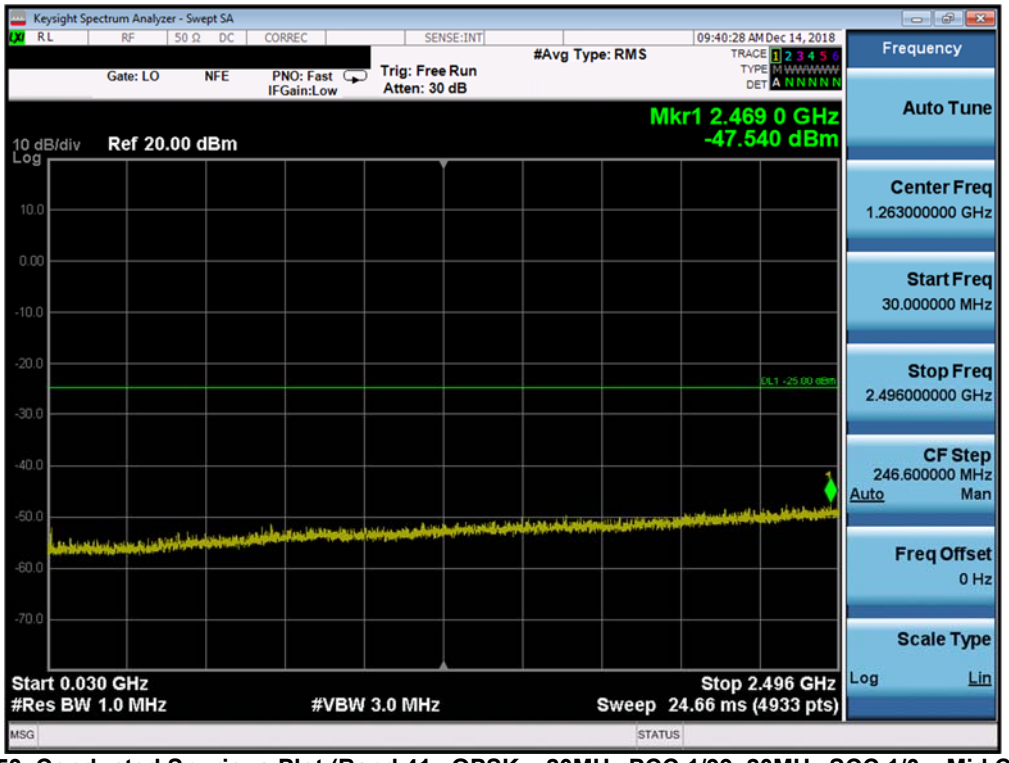
Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	20.55
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	17.50
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	14.10
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	21.26
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	**25.28**
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	22.74
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	21.65
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	20.38
Max	LTE B41	20	39750	2506	256-QAM	100	0	LTE B41	20	39948	2525.8	256-QAM	100	0	19.28

Table 7-11. Conducted Powers (B41 with Various Combinations for 20+20MHz Channel Bandwidth)



Plot 7-453. Conducted Spurious Plot (Band 41 –QPSK – 20MHz PCC 1/99, 20MHz SCC 1/0 – Mid Channel)

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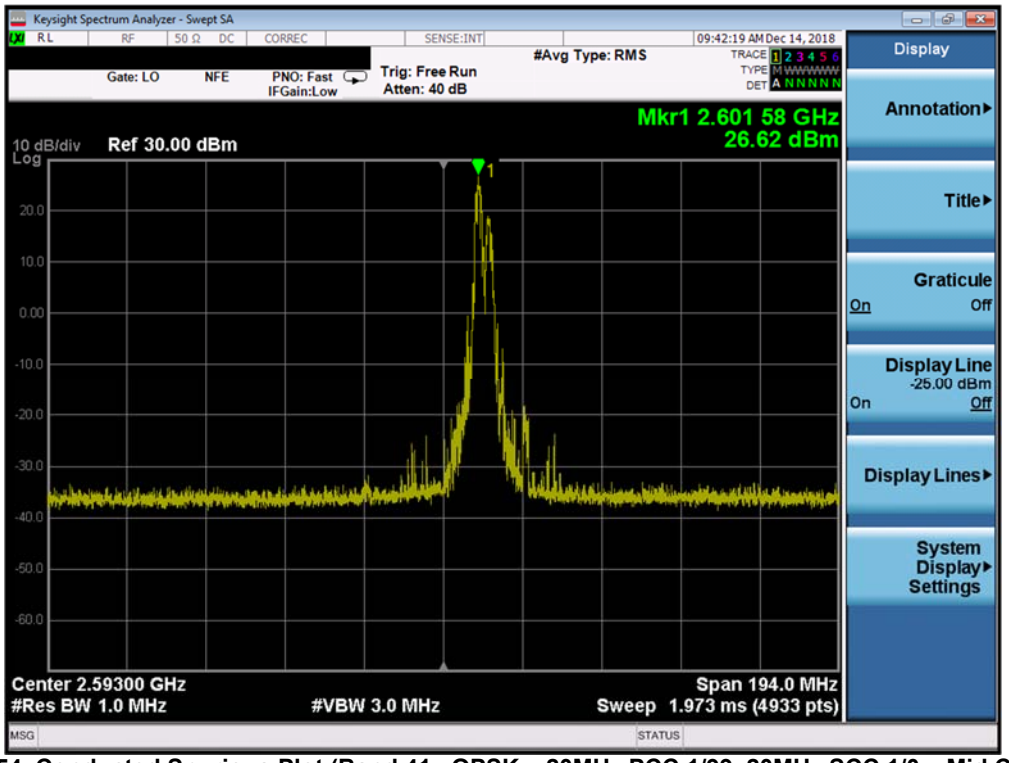
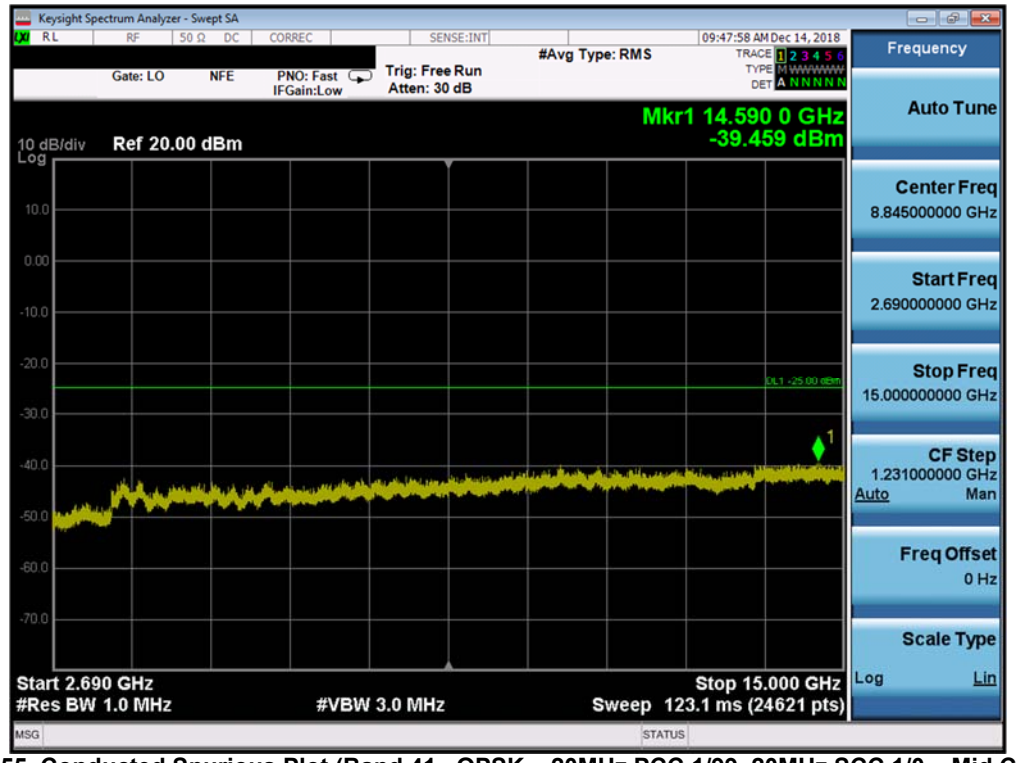


Plot 7-454. Conducted Spurious Plot (Band 41 –QPSK – 20MHz PCC 1/99, 20MHz SCC 1/0 – Mid Channel)



Plot 7-455. Conducted Spurious Plot (Band 41 –QPSK – 20MHz PCC 1/99, 20MHz SCC 1/0 – Mid Channel)

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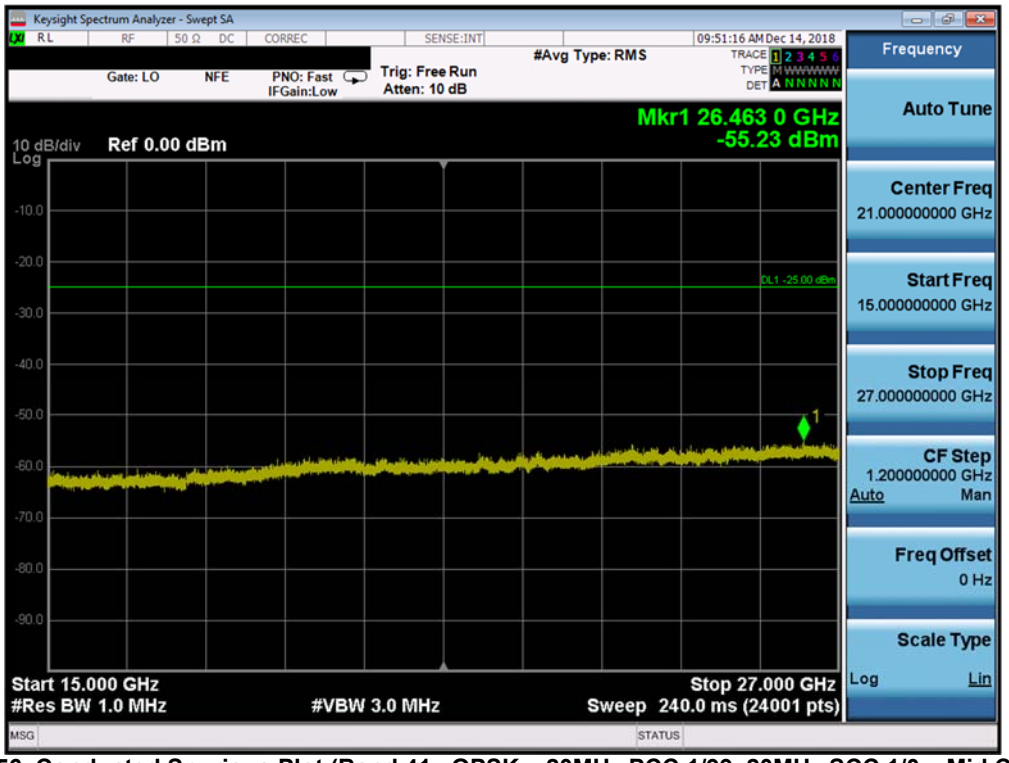
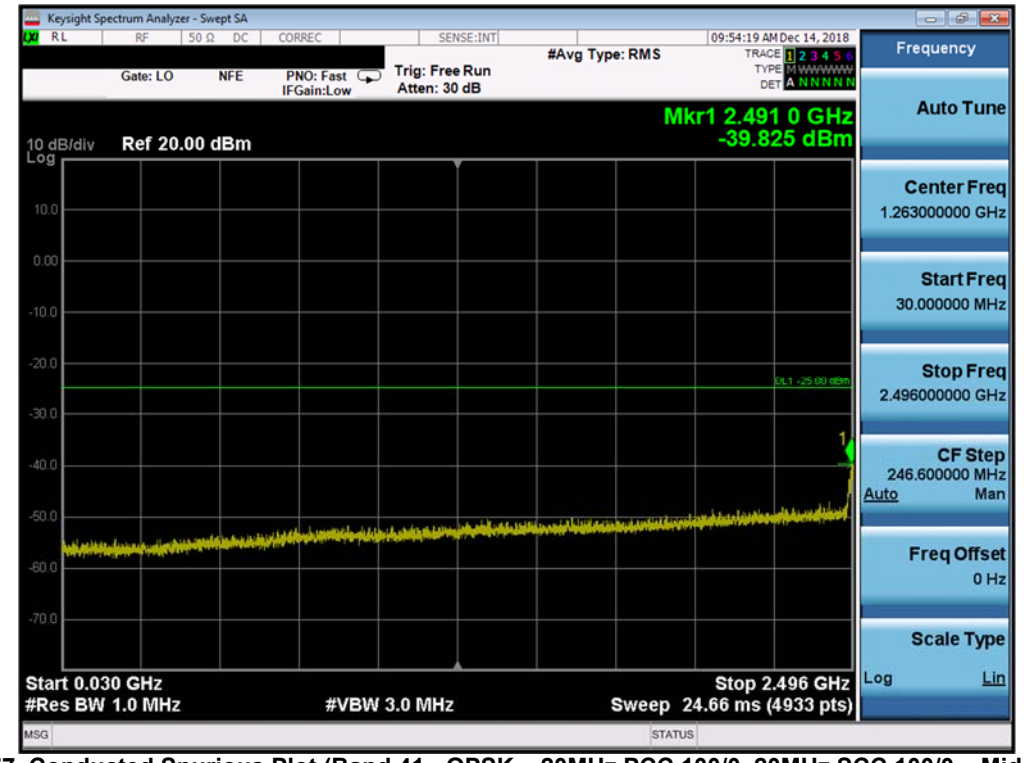


Plot 7-456. Conducted Spurious Plot (Band 41 –QPSK – 20MHz PCC 1/99, 20MHz SCC 1/0 – Mid Channel)



Plot 7-457. Conducted Spurious Plot (Band 41 - QPSK – 20MHz PCC 100/0, 20MHz SCC 100/0 – Mid Channel)

