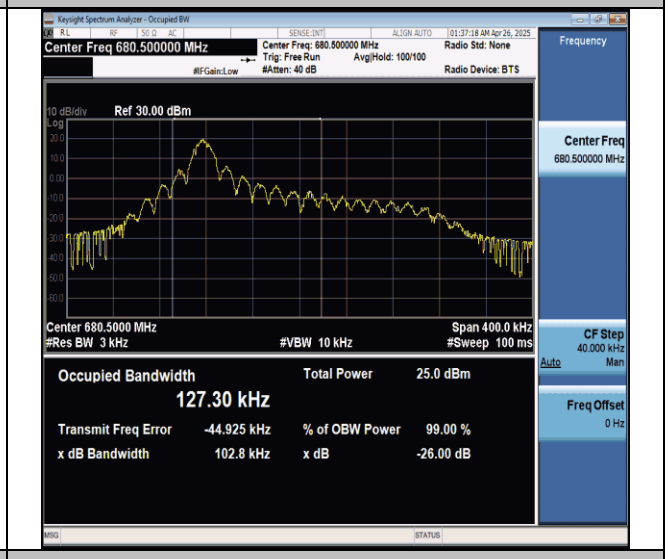
Band71-0.18-BPSK-133124-PASS



Band71-0.18-QPSK-133124-PASS

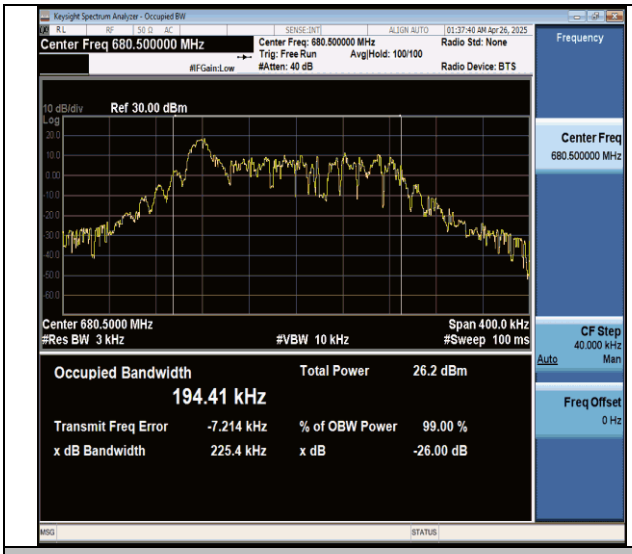


Band71-0.18-BPSK-133297-PASS

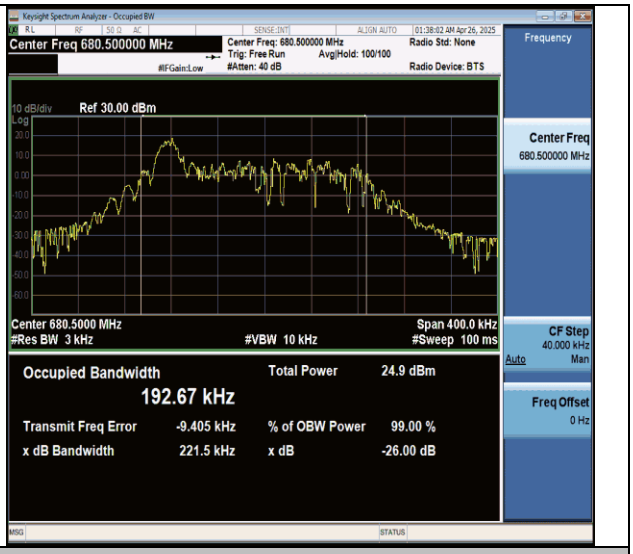


Band71-0.18-QPSK-133297-PASS

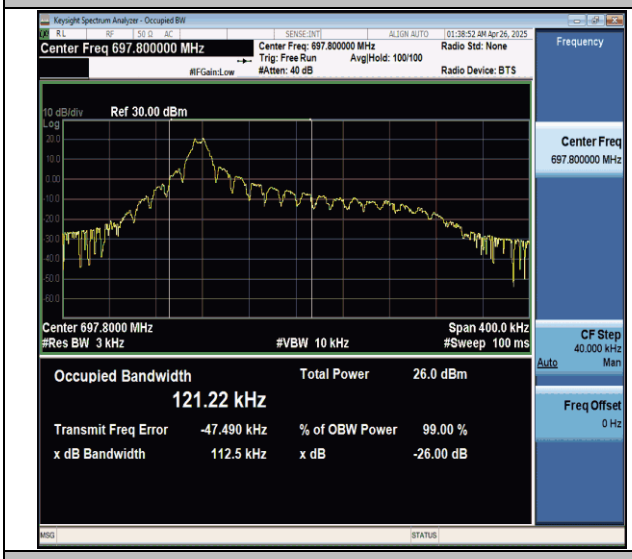
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.