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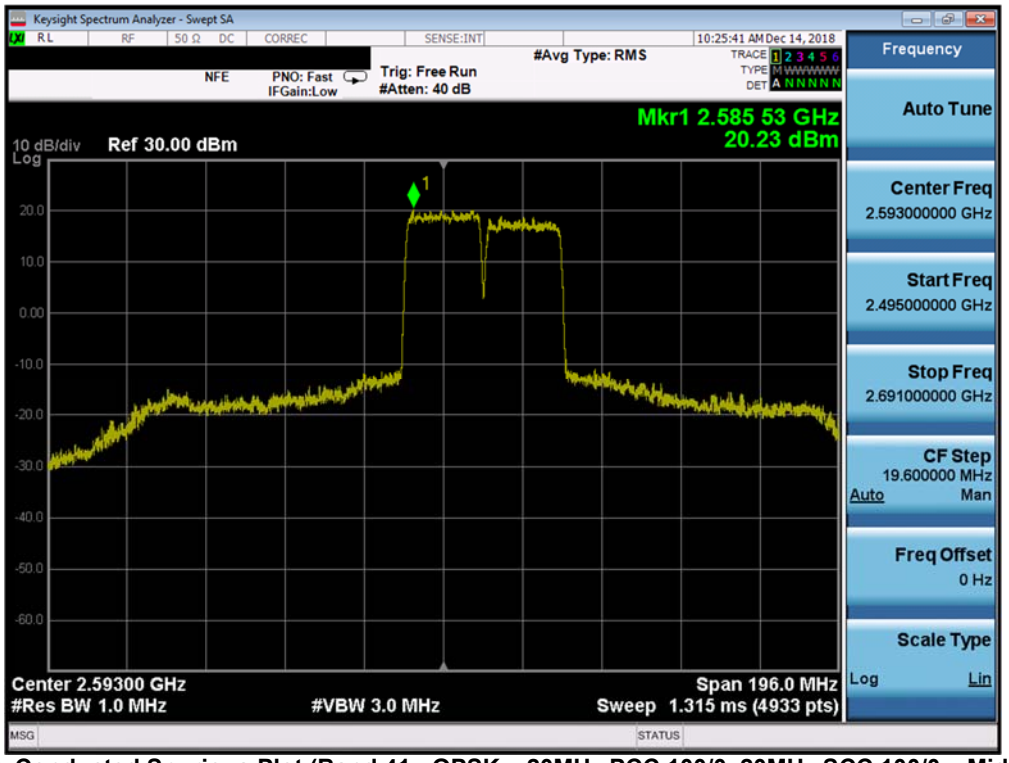
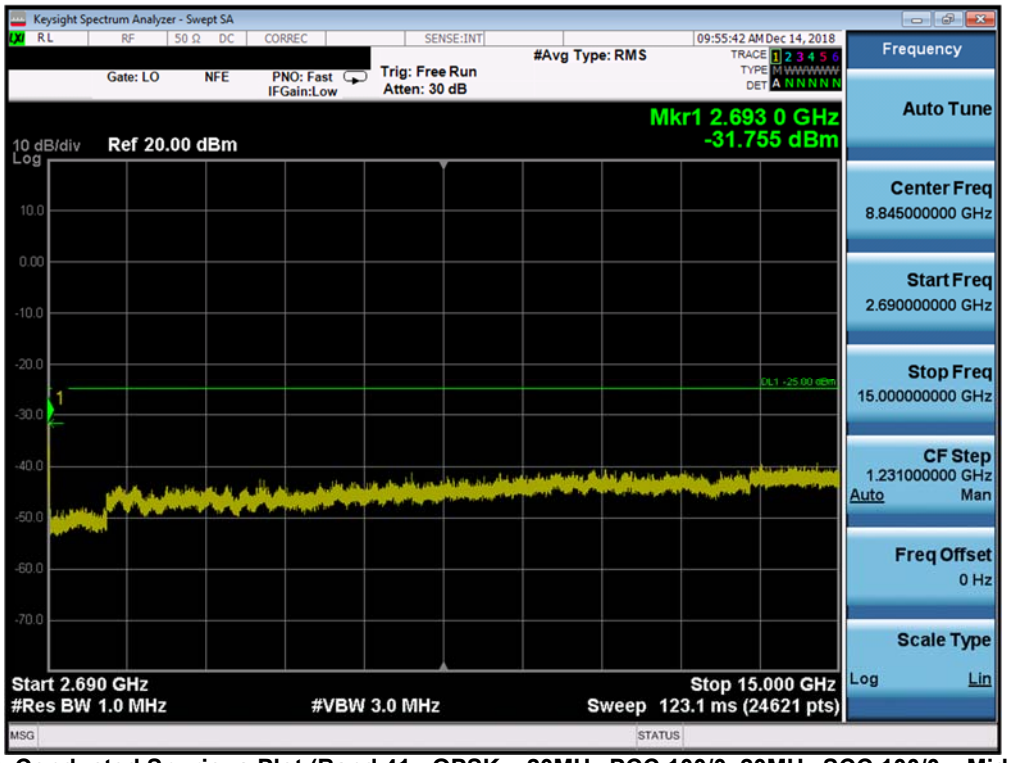


Plot 7-458. Conducted Spurious Plot (Band 41 - QPSK – 20MHz PCC 100/0, 20MHz SCC 100/0 – Mid Channel)



Plot 7-459. Conducted Spurious Plot (Band 41 - QPSK – 20MHz PCC 100/0, 20MHz SCC 100/0 – Mid Channel)

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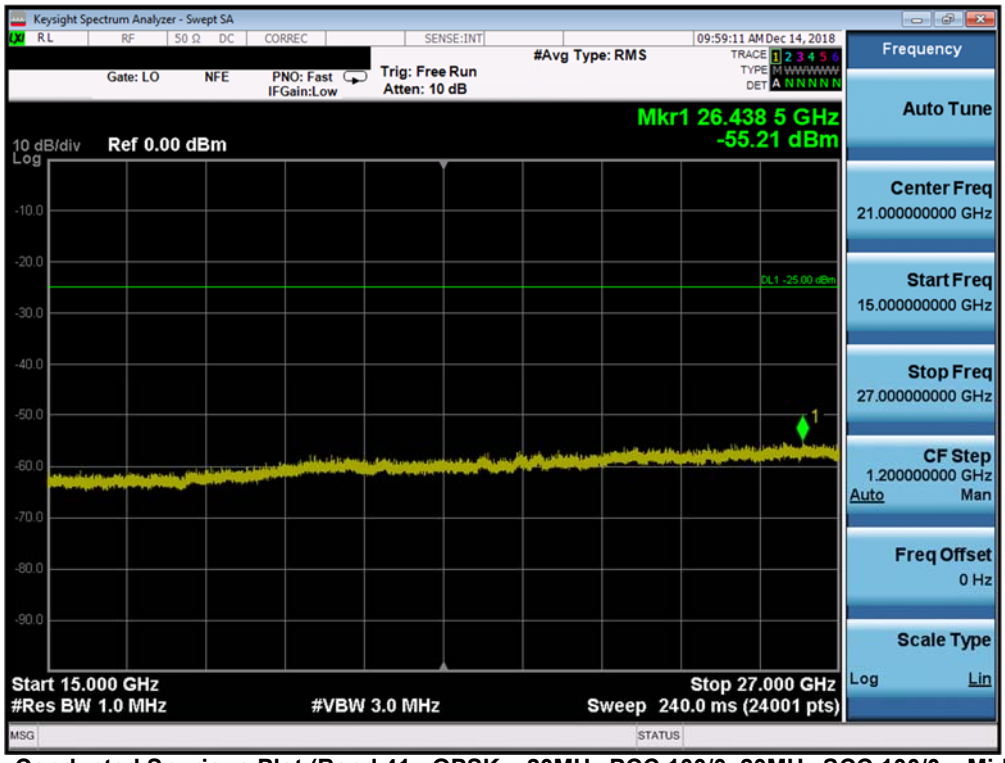

Plot 7-460. Conducted Spurious Plot (Band 41 - QPSK – 20MHz PCC 100/0, 20MHz SCC 100/0 – Mid Channel)

Plot 7-461. Lower Band Edge Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

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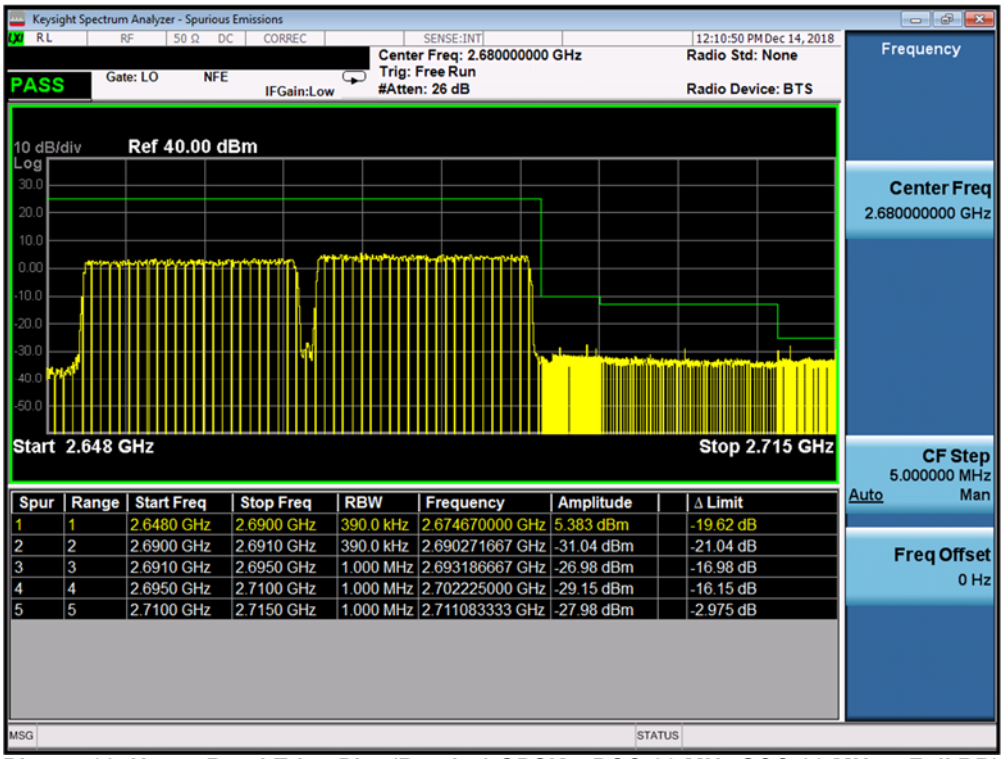

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6480 GHz	2.6900 GHz	390.0 kHz	2.674670000 GHz	5.383 dBm	-19.62 dB
2	2	2.6900 GHz	2.6910 GHz	390.0 kHz	2.690271667 GHz	-31.04 dBm	-21.04 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.693186667 GHz	-26.98 dBm	-16.98 dB
4	4	2.6950 GHz	2.7100 GHz	1.000 MHz	2.702225000 GHz	-29.15 dBm	-16.15 dB
5	5	2.7100 GHz	2.7150 GHz	1.000 MHz	2.711083333 GHz	-27.98 dBm	-2.975 dB

Plot 7-462. Upper Band Edge Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

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7.8 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

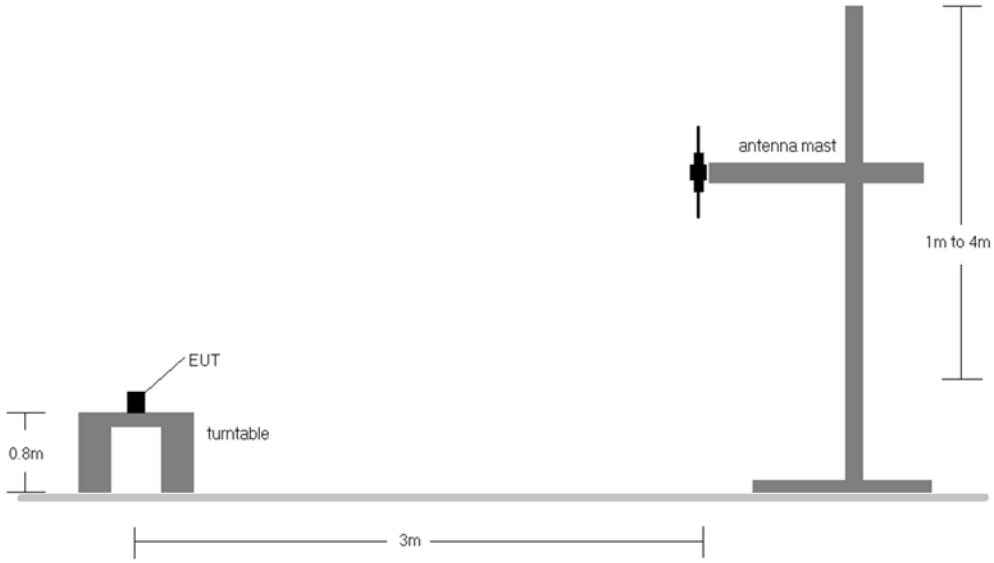

Figure 7-7. Radiated Test Setup <1GHz

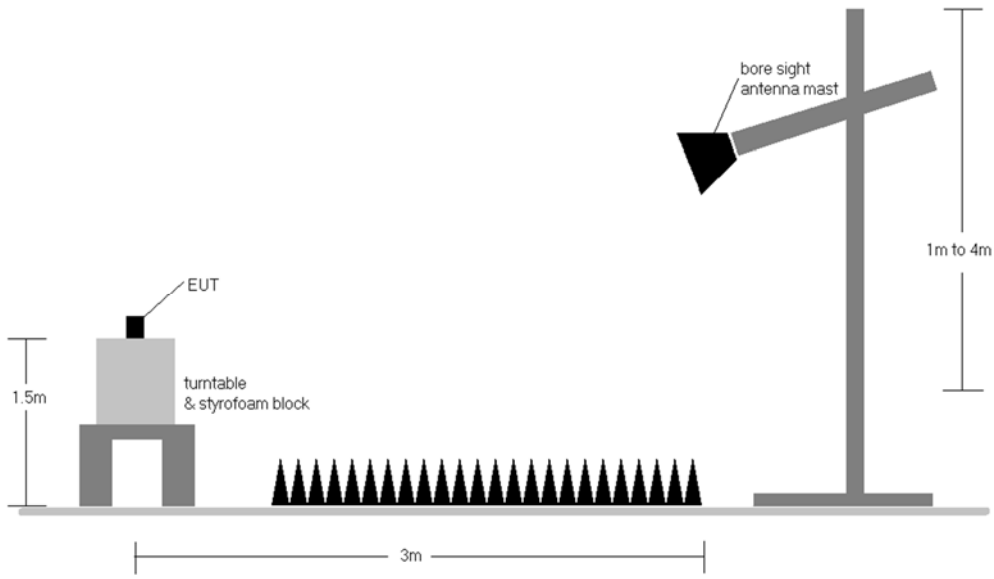

Figure 7-8. Radiated Test Setup >1GHz

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
665.50	5	QPSK	H	146	354	1 / 24	18.85	3.84	20.54	0.113	34.77	-14.24
680.50	5	QPSK	H	138	301	1 / 0	20.44	3.91	**22.20**	0.166	34.77	-12.57
695.50	5	QPSK	H	123	322	1 / 24	17.90	3.98	19.73	0.094	34.77	-15.04
680.50	5	16-QAM	H	138	301	1 / 0	18.53	3.91	**20.29**	0.107	34.77	-14.48
680.50	5	64-QAM	H	138	301	1 / 0	17.49	3.91	**19.25**	0.084	34.77	-15.52
680.50	5	256-QAM	H	138	301	1 / 0	14.38	3.91	16.14	0.041	34.77	-18.63
668.00	10	QPSK	H	152	306	1 / 49	20.37	3.85	22.07	0.161	34.77	-12.70
680.50	10	QPSK	H	139	304	1 / 0	20.82	3.91	**22.58**	0.181	34.77	-12.19
693.00	10	QPSK	H	123	325	1 / 0	18.34	3.97	20.16	0.104	34.77	-14.61
680.50	10	16-QAM	H	139	304	1 / 0	18.88	3.91	**20.64**	0.116	34.77	-14.13
680.50	10	64-QAM	H	139	304	1 / 0	17.84	3.91	**19.60**	0.091	34.77	-15.17
680.50	10	256-QAM	H	139	304	1 / 0	14.73	3.91	**16.49**	**0.045**	34.77	-18.28
670.50	15	QPSK	H	140	298	1 / 74	21.35	3.86	**23.06**	**0.202**	34.77	-11.71
680.50	15	QPSK	H	136	293	1 / 0	20.90	3.91	22.66	0.184	34.77	-12.11
690.50	15	QPSK	H	142	309	1 / 0	19.28	3.96	21.09	0.128	34.77	-13.69
670.50	15	16-QAM	H	140	298	1 / 74	19.52	3.86	**21.23**	0.133	34.77	-13.54
670.50	15	64-QAM	H	140	298	1 / 74	18.46	3.86	**20.17**	0.104	34.77	-14.60
670.50	15	256-QAM	H	140	298	1 / 74	15.27	3.86	**16.98**	**0.050**	34.77	-17.79
673.00	20	QPSK	H	155	324	1 / 99	21.21	3.87	**22.93**	0.196	34.77	-11.84
680.50	20	QPSK	H	140	293	1 / 0	20.40	3.91	22.16	0.164	34.77	-12.61
688.00	20	QPSK	H	138	304	1 / 0	20.61	3.94	22.40	0.174	34.77	-12.37
673.00	20	16-QAM	H	155	324	1 / 99	19.40	3.87	**21.12**	0.129	34.77	-13.65
673.00	20	64-QAM	H	155	324	1 / 99	18.30	3.87	**20.02**	0.101	34.77	-14.75
673.00	20	256-QAM	H	155	324	1 / 99	15.05	3.87	**16.77**	**0.048**	34.77	-18.00
670.50	15	QPSK	V	102	4	1 / 74	15.33	3.86	17.04	0.051	34.77	-17.73
670.50	15 (WCP)	QPSK	H	167	58	1 / 74	15.89	3.86	17.60	0.058	34.77	-17.17

Table 7-12. ERP Data (Band 71)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	257	321	1 / 5	19.31	4.00	21.16	0.131	34.77	-13.61	23.31	0.214	36.99	-13.68
707.50	1.4	QPSK	H	267	306	1 / 0	20.54	4.22	22.61	0.182	34.77	-12.16	24.76	0.299	36.99	-12.23
715.30	1.4	QPSK	H	249	315	1 / 5	20.42	4.44	**22.71**	**0.187**	34.77	-12.06	**24.86**	**0.306**	36.99	-12.13
715.30	1.4	16-QAM	H	249	315	1 / 0	19.24	4.44	**21.53**	0.142	34.77	-13.25	**23.68**	0.233	36.99	-13.31
715.30	1.4	64-QAM	H	249	315	1 / 0	18.10	4.44	**20.39**	0.109	34.77	-14.38	**22.54**	0.180	36.99	-14.45
715.30	1.4	256-QAM	H	249	315	1 / 0	14.31	4.44	**16.60**	**0.046**	34.77	-18.18	**18.75**	**0.075**	36.99	-18.24
700.50	3	QPSK	H	128	158	1 / 14	17.64	4.01	19.51	0.089	34.77	-15.26	21.66	0.147	36.99	-15.33
707.50	3	QPSK	H	112	132	1 / 14	19.54	4.22	21.60	0.145	34.77	-13.17	23.75	0.237	36.99	-13.24
714.50	3	QPSK	H	124	149	1 / 0	19.85	4.41	**22.11**	0.163	34.77	-12.66	**24.26**	0.267	36.99	-12.73
714.50	3	16-QAM	H	124	149	1 / 0	18.44	4.41	**20.71**	0.118	34.77	-14.07	**22.86**	0.193	36.99	-14.13
714.50	3	64-QAM	H	124	149	1 / 0	16.81	4.41	**19.07**	0.081	34.77	-15.70	**21.22**	0.132	36.99	-15.77
714.50	3	256-QAM	H	124	149	1 / 0	14.81	4.41	**17.07**	**0.051**	34.77	-17.70	**19.22**	**0.084**	36.99	-17.77
701.50	5	QPSK	H	255	129	1 / 24	19.45	4.04	21.34	0.136	34.77	-13.43	23.49	0.223	36.99	-13.50
707.50	5	QPSK	H	274	123	1 / 24	20.02	4.22	**22.09**	0.162	34.77	-12.68	**24.24**	0.265	36.99	-12.75
713.50	5	QPSK	H	268	132	1 / 24	19.82	4.39	22.06	0.161	34.77	-12.71	24.21	0.264	36.99	-12.78
707.50	5	16-QAM	H	274	123	1 / 24	19.19	4.22	**21.25**	0.133	34.77	-13.52	**23.40**	0.219	36.99	-13.59
707.50	5	64-QAM	H	274	123	1 / 24	18.02	4.22	**20.08**	0.102	34.77	-14.69	**22.23**	0.167	36.99	-14.76
707.50	5	256-QAM	H	274	123	1 / 24	16.13	4.22	**18.19**	**0.066**	34.77	-16.58	**20.34**	**0.108**	36.99	-16.65
704.00	10	QPSK	H	260	133	1 / 49	20.23	4.12	22.19	0.166	34.77	-12.58	24.34	0.272	36.99	-12.65
707.50	10	QPSK	H	268	127	1 / 49	20.43	4.22	22.50	0.178	34.77	-12.28	24.65	0.291	36.99	-12.34
711.00	10	QPSK	H	241	148	1 / 0	20.44	4.32	**22.61**	0.182	34.77	-12.16	**24.76**	0.299	36.99	-12.23
711.00	10	16-QAM	H	241	148	1 / 49	18.91	4.32	**21.08**	0.128	34.77	-13.69	**23.23**	0.210	36.99	-13.76
711.00	10	64-QAM	H	241	148	1 / 0	17.71	4.32	**19.88**	0.097	34.77	-14.90	**22.03**	0.159	36.99	-14.96
711.00	10	256-QAM	H	241	148	1 / 0	15.94	4.32	**18.10**	**0.065**	34.77	-16.67	**20.25**	**0.106**	36.99	-16.74
715.30	1.4	QPSK	V	152	289	1 / 5	16.05	4.44	18.34	0.068	34.77	-16.43	20.49	0.112	36.99	-16.50
715.30	1.4 (WCP)	QPSK	H	144	163	1 / 5	14.38	4.44	16.66	0.046	34.77	-18.11	18.81	0.076	36.99	-18.18

Table 7-13. ERP Data (Band 12)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	354	1	1 / 24	21.74	1.20	20.79	0.120	34.77	-13.98
782.00	5	QPSK	H	354	6	1 / 24	21.84	1.20	**20.89**	0.123	34.77	-13.88
784.50	5	QPSK	H	354	6	1 / 24	21.81	1.20	20.86	0.122	34.77	-13.91
782.00	5	16-QAM	H	354	6	1 / 24	21.15	1.20	**20.20**	0.105	34.77	-14.57
782.00	5	64-QAM	H	354	6	1 / 24	19.91	1.20	**18.96**	0.079	34.77	-15.81
782.00	5	256-QAM	H	354	6	1 / 24	16.81	1.20	**15.86**	**0.039**	34.77	-18.91
782.00	10	QPSK	H	358	6	1 / 49	21.93	1.20	**20.98**	**0.125**	34.77	-13.79
782.00	10	16-QAM	H	358	6	1 / 49	20.77	1.20	**19.82**	0.096	34.77	-14.95
782.00	10	64-QAM	H	358	6	1 / 49	19.80	1.20	**18.85**	0.077	34.77	-15.92
782.00	10	256-QAM	H	358	6	1 / 49	16.66	1.20	**15.71**	**0.037**	34.77	-19.06
782.00	10	QPSK	V	282	66	1 / 49	20.77	1.20	19.82	0.096	34.77	-14.95
782.00	10 (WCP)	QPSK	H	383	46	1 / 49	11.12	6.24	15.21	0.033	34.77	-19.56

Table 7-14. ERP Data (Band 13)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	367	12	1 / 5	21.38	1.50	20.73	0.118	38.45	-17.72	22.88	0.194	40.61	-17.73
836.50	1.4	QPSK	H	351	12	1 / 0	21.61	1.50	**20.96**	0.125	38.45	-17.49	**23.11**	0.205	40.61	-17.50
848.30	1.4	QPSK	H	353	14	1 / 0	20.39	1.50	19.74	0.094	38.45	-18.71	21.89	0.155	40.61	-18.72
836.50	1.4	16-QAM	H	351	12	1 / 0	20.84	1.50	**20.19**	0.104	38.45	-18.26	**22.34**	0.171	40.61	-18.27
836.50	1.4	64-QAM	H	351	12	1 / 5	20.01	1.50	**19.36**	0.086	38.45	-19.09	**21.51**	0.142	40.61	-19.10
836.50	1.4	256-QAM	H	351	12	1 / 5	17.17	1.50	**16.52**	**0.045**	38.45	-21.93	**18.67**	**0.074**	40.61	-21.94
825.50	3	QPSK	H	363	12	1 / 14	21.57	1.50	20.92	0.124	38.45	-17.53	23.07	0.203	40.61	-17.54
836.50	3	QPSK	H	357	11	1 / 0	22.01	1.50	**21.36**	**0.137**	38.45	-17.09	**23.51**	**0.224**	40.61	-17.10
847.50	3	QPSK	H	370	18	1 / 0	20.81	1.50	20.16	0.104	38.45	-18.29	22.31	0.170	40.61	-18.30
836.50	3	16-QAM	H	357	11	1 / 0	21.08	1.50	**20.43**	0.110	38.45	-18.02	**22.58**	0.181	40.61	-18.03
836.50	3	64-QAM	H	357	11	1 / 0	20.05	1.50	**19.40**	0.087	38.45	-19.05	**21.55**	0.143	40.61	-19.06
836.50	3	256-QAM	H	357	11	1 / 0	17.11	1.50	**16.46**	**0.044**	38.45	-21.99	**18.61**	**0.073**	40.61	-22.00
826.50	5	QPSK	H	354	12	1 / 0	21.67	1.50	21.02	0.126	38.45	-17.43	23.17	0.207	40.61	-17.44
836.50	5	QPSK	H	354	7	1 / 0	21.78	1.50	**21.13**	0.130	38.45	-17.32	**23.28**	0.213	40.61	-17.33
846.50	5	QPSK	H	3	9	1 / 0	21.38	1.50	20.73	0.118	38.45	-17.72	22.88	0.194	40.61	-17.73
836.50	5	16-QAM	H	354	7	1 / 0	20.93	1.50	**20.28**	0.107	38.45	-18.17	**22.43**	0.175	40.61	-18.18
836.50	5	64-QAM	H	354	7	1 / 0	19.86	1.50	**19.21**	0.083	38.45	-19.24	**21.36**	0.137	40.61	-19.25
836.50	5	256-QAM	H	354	7	1 / 0	16.79	1.50	**16.14**	**0.041**	38.45	-22.31	**18.29**	**0.067**	40.61	-22.32
829.00	10	QPSK	H	356	13	1 / 49	21.74	1.50	**21.09**	0.129	38.45	-17.36	**23.24**	0.211	40.61	-17.37
836.50	10	QPSK	H	6	5	1 / 0	21.68	1.50	21.03	0.127	38.45	-17.42	23.18	0.208	40.61	-17.43
844.00	10	QPSK	H	354	21	1 / 0	20.84	1.50	20.19	0.104	38.45	-18.26	22.34	0.171	40.61	-18.27
829.00	10	16-QAM	H	356	13	1 / 0	20.97	1.50	**20.32**	0.108	38.45	-18.13	**22.47**	0.177	40.61	-18.14
829.00	10	64-QAM	H	356	13	1 / 49	19.95	1.50	19.30	0.085	38.45	-19.15	21.45	0.140	40.61	-19.16
829.00	10	256-QAM	H	356	13	1 / 49	16.76	1.50	**16.11**	**0.041**	38.45	-22.34	**18.26**	**0.067**	40.61	-22.35
831.50	15	QPSK	H	364	11	1 / 74	21.58	1.50	20.93	0.124	38.45	-17.52	23.08	0.203	40.61	-17.53
836.50	15	QPSK	H	13	358	1 / 74	21.06	1.50	20.41	0.110	38.45	-18.04	22.56	0.180	40.61	-18.05
841.50	15	QPSK	H	356	16	1 / 0	21.63	1.50	**20.98**	0.125	38.45	-17.47	**23.13**	0.206	40.61	-17.48
841.50	15	16-QAM	H	356	16	1 / 0	20.88	1.50	**20.23**	0.105	38.45	-18.22	**22.38**	0.173	40.61	-18.23
841.50	15	64-QAM	H	356	16	1 / 0	20.00	1.50	**19.35**	0.086	38.45	-19.10	**21.50**	0.141	40.61	-19.11
841.50	15	256-QAM	H	356	16	1 / 74	15.79	1.50	**15.14**	**0.033**	38.45	-23.31	**17.29**	**0.054**	40.61	-23.32
836.50	3	QPSK	V	90	292	1 / 0	19.08	1.50	18.43	0.070	38.45	-20.02	20.58	0.114	40.61	-20.03
836.50	3 (WCP)	QPSK	V	117	81	1 / 0	12.59	6.78	17.22	0.053	38.45	-21.23	19.37	0.086	40.61	-21.24

Table 7-15. ERP Data (Band 5/26)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	150	292	1 / 5	14.61	7.97	22.58	0.181	30.00	-7.42
1745.00	1.4	QPSK	V	138	301	1 / 0	15.04	8.00	**23.04**	0.201	30.00	-6.96
1779.30	1.4	QPSK	V	145	301	1 / 0	14.46	8.14	22.60	0.182	30.00	-7.40
1745.00	1.4	16-QAM	V	138	301	1 / 0	14.30	8.00	**22.30**	0.170	30.00	-7.70
1745.00	1.4	64-QAM	V	138	301	1 / 0	13.32	8.00	**21.32**	0.135	30.00	-8.68
1745.00	1.4	256-QAM	V	138	301	1 / 0	10.90	8.00	**18.90**	**0.078**	30.00	-11.10
1711.50	3	QPSK	V	146	300	1 / 14	14.27	7.97	22.24	0.168	30.00	-7.76
1745.00	3	QPSK	V	143	307	1 / 0	14.83	8.00	**22.83**	0.192	30.00	-7.17
1778.50	3	QPSK	V	147	296	1 / 14	14.38	8.13	22.51	0.178	30.00	-7.49
1745.00	3	16-QAM	V	143	307	1 / 0	14.66	8.00	**22.66**	0.184	30.00	-7.34
1745.00	3	64-QAM	V	143	307	1 / 0	13.57	8.00	**21.57**	0.143	30.00	-8.43
1745.00	3	256-QAM	V	143	307	1 / 0	10.67	8.00	**18.67**	**0.074**	30.00	-11.33
1712.50	5	QPSK	V	121	1	1 / 24	12.56	7.97	20.53	0.113	30.00	-9.47
1745.00	5	QPSK	V	128	12	1 / 0	13.12	8.00	**21.12**	0.129	30.00	-8.88
1777.50	5	QPSK	V	133	2	1 / 0	12.64	8.13	20.77	0.119	30.00	-9.23
1745.00	5	16-QAM	V	128	12	1 / 0	12.53	8.00	**20.53**	0.113	30.00	-9.47
1745.00	5	64-QAM	V	128	12	1 / 0	11.53	8.00	**19.53**	0.090	30.00	-10.47
1745.00	5	256-QAM	V	128	12	1 / 0	9.11	8.00	**17.11**	**0.051**	30.00	-12.89
1715.00	10	QPSK	V	121	353	1 / 0	11.80	7.97	19.77	0.095	30.00	-10.23
1745.00	10	QPSK	V	130	5	1 / 0	13.64	8.00	**21.64**	0.146	30.00	-8.36
1775.00	10	QPSK	V	133	358	1 / 0	11.36	8.12	19.48	0.089	30.00	-10.52
1745.00	10	16-QAM	V	130	5	1 / 0	12.55	8.00	**20.55**	0.113	30.00	-9.45
1745.00	10	64-QAM	V	130	5	1 / 0	10.25	8.00	**18.25**	0.067	30.00	-11.75
1745.00	10	256-QAM	V	130	5	1 / 0	9.63	8.00	**17.63**	**0.058**	30.00	-12.37
1717.50	15	QPSK	V	149	296	1 / 74	14.78	7.98	22.76	0.189	30.00	-7.24
1745.00	15	QPSK	V	142	305	1 / 0	14.86	8.00	**22.86**	0.193	30.00	-7.14
1772.50	15	QPSK	V	135	351	1 / 0	11.21	8.11	19.32	0.085	30.00	-10.68
1745.00	15	16-QAM	V	142	305	1 / 0	14.04	8.00	**22.04**	0.160	30.00	-7.96
1745.00	15	64-QAM	V	142	305	1 / 0	13.18	8.00	**21.18**	0.131	30.00	-8.82
1745.00	15	256-QAM	V	142	305	1 / 0	10.81	8.00	**18.81**	**0.076**	30.00	-11.19
1720.00	20	QPSK	V	156	286	1 / 99	15.29	7.98	**23.27**	**0.212**	30.00	-6.73
1745.00	20	QPSK	V	164	295	1 / 99	13.28	8.00	21.28	0.134	30.00	-8.72
1770.00	20	QPSK	V	148	279	1 / 99	13.72	8.09	21.81	0.152	30.00	-8.19
1720.00	20	16-QAM	V	156	286	1 / 99	14.32	7.98	22.30	0.170	30.00	-7.70
1720.00	20	64-QAM	V	156	286	1 / 99	13.72	7.98	**21.70**	0.148	30.00	-8.30
1720.00	20	256-QAM	V	156	286	1 / 0	10.22	7.98	**18.20**	**0.066**	30.00	-11.80
1720.00	20	QPSK	H	106	181	1 / 99	12.12	8.00	20.12	0.103	30.00	-9.88
1720.00	20 (WCP)	QPSK	V	117	225	1 / 99	7.55	7.98	15.53	0.036	30.00	-14.47