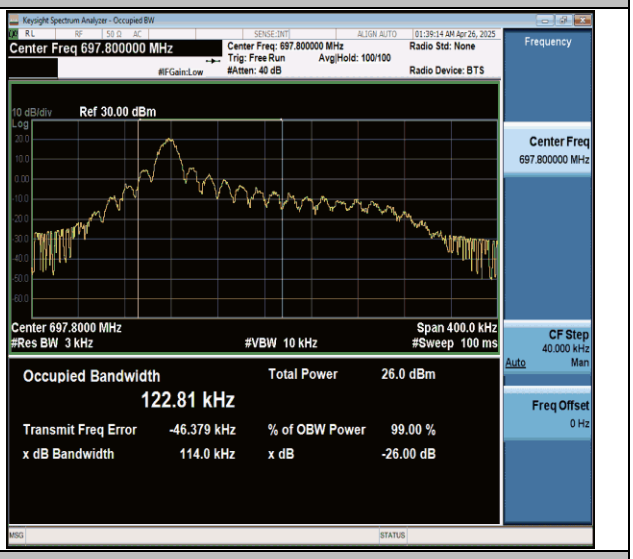
Band71-0.18-BPSK-133297-PASS



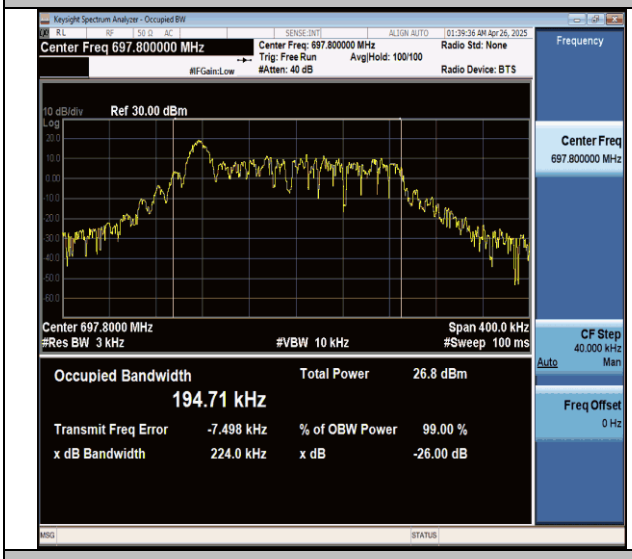
Band71-0.18-QPSK-133297-PASS



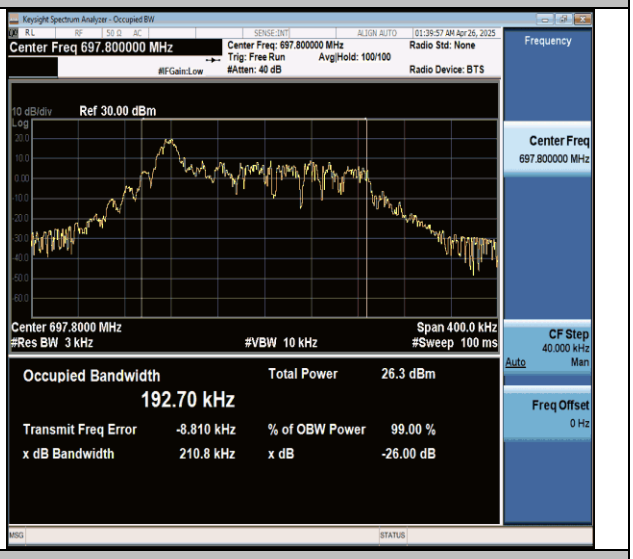
Band71-0.18-BPSK-133470-PASS



Band71-0.18-QPSK-133470-PASS



Band71-0.18-BPSK-133470-PASS

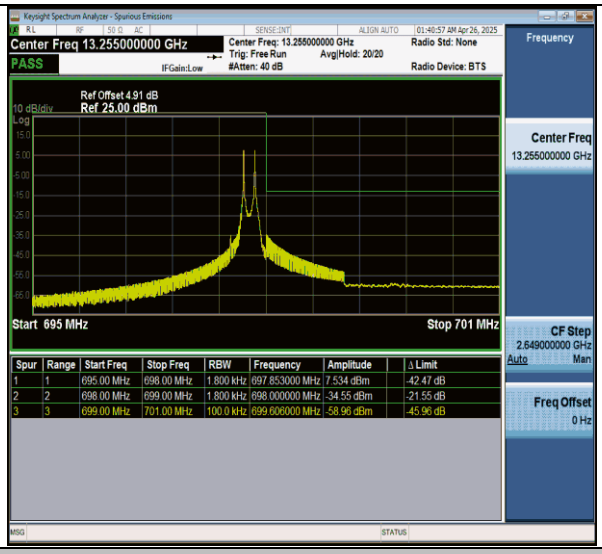


Band71-0.18-QPSK-133470-PASS

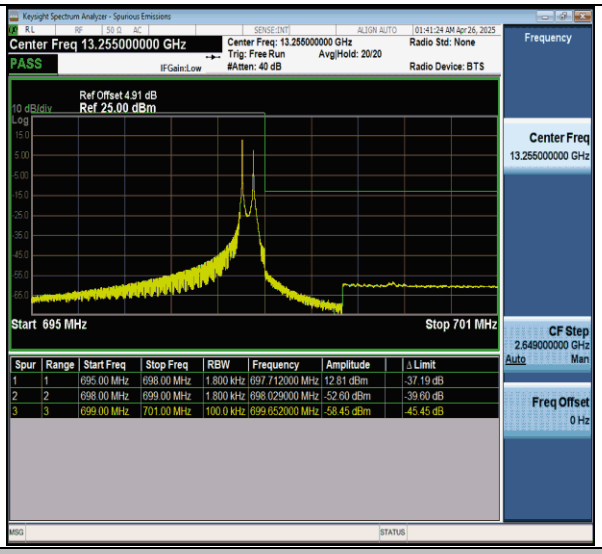
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