Table 7-16. EIRP Data (Band 4/66)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	136	344	6 / 0	12.38	8.37	20.75	0.119	33.01	-12.26
1882.50	1.4	QPSK	H	149	333	6 / 0	13.88	8.42	**22.30**	0.170	33.01	-10.71
1914.30	1.4	QPSK	H	146	334	1 / 5	12.67	8.47	21.14	0.130	33.01	-11.87
1882.50	1.4	16-QAM	H	149	333	1 / 0	13.27	8.42	**21.69**	0.148	33.01	-11.32
1882.50	1.4	64-QAM	H	149	333	1 / 0	13.02	8.42	**21.44**	0.139	33.01	-11.57
1882.50	1.4	256-QAM	H	149	333	1 / 5	11.60	8.42	**20.02**	**0.100**	33.01	-12.99
1851.50	3	QPSK	H	155	349	1 / 14	12.19	8.37	20.56	0.114	33.01	-12.45
1882.50	3	QPSK	H	152	335	15 / 0	14.13	8.42	**22.55**	0.180	33.01	-10.46
1913.50	3	QPSK	H	151	337	1 / 14	12.74	8.47	21.21	0.132	33.01	-11.80
1882.50	3	16-QAM	H	152	335	1 / 14	13.65	8.42	**22.07**	0.161	33.01	-10.94
1882.50	3	64-QAM	H	152	335	1 / 14	12.71	8.42	**21.13**	0.130	33.01	-11.88
1882.50	3	256-QAM	H	152	335	1 / 14	8.43	8.42	**16.85**	**0.048**	33.01	-16.16
1852.50	5	QPSK	H	157	349	25 / 0	12.12	8.37	20.49	0.112	33.01	-12.52
1882.50	5	QPSK	H	149	335	25 / 0	14.02	8.42	**22.44**	0.175	33.01	-10.57
1912.50	5	QPSK	H	148	336	1 / 0	12.83	8.47	21.30	0.135	33.01	-11.71
1882.50	5	16-QAM	H	149	335	1 / 24	13.35	8.42	**21.77**	0.150	33.01	-11.24
1882.50	5	64-QAM	H	149	335	1 / 24	12.41	8.42	**20.83**	0.121	33.01	-12.18
1882.50	5	256-QAM	H	149	335	1 / 24	8.31	8.42	**16.73**	**0.047**	33.01	-16.28
1855.00	10	QPSK	H	157	350	1 / 49	12.29	8.37	20.66	0.117	33.01	-12.35
1882.50	10	QPSK	H	149	341	1 / 49	13.73	8.42	**22.15**	0.164	33.01	-10.86
1910.00	10	QPSK	H	148	337	1 / 49	12.38	8.46	20.84	0.121	33.01	-12.17
1882.50	10	16-QAM	H	149	341	1 / 49	12.99	8.42	**21.41**	0.138	33.01	-11.60
1882.50	10	64-QAM	H	149	341	1 / 49	12.13	8.42	**20.55**	0.113	33.01	-12.46
1882.50	10	256-QAM	H	149	341	1 / 49	8.18	8.42	**16.60**	**0.046**	33.01	-16.41
1857.50	15	QPSK	H	167	236	1 / 74	13.93	8.38	22.31	0.170	33.01	-10.70
1882.50	15	QPSK	H	175	248	1 / 74	14.45	8.42	**22.87**	**0.194**	33.01	-10.14
1907.50	15	QPSK	H	170	239	1 / 74	13.08	8.46	21.54	0.143	33.01	-11.47
1882.50	15	16-QAM	H	175	248	1 / 74	13.78	8.42	**22.20**	0.166	33.01	-10.81
1882.50	15	64-QAM	H	175	248	1 / 74	12.87	8.42	**21.29**	0.135	33.01	-11.72
1882.50	15	256-QAM	H	175	248	1 / 74	8.79	8.42	**17.21**	**0.053**	33.01	-15.80
1860.00	20	QPSK	H	160	335	1 / 99	14.24	8.38	22.62	0.183	33.01	-10.39
1882.50	20	QPSK	H	152	337	1 / 99	14.22	8.42	**22.64**	0.184	33.01	-10.37
1905.00	20	QPSK	H	153	333	1 / 0	13.85	8.45	22.30	0.170	33.01	-10.71
1882.50	20	16-QAM	H	152	337	1 / 99	13.91	8.42	**22.33**	0.171	33.01	-10.68
1882.50	20	64-QAM	H	152	337	1 / 99	12.74	8.42	**21.16**	0.131	33.01	-11.85
1882.50	20	256-QAM	H	152	337	1 / 99	8.61	8.42	**17.03**	**0.050**	33.01	-15.98
1882.50	15	QPSK	V	131	137	1 / 74	13.01	8.42	21.43	0.139	33.01	-11.58
1882.50	15 (WCP)	QPSK	H	149	33	1 / 74	11.56	8.42	19.98	0.100	33.01	-13.03

Table 7-17. EIRP Data (Band 25/2)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	144	70	1 / 24	13.23	7.90	21.13	0.130	23.98	-2.85
2312.50	5	QPSK	H	144	70	1 / 24	13.44	7.90	**21.34**	0.136	23.98	-2.64
2312.50	5	16-QAM	H	144	70	1 / 24	12.29	7.90	**20.19**	0.104	23.98	-3.79
2312.50	5	64-QAM	H	144	70	1 / 24	10.84	7.90	**18.74**	0.075	23.98	-5.24
2312.50	5	64-QAM	H	144	70	1 / 24	8.74	7.90	**16.64**	**0.046**	23.98	-7.34
2310.00	10	QPSK	H	121	51	1 / 49	13.55	7.90	**21.45**	**0.140**	23.98	-2.53
2310.00	10	16-QAM	H	121	51	1 / 49	12.41	7.90	**20.31**	0.107	23.98	-3.67
2310.00	10	64-QAM	H	121	51	1 / 49	11.96	7.90	**19.86**	0.097	23.98	-4.12
2310.00	10	64-QAM	H	121	51	1 / 49	8.78	7.90	**16.68**	**0.047**	23.98	-7.30
2310.00	10	QPSK	V	152	50	1 / 49	12.03	7.90	19.93	0.098	23.98	-4.05
2310.00	10 (WCP)	QPSK	H	146	15	1 / 49	11.71	7.90	19.61	0.091	23.98	-4.37

Table 7-18. EIRP Data (Band 30)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	148	290	1 / 0	11.87	7.89	19.76	0.095	33.01	-13.25
2535.00	5	QPSK	H	152	291	1 / 0	12.43	7.83	**20.26**	0.106	33.01	-12.75
2567.50	5	QPSK	H	148	285	1 / 24	11.58	7.76	19.34	0.086	33.01	-13.67
2535.00	5	16-QAM	H	152	291	1 / 0	11.47	7.83	**19.30**	0.085	33.01	-13.71
2535.00	5	64-QAM	H	152	291	1 / 0	10.57	7.83	**18.40**	0.069	33.01	-14.61
2535.00	5	256-QAM	H	152	291	1 / 0	8.02	7.83	**15.85**	**0.038**	33.01	-17.16
2505.00	10	QPSK	H	148	303	1 / 49	11.86	7.89	19.75	0.094	33.01	-13.26
2535.00	10	QPSK	H	151	301	1 / 0	12.96	7.83	**20.79**	0.120	33.01	-12.22
2565.00	10	QPSK	H	153	299	1 / 49	10.95	7.77	18.72	0.074	33.01	-14.29
2535.00	10	16-QAM	H	151	301	1 / 0	11.31	7.83	**19.14**	0.082	33.01	-13.87
2535.00	10	64-QAM	H	151	301	1 / 0	10.65	7.83	**18.48**	0.070	33.01	-14.53
2535.00	10	256-QAM	H	151	301	1 / 0	8.56	7.83	**16.39**	**0.044**	33.01	-16.62
2507.50	15	QPSK	H	148	289	1 / 74	12.38	7.88	20.26	0.106	33.01	-12.75
2535.00	15	QPSK	H	151	291	1 / 0	12.64	7.83	**20.47**	0.111	33.01	-12.54
2562.50	15	QPSK	H	150	296	1 / 0	11.54	7.77	19.31	0.085	33.01	-13.70
2535.00	15	16-QAM	H	151	291	1 / 0	11.55	7.83	**19.38**	0.087	33.01	-13.63
2535.00	15	64-QAM	H	151	291	1 / 0	10.84	7.83	**18.67**	0.074	33.01	-14.34
2535.00	15	256-QAM	H	151	291	1 / 0	8.54	7.83	**16.37**	**0.043**	33.01	-16.64
2510.00	20	QPSK	H	149	284	1 / 99	12.11	7.88	19.99	0.100	33.01	-13.02
2535.00	20	QPSK	H	152	294	1 / 0	13.03	7.83	**20.86**	**0.122**	33.01	-12.15
2560.00	20	QPSK	H	150	297	1 / 0	12.30	7.78	20.08	0.102	33.01	-12.93
2535.00	20	16-QAM	H	152	294	1 / 0	12.23	7.83	**20.06**	0.101	33.01	-12.95
2535.00	20	64-QAM	H	152	294	1 / 0	11.28	7.83	**19.11**	0.081	33.01	-13.90
2535.00	20	256-QAM	H	152	294	1 / 0	8.92	7.83	**16.75**	**0.047**	33.01	-16.26
2535.00	20	QPSK	V	116	242	1 / 0	10.09	7.83	17.92	0.062	33.01	-15.09
2535.00	20 (WCP)	QPSK	H	115	48	1 / 0	8.47	7.83	16.30	0.043	33.01	-16.71

Table 7-19. EIRP Data (Band 7)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	116	216	1 / 0	10.00	7.89	17.89	0.062	33.01	-15.12
2535.00	5	QPSK	H	115	219	1 / 0	11.81	7.83	**19.64**	0.092	33.01	-13.37
2567.50	5	QPSK	H	115	268	1 / 0	10.38	7.76	18.14	0.065	33.01	-14.87
2535.00	5	16-QAM	H	115	219	1 / 0	11.09	7.83	**18.92**	0.078	33.01	-14.09
2535.00	5	64-QAM	H	115	219	1 / 0	8.07	7.83	**15.90**	0.039	33.01	-17.11
2535.00	5	256-QAM	H	115	219	1 / 0	6.83	7.83	**14.66**	**0.029**	33.01	-18.35
2505.00	10	QPSK	H	125	210	1 / 0	10.62	7.89	18.51	0.071	33.01	-14.50
2535.00	10	QPSK	H	117	208	1 / 0	11.80	7.83	**19.63**	0.092	33.01	-13.38
2565.00	10	QPSK	H	108	24	1 / 0	9.61	7.77	17.38	0.055	33.01	-15.63
2535.00	10	16-QAM	H	117	208	1 / 0	10.61	7.83	**18.44**	0.070	33.01	-14.57
2535.00	10	64-QAM	H	117	208	1 / 0	9.28	7.83	**17.11**	0.051	33.01	-15.90
2535.00	10	256-QAM	H	117	208	1 / 0	7.84	7.83	**15.67**	**0.037**	33.01	-17.34
2507.50	15	QPSK	H	120	226	1 / 0	11.91	7.88	**19.79**	0.095	33.01	-13.22
2535.00	15	QPSK	H	118	254	1 / 0	11.28	7.83	19.11	0.081	33.01	-13.90
2562.50	15	QPSK	H	108	209	1 / 0	10.71	7.77	18.48	0.070	33.01	-14.53
2507.50	15	16-QAM	H	120	226	1 / 0	11.03	7.88	**18.91**	0.078	33.01	-14.10
2507.50	15	64-QAM	H	120	226	1 / 0	10.18	7.88	**18.06**	0.064	33.01	-14.95
2507.50	15	256-QAM	H	120	226	1 / 0	7.88	7.88	**15.76**	**0.038**	33.01	-17.25
2510.00	20	QPSK	H	128	210	1 / 0	12.20	7.88	**20.08**	**0.102**	33.01	-12.93
2535.00	20	QPSK	H	142	208	1 / 0	11.55	7.83	19.38	0.087	33.01	-13.63
2560.00	20	QPSK	H	127	237	1 / 0	10.91	7.78	18.69	0.074	33.01	-14.32
2510.00	20	16-QAM	H	128	210	1 / 0	11.15	7.88	**19.03**	0.080	33.01	-13.98
2510.00	20	64-QAM	H	128	210	1 / 0	9.86	7.88	**17.74**	0.059	33.01	-15.27
2510.00	20	256-QAM	H	128	210	1 / 0	7.31	7.88	**15.19**	**0.033**	33.01	-17.82
2510.00	20	QPSK	V	167	128	1 / 0	10.54	7.86	18.40	0.069	33.01	-14.61
2510.00	20 (WCP)	QPSK	H	156	268	1 / 0	11.24	7.88	19.12	0.082	33.01	-13.89