Band Edge for NB1

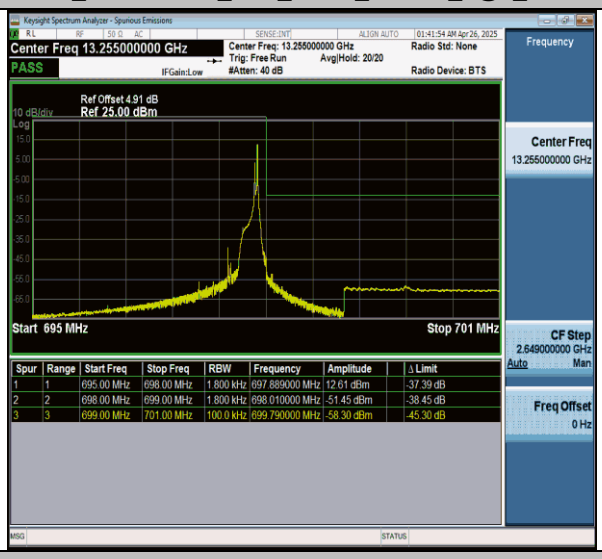
Test Graphs



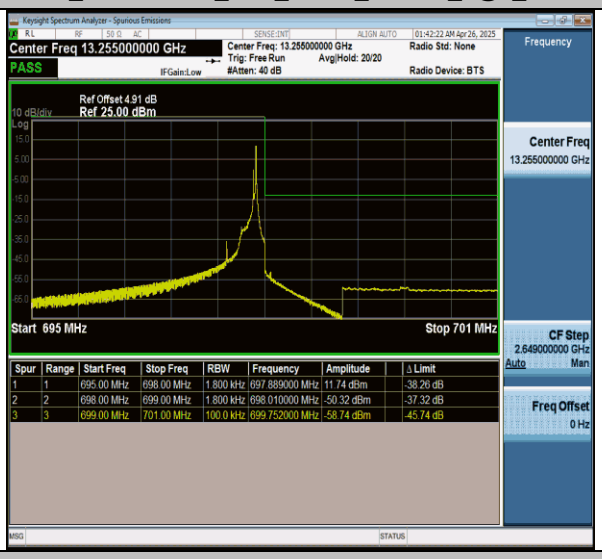
Band71_Stand-Alone_0.18_BPSK_133470_1@0_3.75kHz



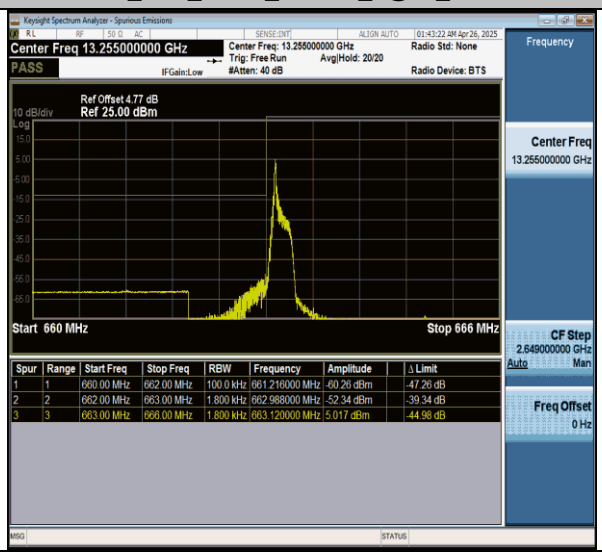
Band71_Stand-Alone_0.18_QPSK_133470_1@0_3.75kHz

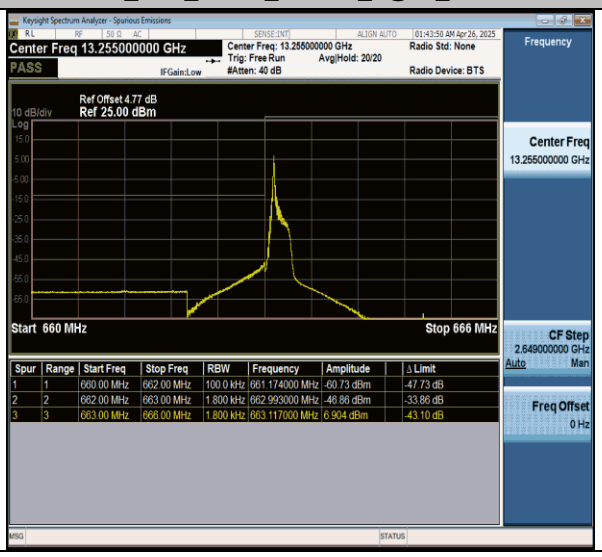


Band71_Stand-Alone_0.18_BPSK_133470_1@47_3.75kHz



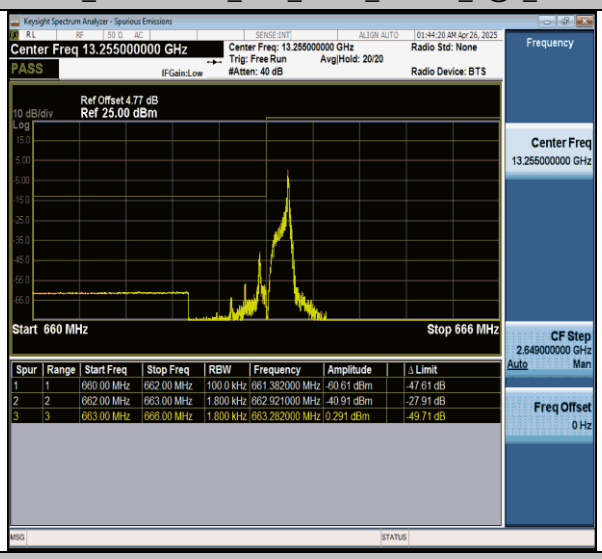
Band71_Stand-Alone_0.18_QPSK_133470_1@47_3.75kHz



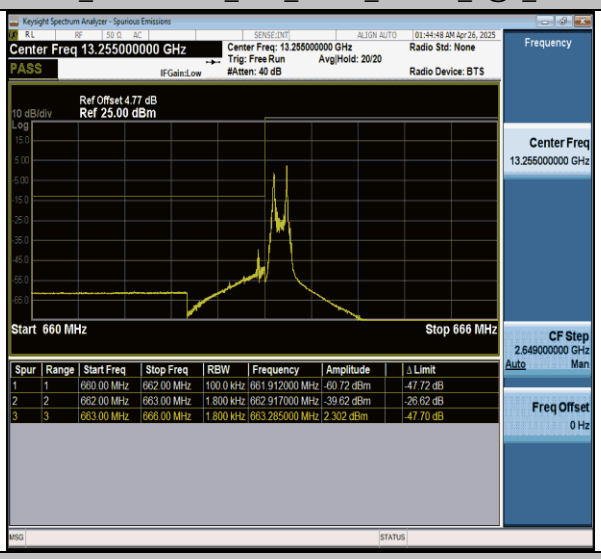


All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

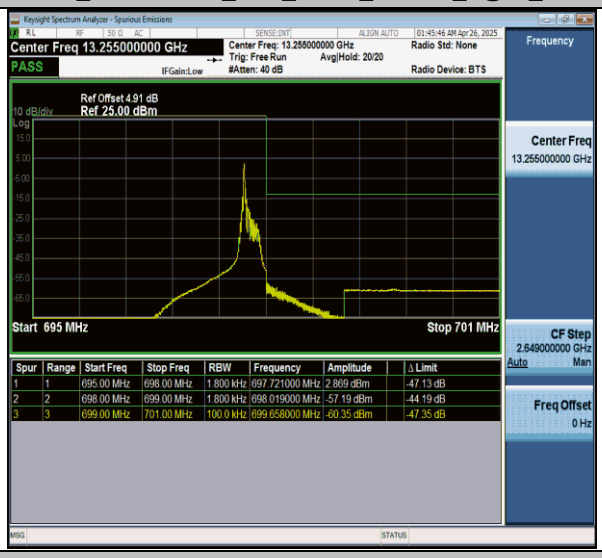
Band71_Stand-Alone_0.18_BPSK_133124_1@0_15kHz



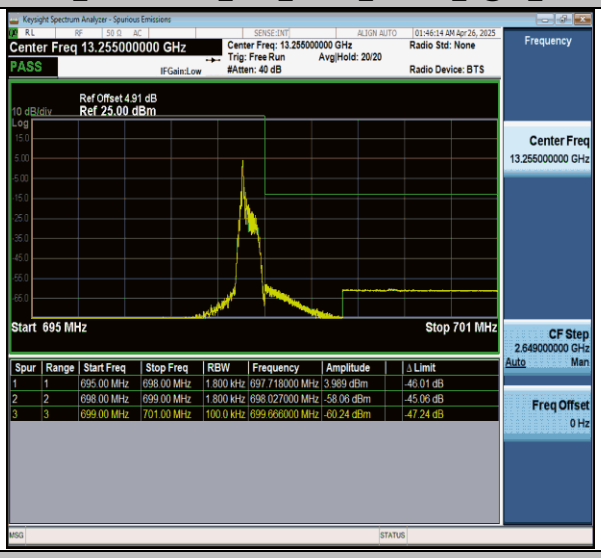
Band71_Stand-Alone_0.18_QPSK_133124_1@0_15kHz



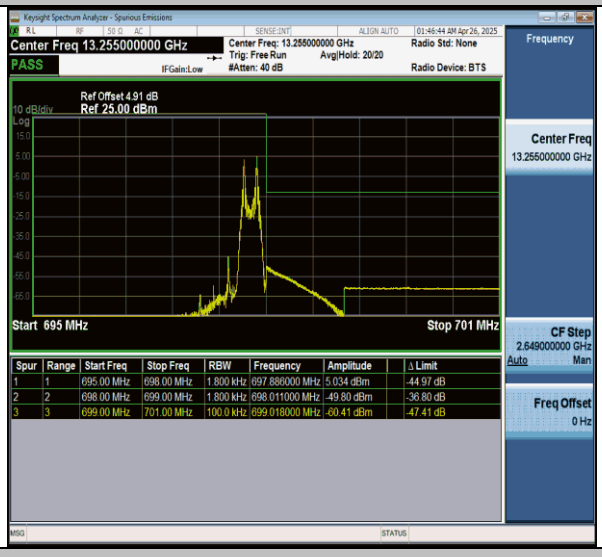
Band71_Stand-Alone_0.18_BPSK_133124_1@11_15kHz



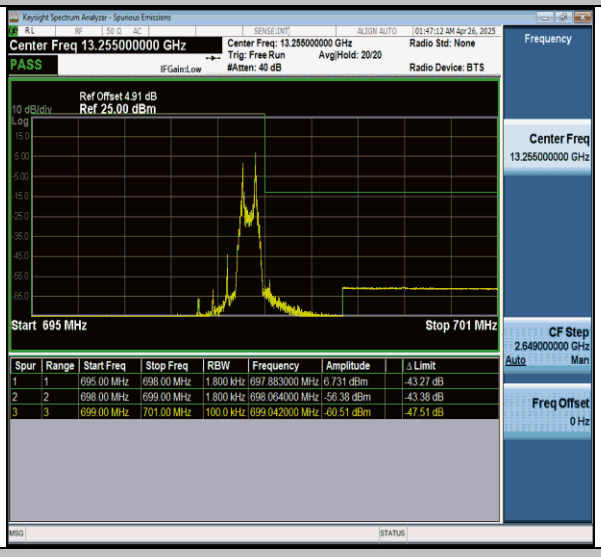
Band71_Stand-Alone_0.18_QPSK_133124_1@11_15kHz



Band71_Stand-Alone_0.18_BPSK_133470_1@0_15kHz



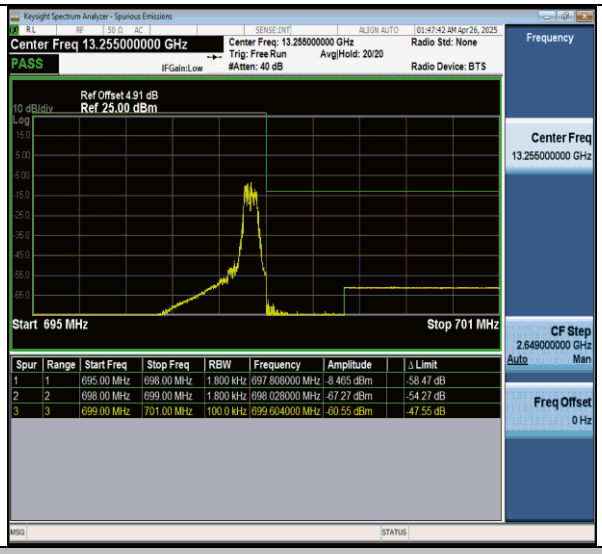
Band71_Stand-Alone_0.18_QPSK_133470_1@0_15kHz