Table 7-20. EIRP Data (Band 7 Ant A)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	H	115	308	1 / 0	17.03	7.90	**24.93**	0.311	33.01	-8.08
2593.00	5	QPSK	H	104	296	1 / 0	16.68	7.71	24.39	0.275	33.01	-8.62
2687.50	5	QPSK	H	115	274	1 / 0	16.37	7.52	23.89	0.245	33.01	-9.12
2498.50	5	16-QAM	H	115	308	1 / 0	16.08	7.90	**23.98**	0.250	33.01	-9.03
2498.50	5	64-QAM	H	115	308	1 / 0	15.15	7.90	**23.05**	0.202	33.01	-9.96
2498.50	5	256-QAM	H	115	308	1 / 0	12.48	7.90	**20.38**	**0.109**	33.01	-12.63
2501.00	10	QPSK	H	114	287	1 / 0	17.25	7.90	**25.15**	0.327	33.01	-7.86
2593.00	10	QPSK	H	112	277	1 / 0	16.13	7.71	23.84	0.242	33.01	-9.17
2685.00	10	QPSK	H	105	265	1 / 0	15.91	7.53	23.44	0.221	33.01	-9.57
2501.00	10	16-QAM	H	114	287	1 / 0	16.03	7.90	**23.93**	0.247	33.01	-9.08
2501.00	10	64-QAM	H	114	287	1 / 0	15.35	7.90	**23.25**	0.211	33.01	-9.76
2501.00	10	256-QAM	H	114	287	1 / 0	12.59	7.90	**20.49**	**0.112**	33.01	-12.52
2503.50	15	QPSK	H	120	291	1 / 0	17.49	7.89	**25.38**	0.345	33.01	-7.63
2593.00	15	QPSK	H	115	237	1 / 0	16.50	7.71	24.21	0.264	33.01	-8.80
2682.50	15	QPSK	H	104	296	1 / 0	16.41	7.53	23.94	0.248	33.01	-9.07
2503.50	15	16-QAM	H	120	291	1 / 0	16.47	7.89	**24.36**	0.273	33.01	-8.65
2503.50	15	64-QAM	H	120	291	1 / 0	15.61	7.89	**23.50**	0.224	33.01	-9.51
2503.50	15	256-QAM	H	120	291	1 / 0	12.84	7.89	**20.73**	**0.118**	33.01	-12.28
2506.00	20	QPSK	H	118	288	1 / 0	17.76	7.89	**25.65**	**0.367**	33.01	-7.36
2593.00	20	QPSK	H	102	238	1 / 99	16.31	7.71	24.02	0.252	33.01	-8.99
2680.00	20	QPSK	H	104	296	1 / 0	15.77	7.54	23.31	0.214	33.01	-9.71
2506.00	20	16-QAM	H	118	288	1 / 0	16.75	7.89	**24.64**	0.291	33.01	-8.37
2506.00	20	64-QAM	H	118	288	1 / 0	16.18	7.89	**24.07**	0.255	33.01	-8.94
2506.00	20	256-QAM	H	118	288	1 / 0	13.37	7.89	**21.26**	**0.134**	33.01	-11.75
2506.00	20	QPSK	V	116	294	1 / 0	16.75	7.89	24.64	0.291	33.01	-8.37
2506.00	20 (WCP)	QPSK	H	117	54	1 / 0	11.52	7.89	19.41	0.087	33.01	-13.60

Table 7-21. EIRP Data (Band 41)

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7.9 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points ≥ 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

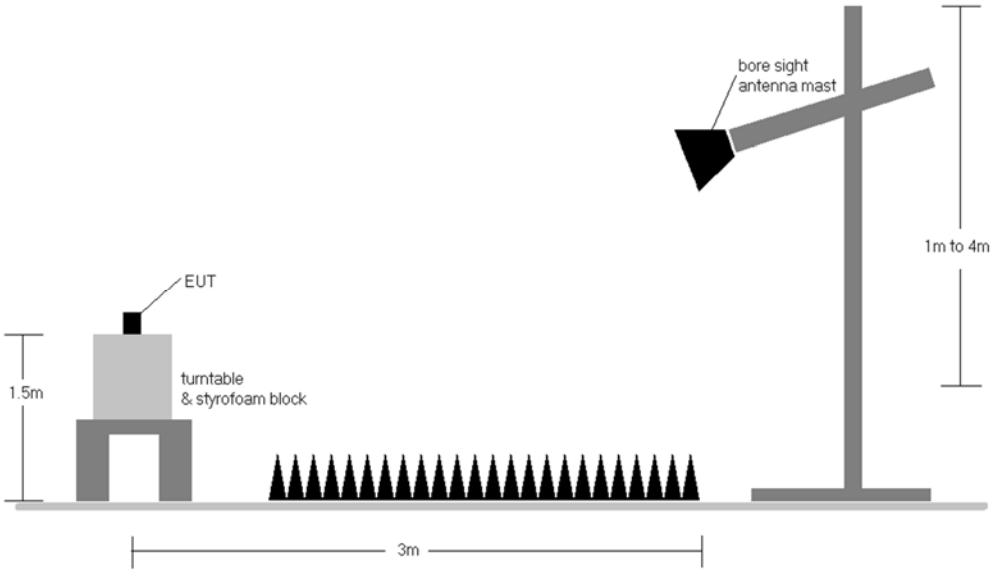

Figure 7-9. Test Instrument & Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

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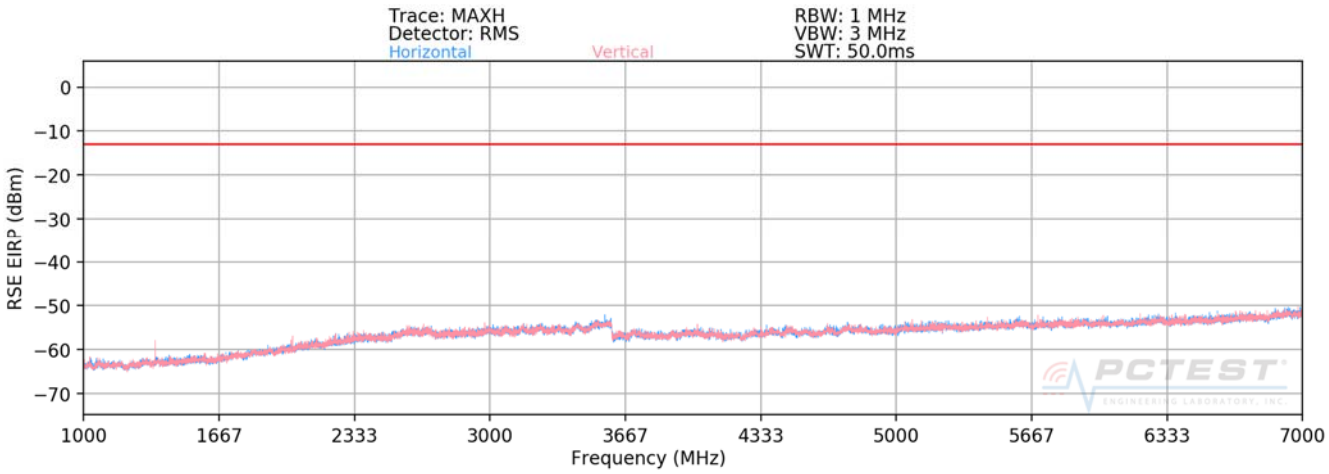
Band 71



Plot 7-463. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY:	673.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	H	160	321	-68.85	7.47	-61.38	-48.4
2019.00	H	151	188	-69.61	8.68	-60.92	-47.9
2692.00	H	-	-	-70.47	9.99	-60.48	-47.5

Table 7-22. Radiated Spurious Data (Band 71 – Low Channel)

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OPERATING FREQUENCY:	680.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	H	154	176	-68.76	7.48	-61.28	-48.3
2041.50	H	188	163	-68.86	8.76	-60.10	-47.1
2722.00	H	-	-	-71.20	10.08	-61.12	-48.1

Table 7-23. Radiated Spurious Data (Band 71 – Mid Channel)

OPERATING FREQUENCY:	688.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	H	144	181	-66.67	7.46	-59.20	-46.2
2064.00	H	127	183	-67.09	8.80	-58.29	-45.3
2752.00	H	-	-	-71.90	10.17	-61.73	-48.7

Table 7-24. Radiated Spurious Data (Band 71 – High Channel)

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OPERATING FREQUENCY:	688.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	H	100	256	-66.89	7.46	-59.42	-46.4
2064.00	H	113	257	-70.51	8.80	-61.71	-48.7
2752.00	H	-	-	-74.93	10.17	-64.76	-51.8

Table 7-25. Radiated Spurious Data with WCP (Band 71 High Channel)

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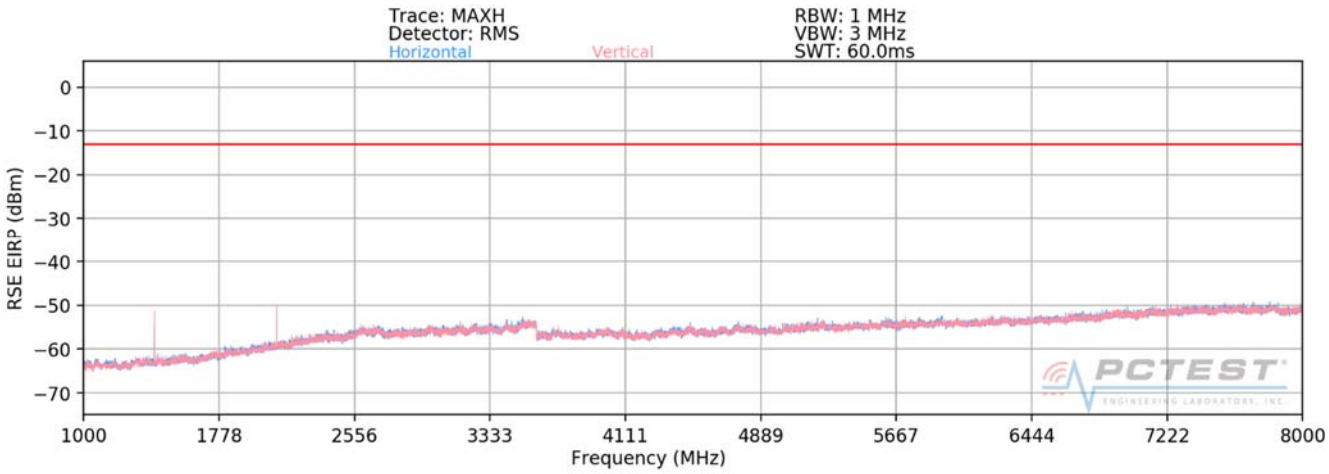
Band 12



Plot 7-464. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY:	704.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	1.4	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	H	109	38	-62.28	7.54	-54.74	-41.7
2112.00	H	115	39	-67.93	8.85	-59.08	-46.1
2816.00	H	-	-	-71.51	10.12	-61.39	-48.4

Table 7-26. Radiated Spurious Data (Band 12 – Low Channel)

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OPERATING FREQUENCY:	707.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	1.4	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	156	18	-62.59	7.63	-54.96	-42.0
2122.50	H	112	278	-67.52	8.86	-58.66	-45.7
2830.00	H	-	-	-71.91	10.10	-61.82	-48.8

Table 7-27. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY:	711.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	1.4	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	H	145	0	-62.32	7.72	-54.60	-41.6
2133.00	H	108	330	-66.31	8.87	-57.44	-44.4
2844.00	H	-	-	-72.25	10.07	-62.18	-49.2

Table 7-28. Radiated Spurious Data (Band 12 – High Channel)

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OPERATING FREQUENCY:	711.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	1.4	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	H	185	97	-64.68	7.72	-56.96	-44.0
2133.00	H	226	138	-71.22	8.87	-62.35	-49.3
2844.00	H	-	-	-72.34	10.07	-62.27	-49.3

Table 7-29. Radiated Spurious Data with WCP (Band 12 – High Channel)

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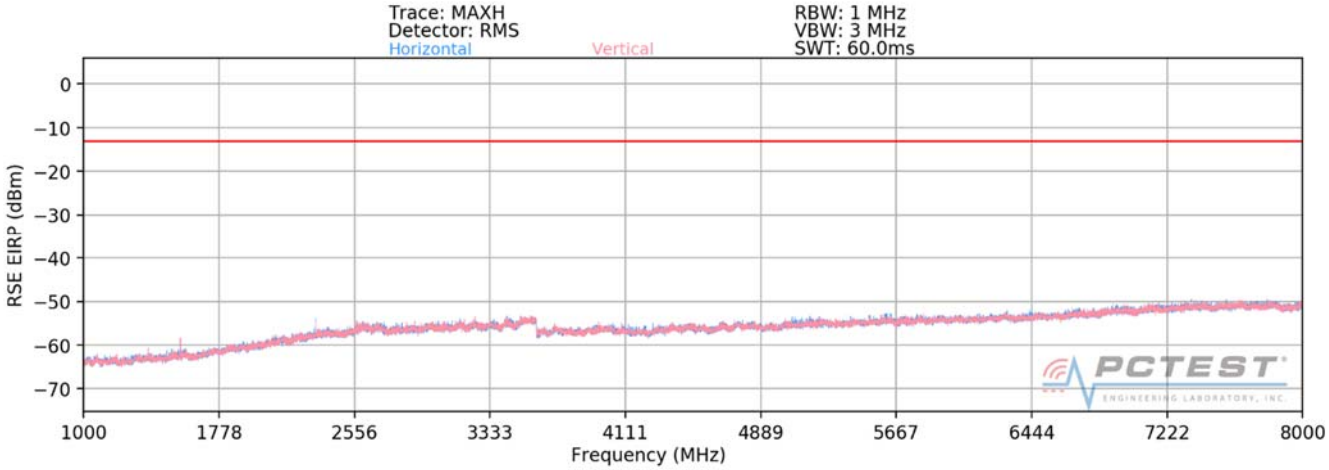
Band 13



Plot 7-465. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY:	782.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	-	-	-71.56	9.43	-62.12	-49.1

Table 7-30. Radiated Spurious Data (Band 13 – Mid Channel)

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	103	97	-69.38	8.55	-60.83	-20.8

Table 7-31. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

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MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	201	56	-73.48	8.55	-64.93	-24.9

Table 7-32. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	782.00	MHz
CHANNEL:	23230	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	108	53	-67.92	9.41	-58.51	-45.5
3128.00	H	-	-	-70.54	9.33	-61.21	-48.2

Table 7-33. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

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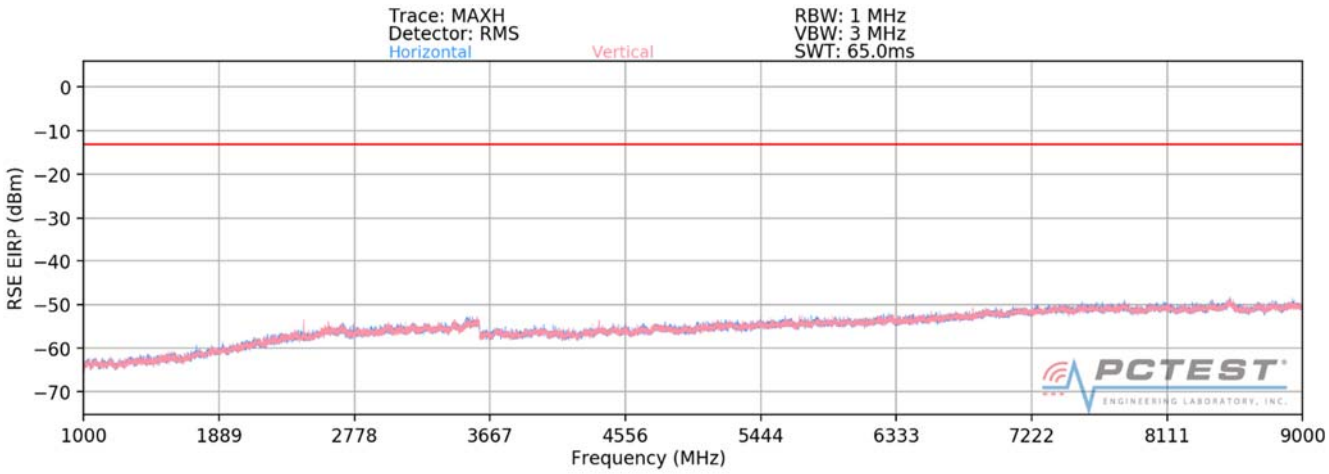
Band 26/5