Band71_Stand-Alone_0.18_BPSK_133470_1@11_15kHz

Band71_Stand-Alone_0.18_QPSK_133470_1@11_15kHz

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

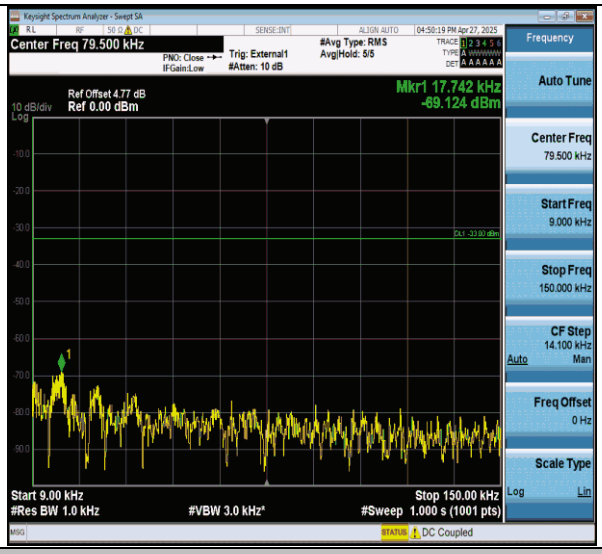


Band71_Stand-Alone_0.18_QPSK_133470_12@0_15kHz

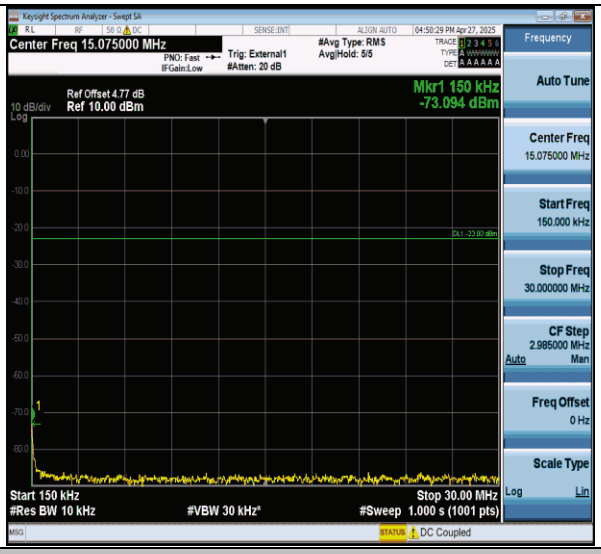
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

Conducted Spurious Emission for NB1

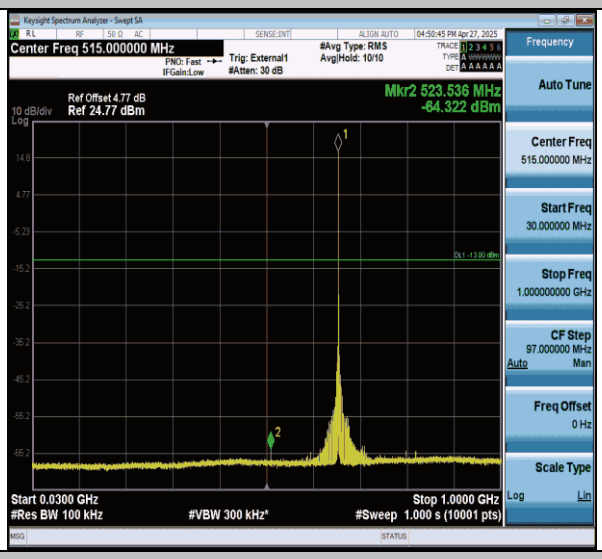
Test Graphs



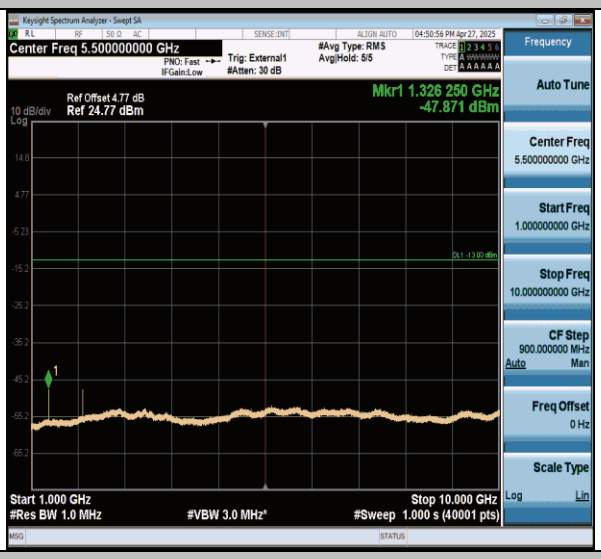
Band71-0.18-QPSK-133124-PASS



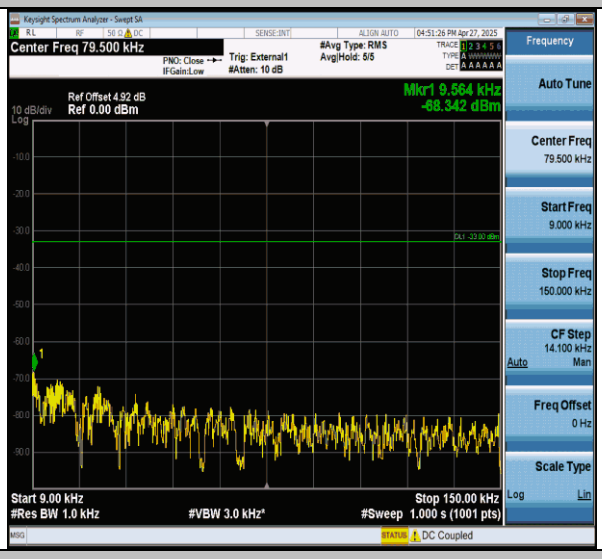
Band71-0.18-QPSK-133124-PASS



Band71-0.18-QPSK-133124-PASS



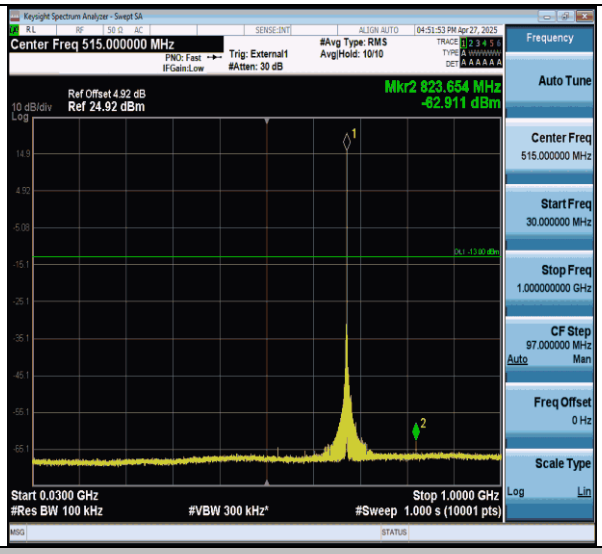
Band71-0.18-QPSK-133124-PASS



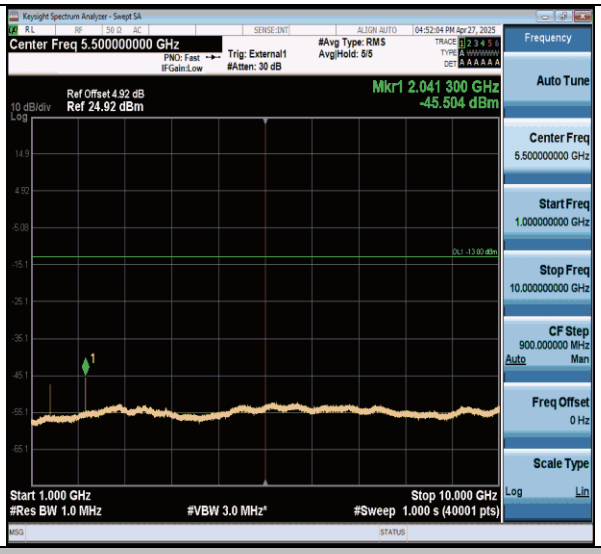
Band71-0.18-QPSK-133297-PASS

Band71-0.18-QPSK-133297-PASS

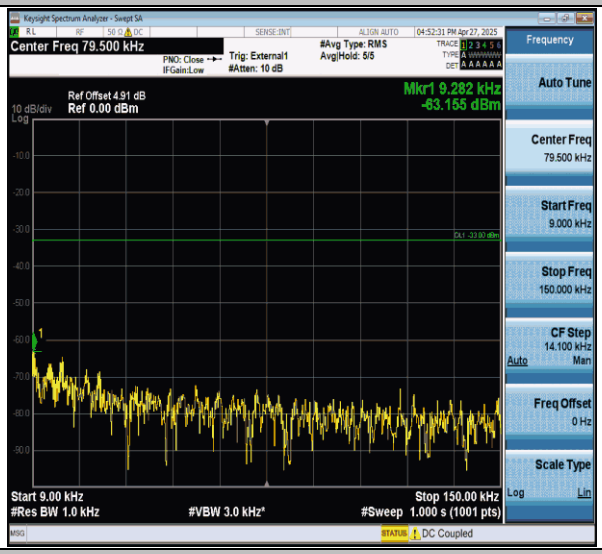
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.