Plot 7-466. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY:	825.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1651.00	H	-	-	-73.36	8.95	-64.41	-64.4
2476.50	H	112	56	-67.88	9.66	-58.22	-58.2
3302.00	H	-	-	-70.76	9.58	-61.19	-61.2

Table 7-34. Radiated Spurious Data (Band 26/5 – Low Channel)

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OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	26915	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	-	-	-73.73	8.95	-64.77	-64.8
2509.50	H	100	315	-67.41	9.75	-57.66	-57.7
3346.00	H	-	-	-70.13	9.60	-60.52	-60.5

Table 7-35. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY:	847.50	MHz
CHANNEL:	27025	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1695.00	H	-	-	-75.15	8.95	-66.20	-66.2
2542.50	H	115	208	-69.45	9.74	-59.71	-59.7
3390.00	H	-	-	-71.33	9.76	-61.57	-61.6

Table 7-36. Radiated Spurious Data (Band 26/5 – High Channel)

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OPERATING FREQUENCY:	836.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	228	115	-72.05	8.95	-63.09	-63.1
2509.50	H	149	108	-70.14	9.75	-60.39	-60.4
3346.00	H	-	-	-70.14	9.60	-60.53	-60.5

Table 7-37. Radiated Spurious Data with WCP (Band 26/5 – Mid Channel)

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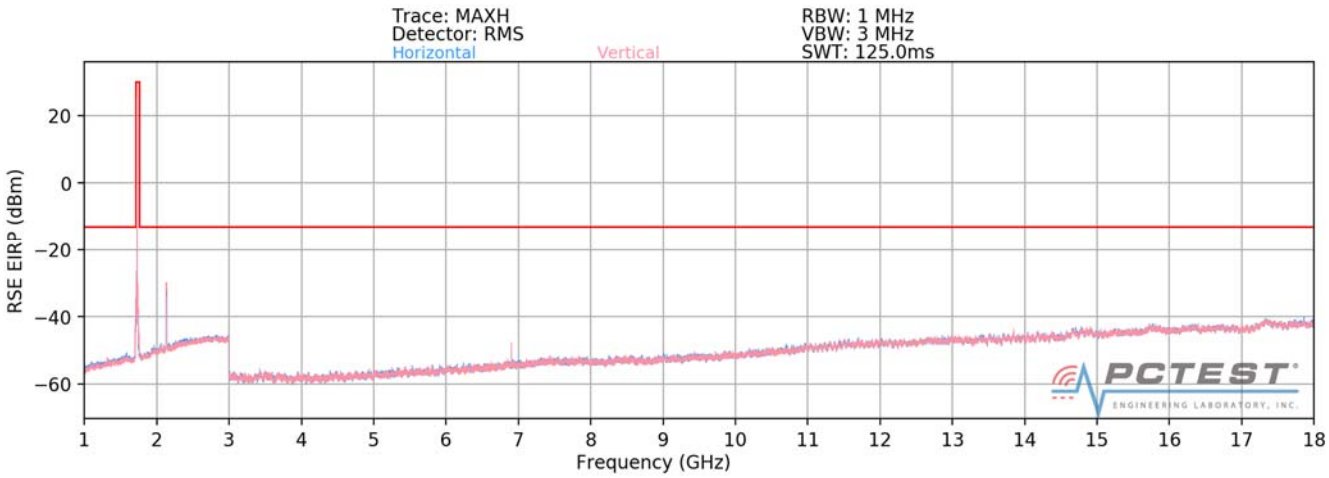
Band 66/4



Plot 7-467. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY:	1720.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	V	289	325	-55.88	9.84	-46.04	-33.0
5160.00	V	-	-	-71.63	10.71	-60.92	-47.9
6880.00	V	256	148	-65.54	11.68	-53.85	-40.9
8600.00	V	-	-	-66.30	11.08	-55.22	-42.2

Table 7-38. Radiated Spurious Data (Band 66/4 – Low Channel)

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OPERATING FREQUENCY:	1745.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	V	278	264	-57.68	9.91	-47.77	-34.8
5235.00	V	-	-	-72.18	10.73	-61.45	-48.4
6980.00	V	264	109	-66.26	11.82	-54.44	-41.4
8725.00	V	-	-	-66.48	11.00	-55.49	-42.5

Table 7-39. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY:	1770.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	V	322	287	-56.94	9.89	-47.05	-34.0
5310.00	V	-	-	-71.77	10.69	-61.08	-48.1
7080.00	V	259	158	-67.72	11.79	-55.94	-42.9
8850.00	V	-	-	-66.86	11.00	-55.87	-42.9

Table 7-40. Radiated Spurious Data (Band 66/4 – High Channel)

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OPERATING FREQUENCY:	1770.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	V	120	317	-72.24	9.89	-62.35	-49.3
5310.00	V	-	-	-71.86	10.69	-61.17	-48.2
7080.00	V	307	17	-63.78	11.79	-52.00	-39.0
8850.00	V	-	-	-67.15	11.00	-56.16	-43.2

Table 7-41. Radiated Spurious Data with WCP (Band 66/4 – High Channel)

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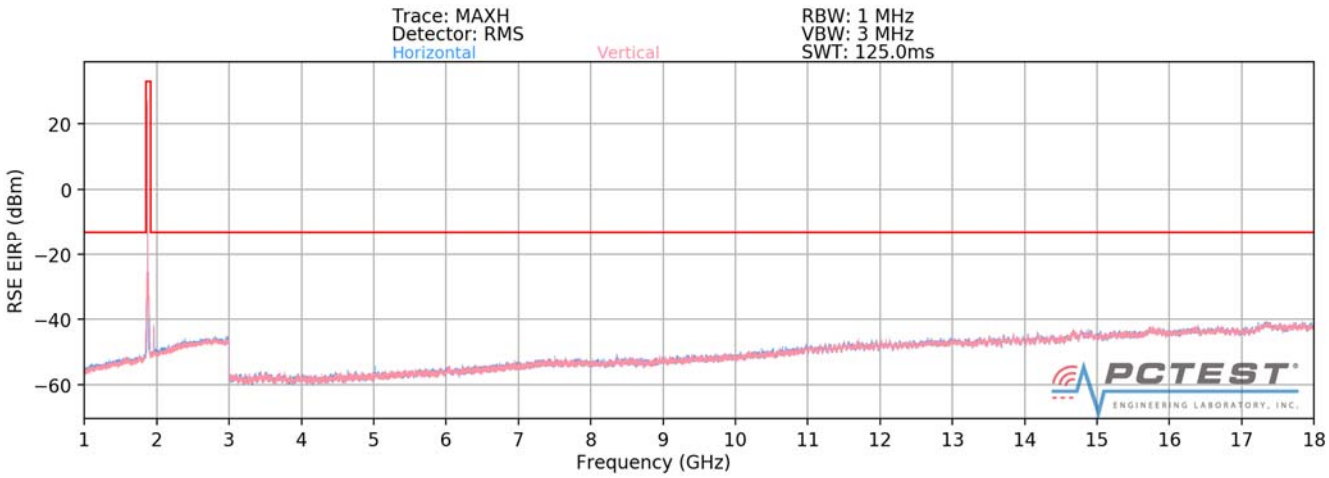
Band 25/2



Plot 7-468. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY:	1857.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	H	-	-	-70.62	9.53	-61.09	-48.1
5572.50	H	347	272	-68.93	10.97	-57.95	-45.0
7430.00	H	-	-	-68.32	10.98	-57.34	-44.3

Table 7-42. Radiated Spurious Data (Band 25/2 – Low Channel)

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OPERATING FREQUENCY:	1882.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	-	-	-71.59	9.36	-62.24	-49.2
5647.50	H	356	297	-70.93	11.19	-59.73	-46.7
7530.00	H	-	-	-68.78	11.13	-57.65	-44.6

Table 7-43. Radiated Spurious Data (Band 25/2 – Mid Channel)

OPERATING FREQUENCY:	1907.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.00	H	-	-	-72.04	9.30	-62.74	-49.7
5722.50	H	387	316	-71.23	11.37	-59.86	-46.9
7630.00	H	-	-	-68.96	11.31	-57.65	-44.6

Table 7-44. Radiated Spurious Data (Band 25/2 – High Channel)

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OPERATING FREQUENCY:	1882.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	148	276	-70.60	9.30	-61.30	-48.3
5647.50	H	-	-	-72.26	11.37	-60.89	-47.9

Table 7-45. Radiated Spurious Data with WCP (Band 25/2 – Mid Channel)

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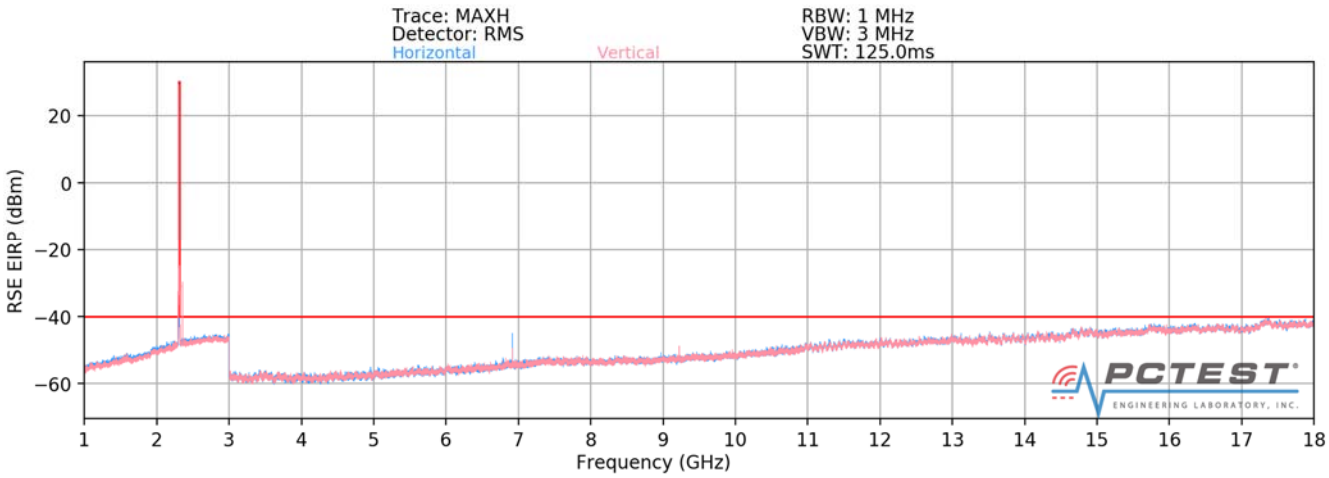
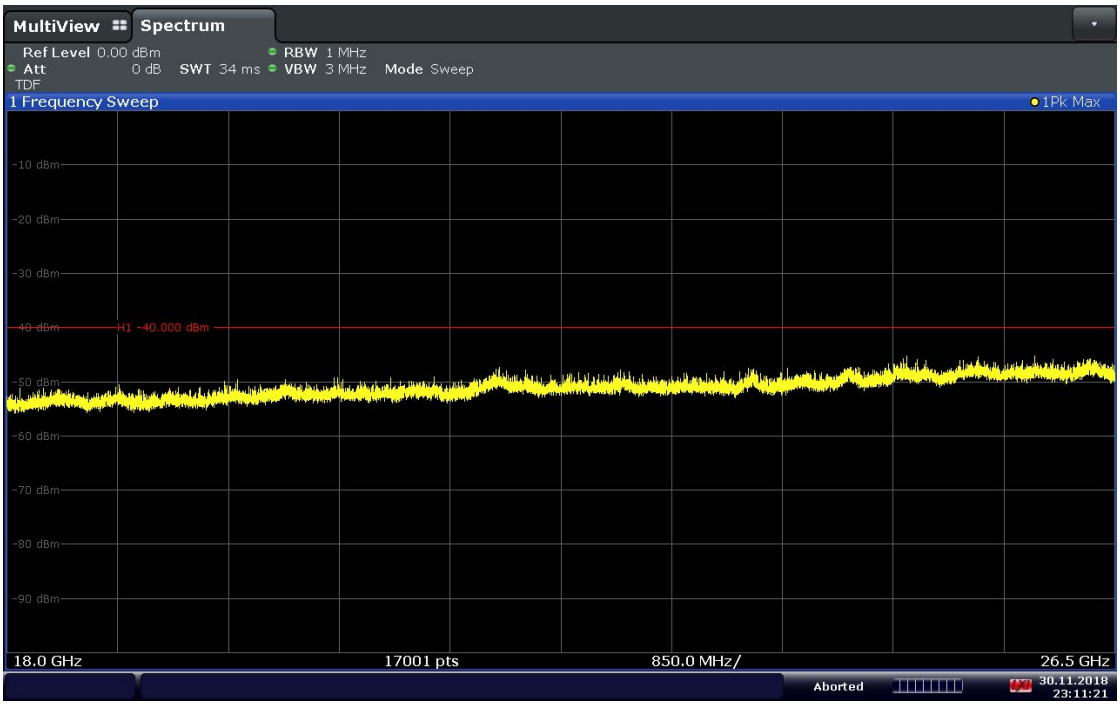
Band 30



Plot 7-469. Radiated Spurious Plot 1GHz - 18GHz (Band 30)



Plot 7-470. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30)

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OPERATING FREQUENCY: 2310.00 MHz
CHANNEL: 27710
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	113	315	-66.95	10.92	-56.04	-16.0
6930.00	H	295	337	-64.70	11.74	-52.95	-13.0
9240.00	H	226	28	-62.89	11.62	-51.27	-11.3
11550.00	H	-	-	-62.37	12.72	-49.66	-9.7

Table 7-46. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY: 2310.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 10.0 MHz
DISTANCE: 3 meters
LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	113	259	-69.41	10.92	-58.50	-18.5
6930.00	H	187	293	-68.16	11.74	-56.41	-16.4
9240.00	H	-	-	-68.30	11.62	-56.68	-16.7

Table 7-47. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

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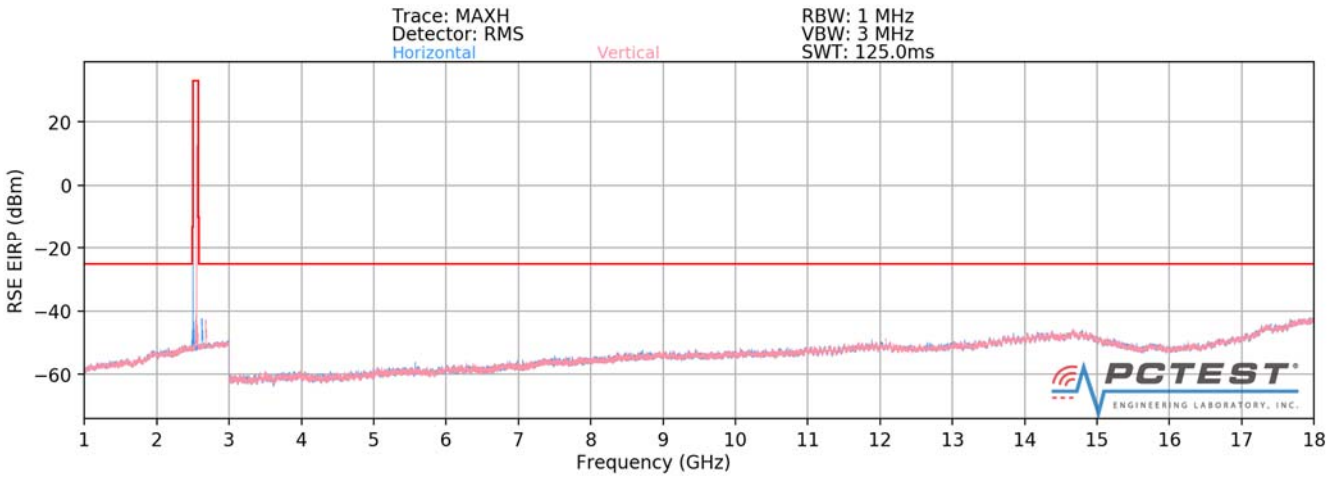
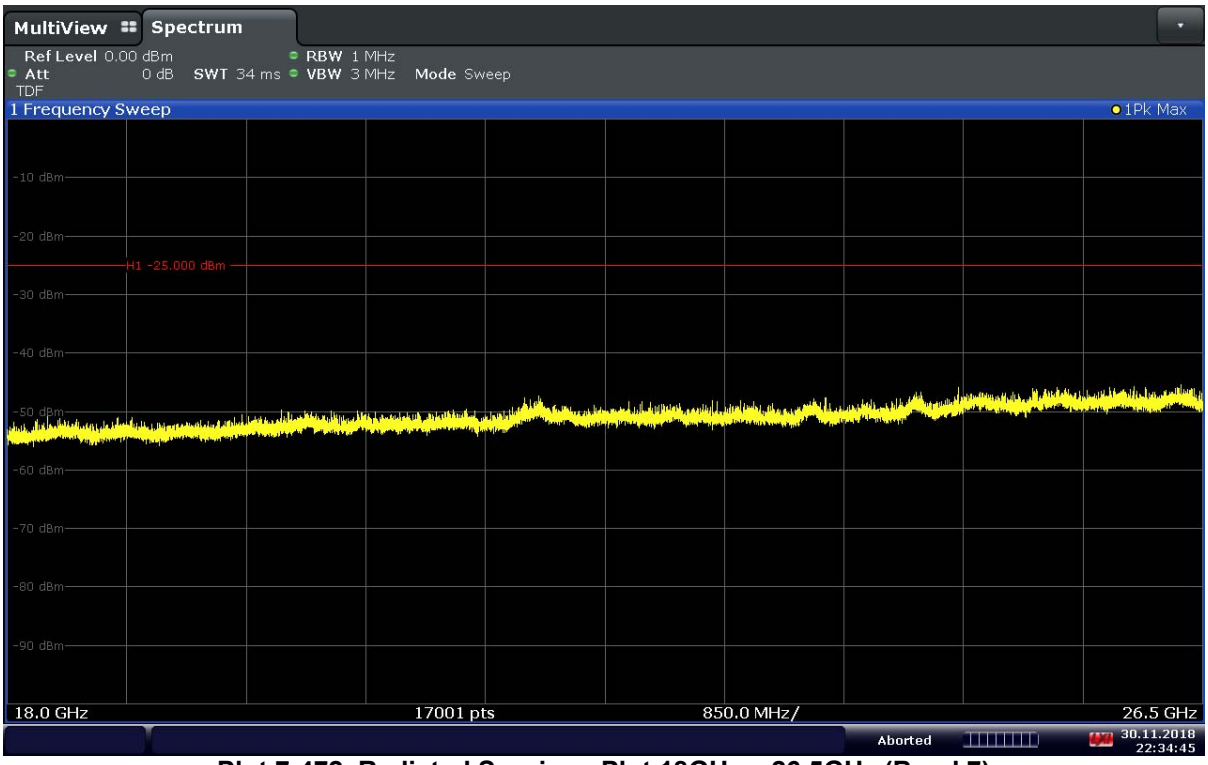
Band 7



Plot 7-471. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



Plot 7-472. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7)

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OPERATING FREQUENCY:	2510.00	MHz
CHANNEL:	20850	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	-	-	-64.21	11.09	-53.12	-28.1
7530.00	H	131	57	-58.36	11.05	-47.31	-22.3
10040.00	H	-	-	-57.29	12.18	-45.12	-20.1

Table 7-48. Radiated Spurious Data (Band 7 – Low Channel)

OPERATING FREQUENCY:	2535.00	MHz
CHANNEL:	21100	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	-	-	-62.72	10.91	-51.80	-26.8
7605.00	H	-	-	-58.61	11.22	-47.39	-22.4

Table 7-49. Radiated Spurious Data (Band 7 – Mid Channel)

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OPERATING FREQUENCY: 2560.00 MHz
CHANNEL: 21350
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	302	295	-62.05	10.84	-51.21	-26.2
7680.00	H	-	-	-58.68	11.34	-47.34	-22.3

Table 7-50. Radiated Spurious Data (Band 7 – High Channel)

OPERATING FREQUENCY: 2510.00 MHz
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	-	-	-72.59	11.09	-61.50	-36.5
7530.00	H	257	258	-67.57	11.05	-56.51	-31.5
10040.00	H	-	-	-67.40	12.18	-55.23	-30.2

Table 7-51. Radiated Spurious Data with WCP (Band 7 –Low Channel)

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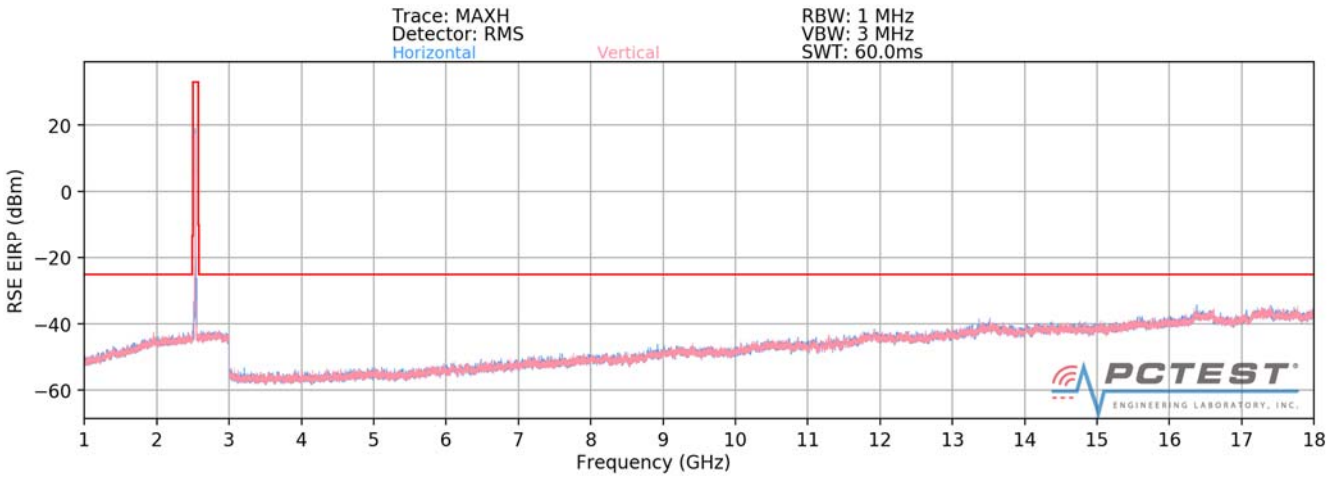
Band 7 Ant A



Plot 7-473. Radiated Spurious Plot 1GHz - 18GHz (Band 7 Ant A)

OPERATING FREQUENCY:	2510.00	MHz
CHANNEL:	20850	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	355	36	-69.70	8.78	-60.92	-35.9
7530.00	H	320	359	-62.15	9.31	-52.84	-27.8
10040.00	H	-	-	-64.57	9.78	-54.79	-29.8

Table 7-52. Radiated Spurious Data (Band 7 Ant A– Low Channel)

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OPERATING FREQUENCY: 2535.00 MHz
CHANNEL: 21100
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	393	33	-68.03	8.89	-59.14	-34.1
7605.00	H	335	46	-64.74	9.25	-55.48	-30.5
10140.00	H	-	-	-64.30	9.75	-54.55	-29.5

Table 7-53. Radiated Spurious Data (Band 7 Ant A – Mid Channel)

OPERATING FREQUENCY: 2560.00 MHz
CHANNEL: 21350
MODULATION SIGNAL: QPSK
BANDWIDTH: 20.0 MHz
DISTANCE: 3 meters
LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	271	32	-69.32	8.91	-60.41	-35.4
7680.00	H	379	291	-66.75	9.28	-57.47	-32.5
10240.00	H	-	-	-63.08	9.66	-53.42	-28.4

Table 7-54. Radiated Spurious Data (Band 7 Ant A– High Channel)

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OPERATING FREQUENCY:	2510.00	MHz
CHANNEL:	39675	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	-	-	-70.18	8.78	-61.40	-36.4
7530.00	H	104	261	-64.82	9.31	-55.51	-30.5
10040.00	H	-	-	-64.91	9.78	-55.13	-30.1

Table 7-55. Radiated Spurious Data with WCP (Band 7 Ant A–Low Channel)

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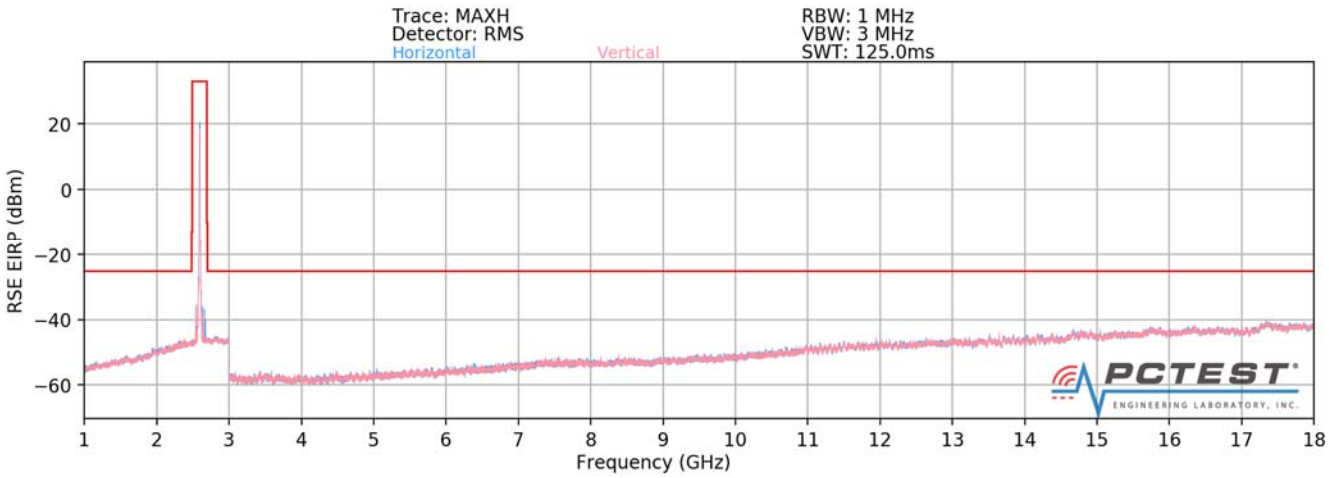
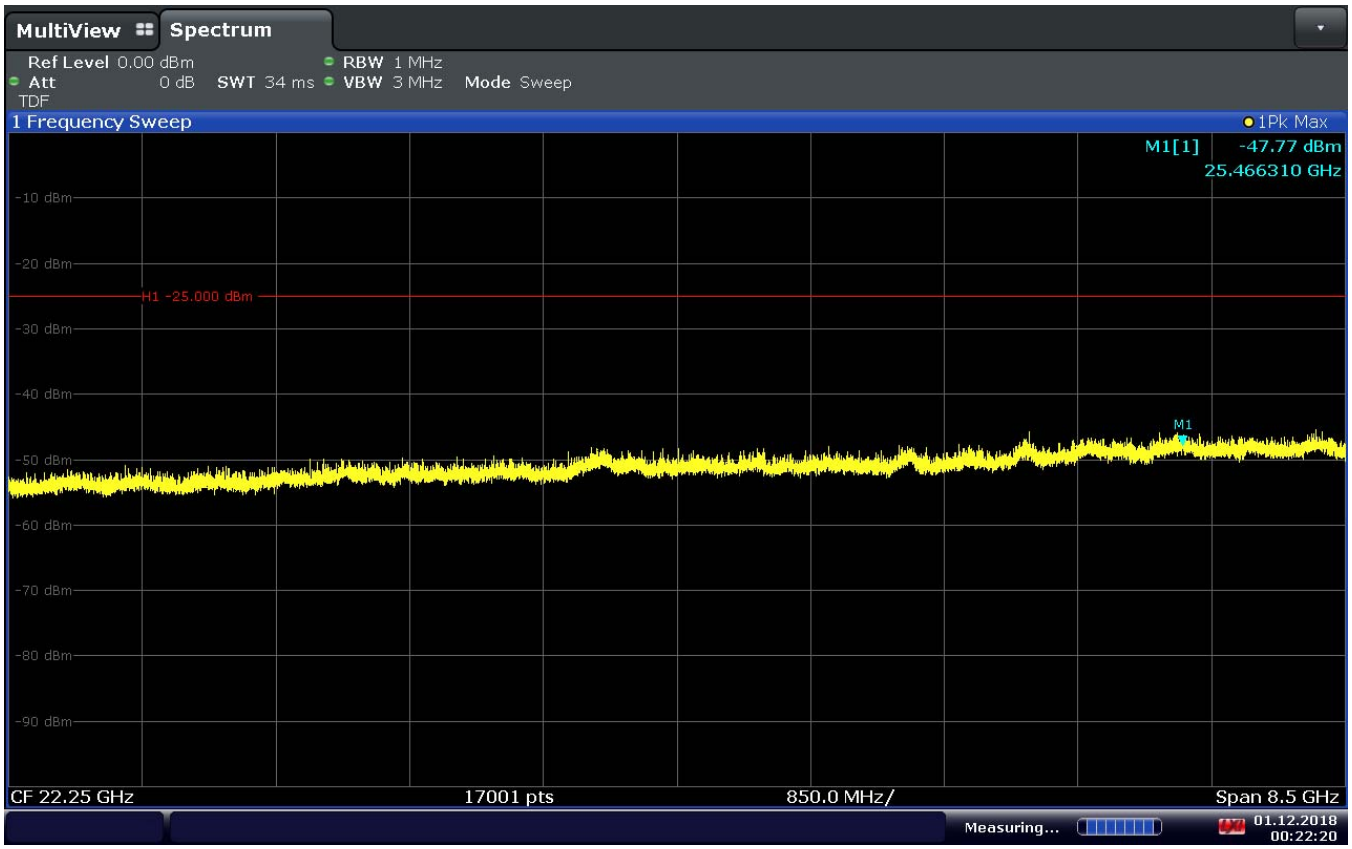
Band 41 PC2



Plot 7-474. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2)



Plot 7-475. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 PC2)

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OPERATING FREQUENCY:	2506.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	H	138	207	-70.89	10.88	-60.01	-35.0
7518.00	H	167	67	-62.34	11.13	-51.21	-26.2
10024.00	H	-	-	-66.98	11.99	-55.00	-30.0

Table 7-56. Radiated Spurious Data (Band 41 PC2 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
CHANNEL:	40620	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	116	294	-69.55	10.74	-58.81	-33.8
7779.00	H	121	60	-63.16	11.44	-51.72	-26.7
10372.00	H	-	-	-67.10	12.42	-54.67	-29.7