Band71-0.18-QPSK-133297-PASS

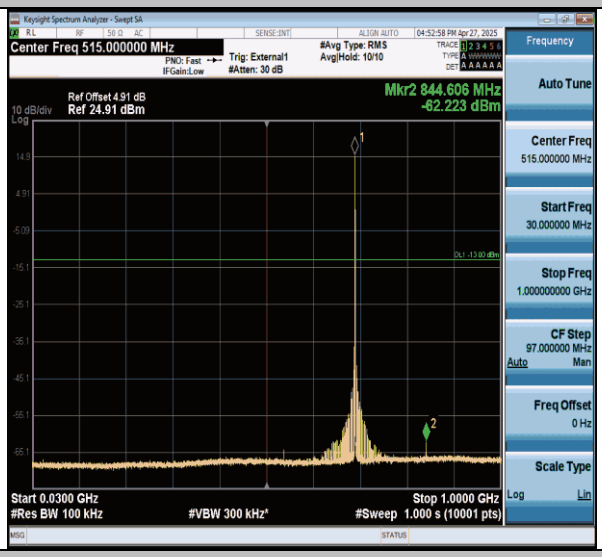


Band71-0.18-QPSK-133297-PASS

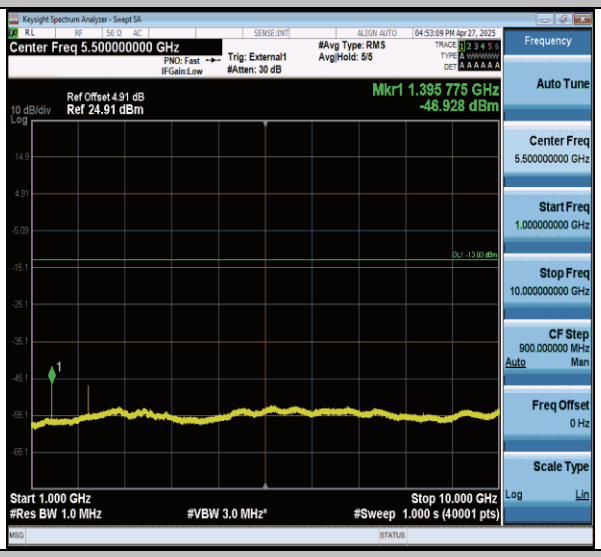


Band71-0.18-QPSK-133470-PASS

Band71-0.18-QPSK-133470-PASS

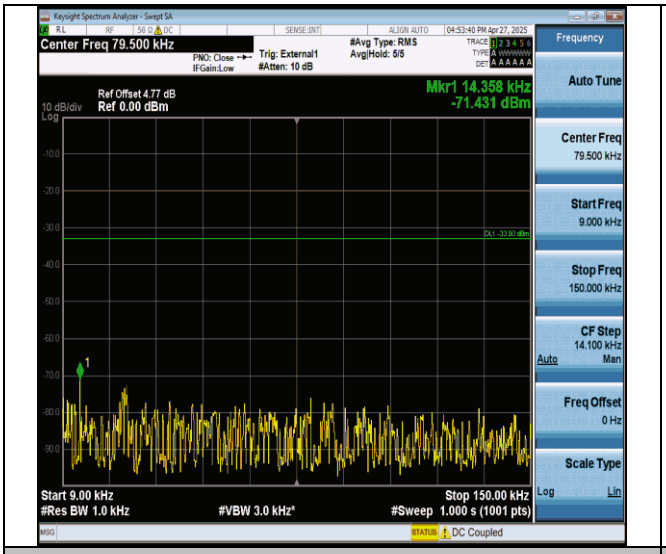


Band71-0.18-QPSK-133470-PASS

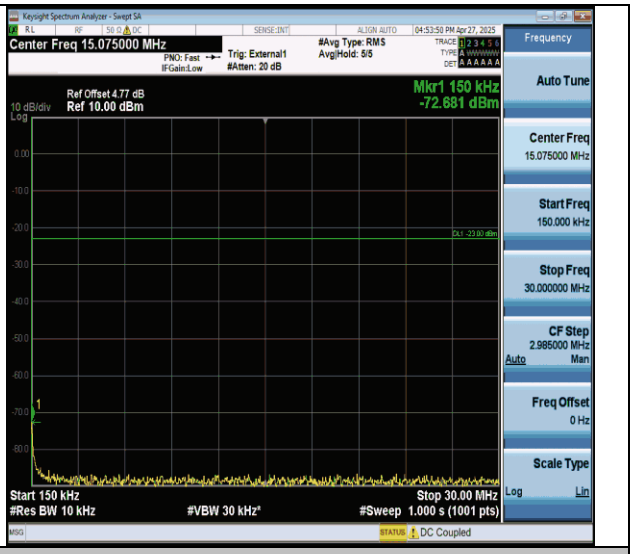


Band71-0.18-QPSK-133470-PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.



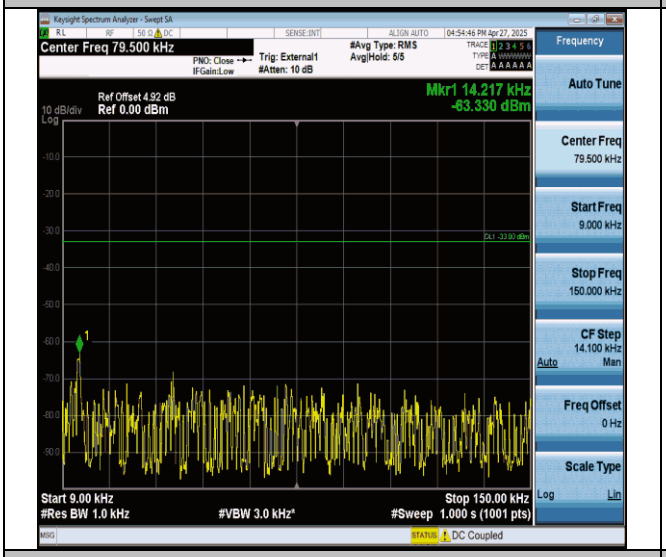
Band71-0.18-BPSK-133124-PASS



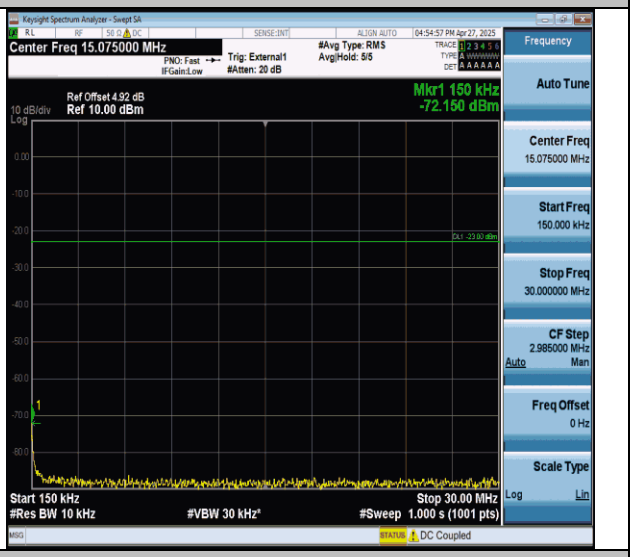
Band71-0.18-BPSK-133124-PASS

Band71-0.18-BPSK-133124-PASS

Band71-0.18-BPSK-133124-PASS



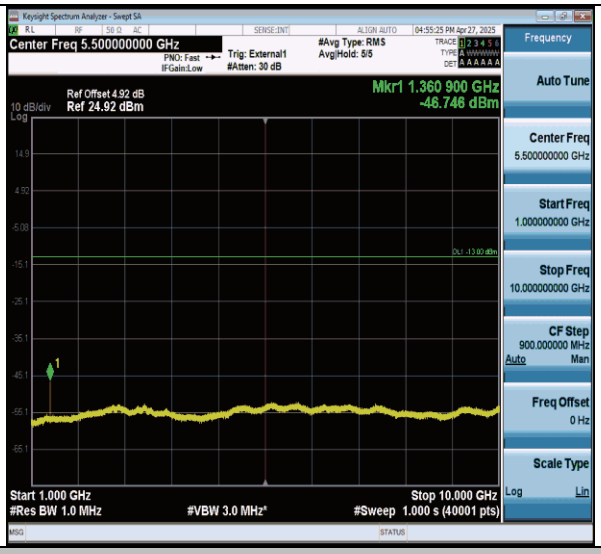
Band71-0.18-BPSK-133297-PASS



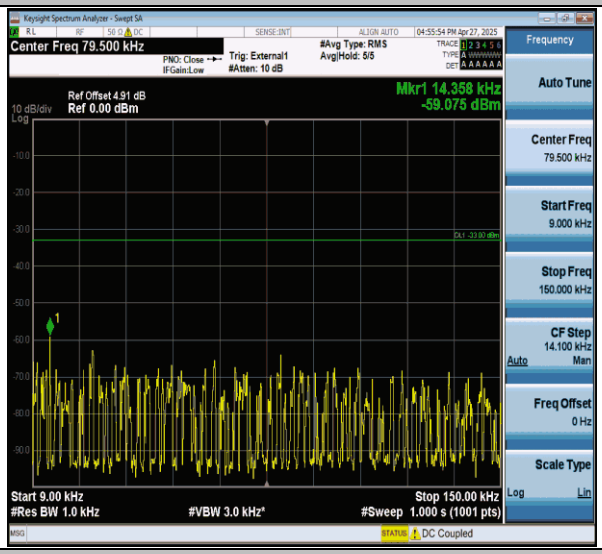
Band71-0.18-BPSK-133297-PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

Band71-0.18-BPSK-133297-PASS

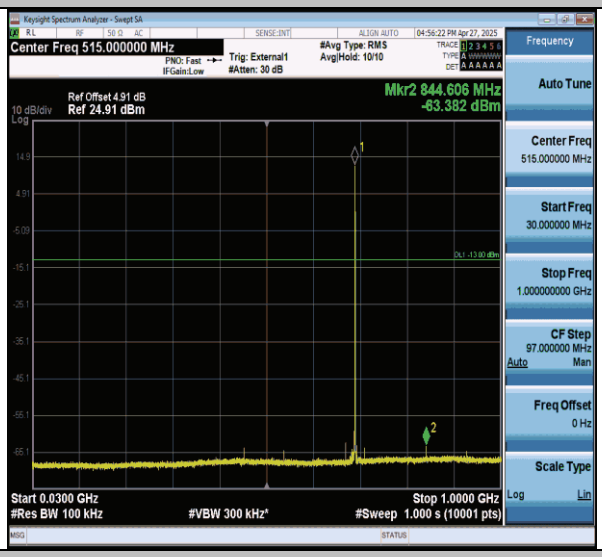


Band71-0.18-BPSK-133297-PASS

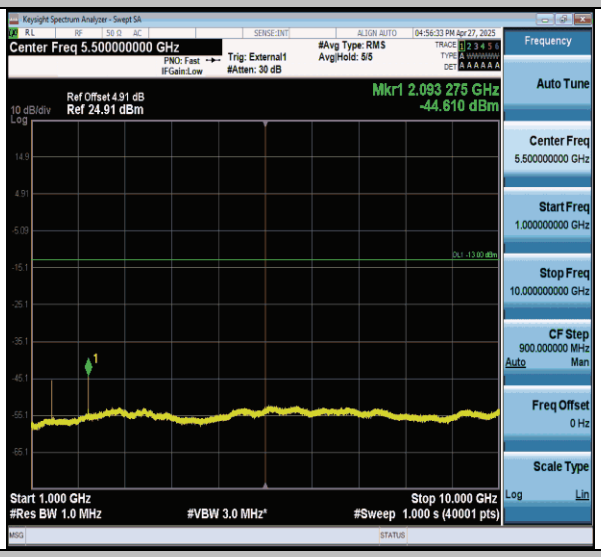


Band71-0.18-BPSK-133470-PASS

Band71-0.18-BPSK-133470-PASS



Band71-0.18-BPSK-133470-PASS



Band71-0.18-BPSK-133470-PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

Frequency Stability for NB1

Test Result

Voltage											
Band	OpMode	SCS	Bandwidth	Modulation	Channel	Tones	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Verdict
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	VN	NT	-1.60	-0.002351	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	VL	NT	-1.60	-0.002351	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	VH	NT	-3.10	-0.004555	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	VN	NT	-0.10	-0.000147	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	VL	NT	0.20	0.000294	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	VH	NT	-0.50	-0.000735	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	VN	NT	-1.60	-0.002351	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	VL	NT	-0.90	-0.001323	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	VH	NT	-1.50	-0.002204	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	VN	NT	0.60	0.000882	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	VL	NT	-3.10	-0.004555	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	VH	NT	-0.40	-0.000588	PASS

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.

Temperature											
Band	OpMode	Bandwidth	Modulation	Channel	Tones	SCS	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Verdict
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	-30	-0.60	-0.000882	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	-20	-0.90	-0.001323	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	-10	-1.90	-0.002792	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	0	-2.60	-0.003821	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	10	-1.90	-0.002792	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	20	1.30	0.001910	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	30	-0.30	-0.000441	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	40	-1.10	-0.001616	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@0	NV	50	-2.60	-0.003821	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	-30	-1.40	-0.002057	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	-20	-2.30	-0.003380	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	-10	-1.60	-0.002351	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	0	-1.70	-0.002498	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	10	-2.80	-0.004115	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	20	-1.30	-0.001910	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	30	-0.40	-0.000588	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	40	-1.30	-0.001910	PASS
Band71	Stand-Alone	3.75kHz	0.18	QPSK	133297	1@47	NV	50	-0.90	-0.001323	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	-30	-1.10	-0.001616	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	-20	-0.90	-0.001323	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	-10	0.70	0.001029	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	0	0.00	0.000000	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	10	-0.70	-0.001029	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	20	-1.60	-0.002351	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	30	1.50	0.002204	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	40	-1.90	-0.002792	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@0	NV	50	-0.80	-0.001176	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	-30	-3.00	-0.004409	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	-20	-1.50	-0.002204	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	-10	-1.60	-0.002351	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	0	-1.00	-0.001470	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	10	-0.30	-0.000441	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	20	-0.60	-0.000882	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	30	-2.20	-0.003233	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	40	-1.60	-0.002351	PASS
Band71	Stand-Alone	15kHz	0.18	QPSK	133297	1@11	NV	50	-2.40	-0.003527	PASS

~The End~

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from TOWE.