Table 7-57. Radiated Spurious Data (Band 41 PC2– Mid Channel)

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OPERATING FREQUENCY:	2680.00	MHz
CHANNEL:	41490	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	126	204	-68.26	10.70	-57.56	-32.6
8040.00	H	115	39	-60.63	11.16	-49.47	-24.5
10720.00	H	-	-	-66.59	12.59	-53.99	-29.0

Table 7-58. Radiated Spurious Data (Band 41 PC2– High Channel)

OPERATING FREQUENCY:	2506.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	H	115	10	-69.75	10.74	-59.01	-34.0
7518.00	H	238	255	-64.14	11.44	-52.70	-27.7
10024.00	H	-	-	-67.09	12.42	-54.66	-29.7

Table 7-59. Radiated Spurious Data with WCP (Band 41 PC2 – Low Channel)

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7.10 Uplink Carrier Aggregation Radiated Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. No. of sweep points ≥ 2 x span / RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

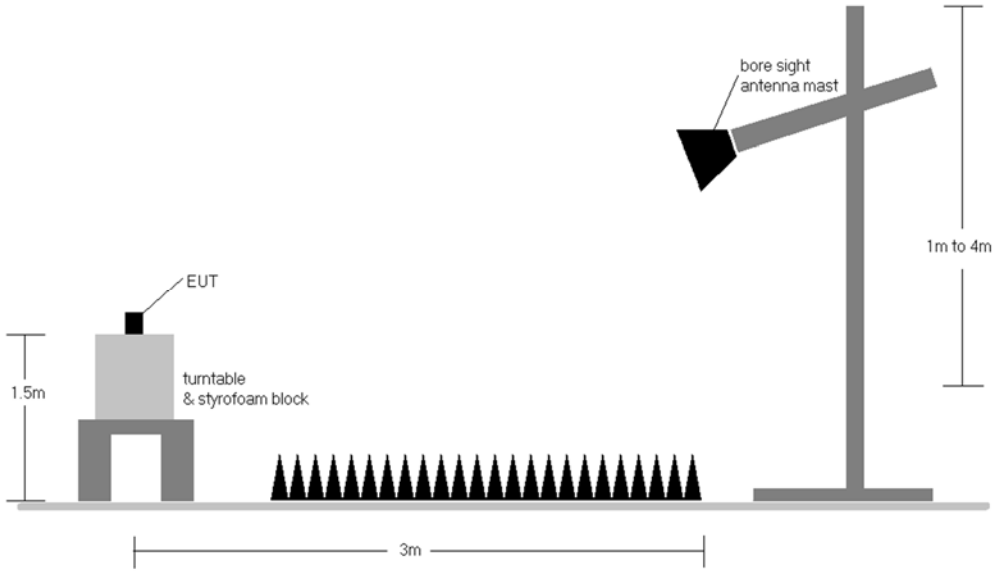

Figure 7-10. Test Instrument & Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.

4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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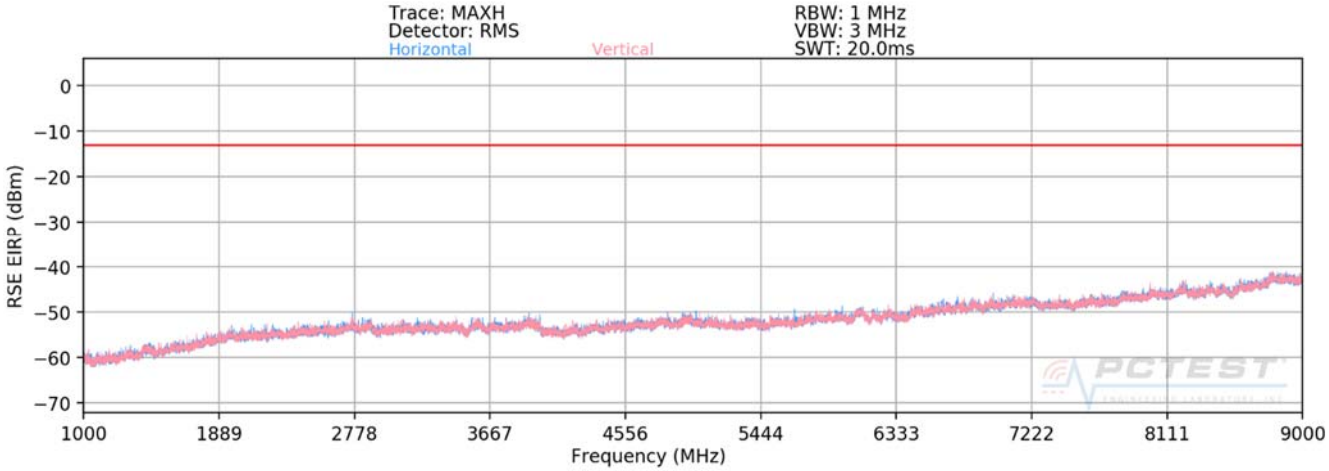
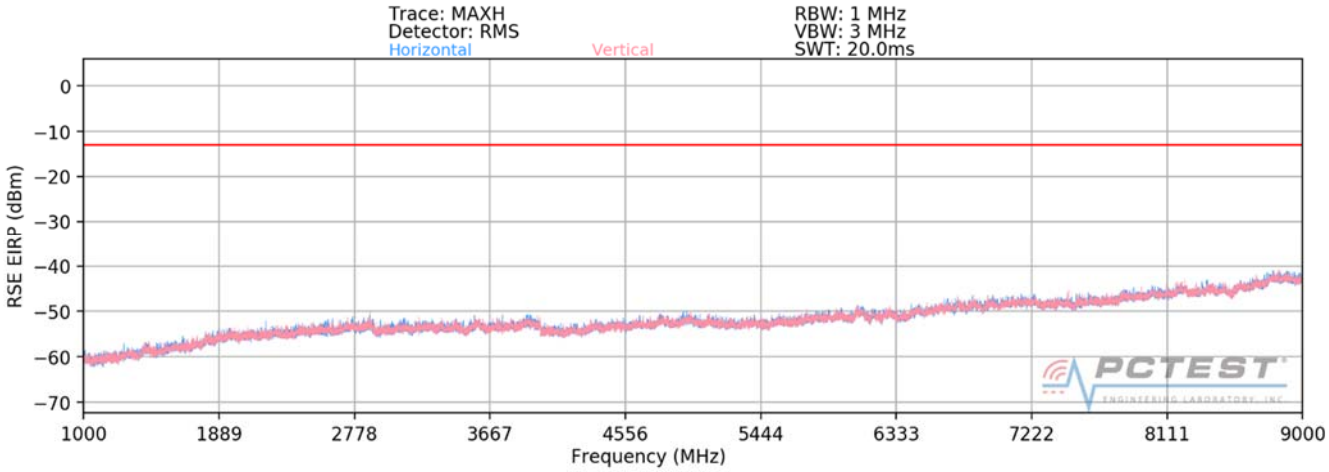
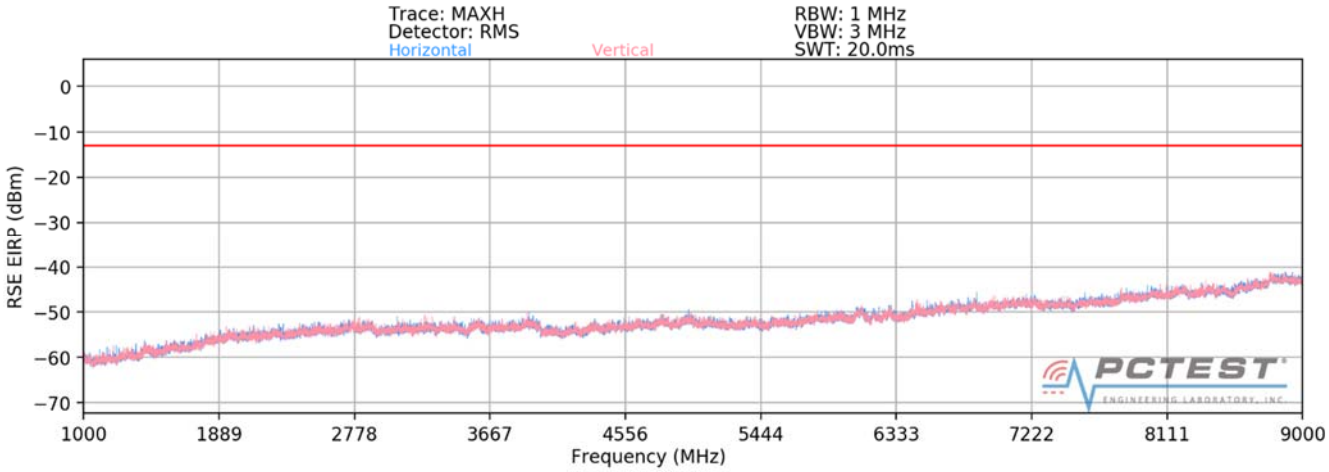
Uplink CA Configuration 5B



Plot 7-476. Radiated Spruious Plot (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)



Plot 7-477. Radiated Spruious Plot (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – Mid Channel)



Plot 7-478. Radiated Spruious Plot (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

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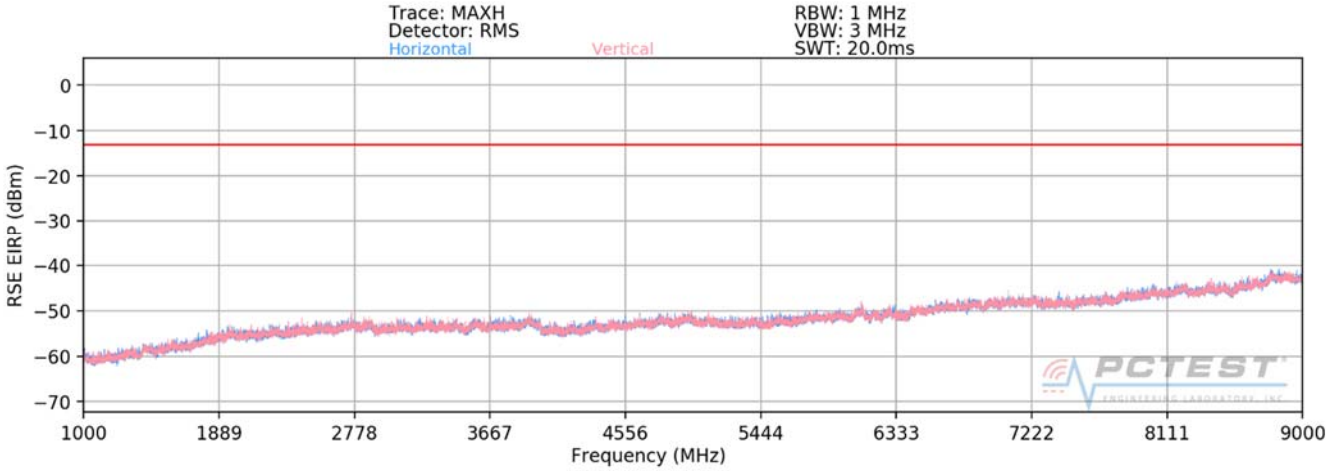
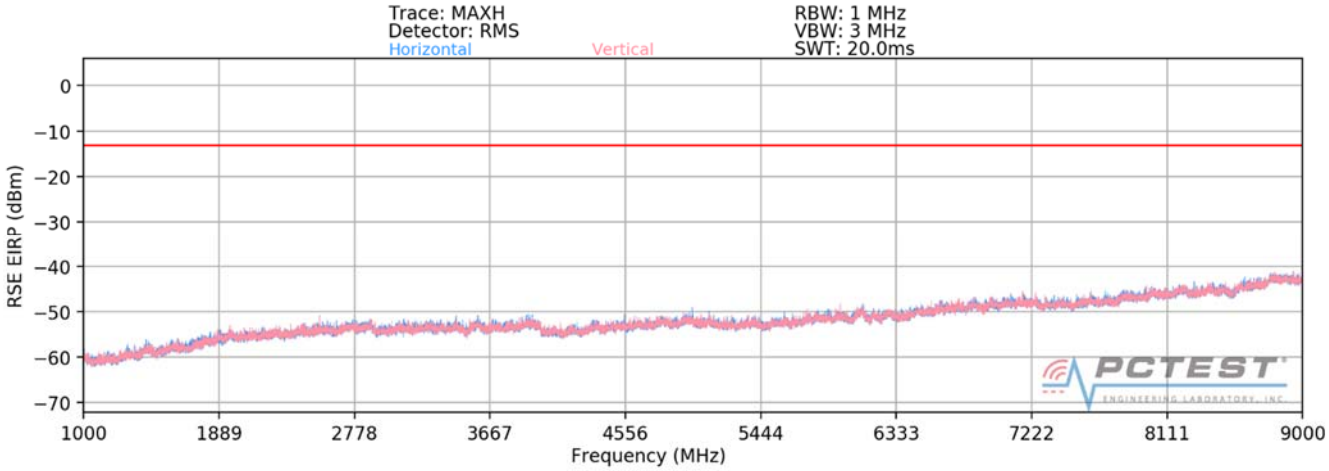
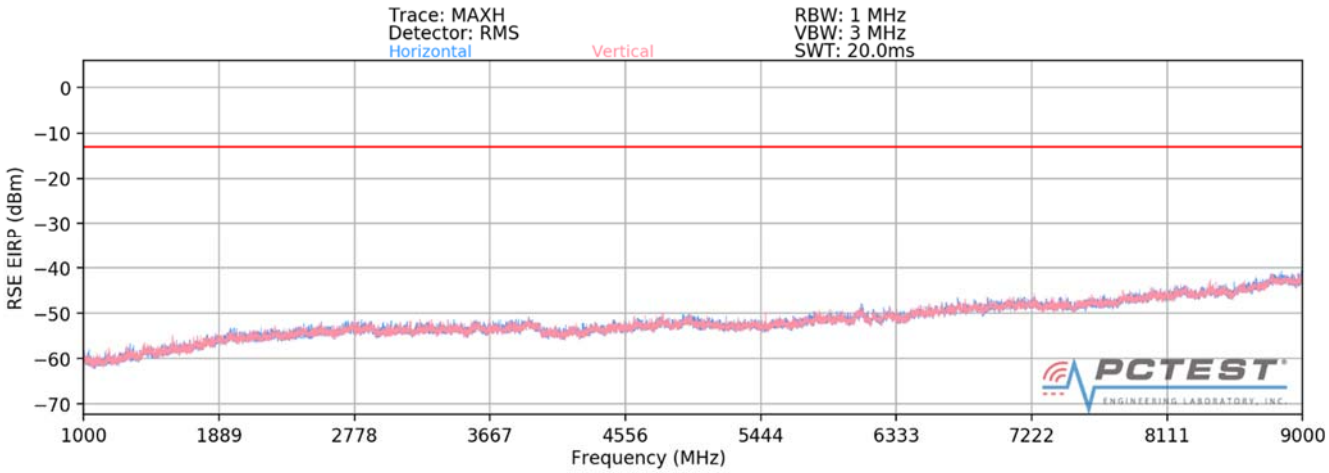


Plot 7-479. Radiated Spruious Plot (ULCA B5 PCC: RB 50 Offset 0, SCC: RB 50 Offset 0 – Low Channel)



Plot 7-480. Radiated Spruious Plot (ULCA B5 PCC: RB 50 Offset 0, SCC: RB 50 Offset 0 – Mid Channel)



Plot 7-481. Radiated Spruious Plot (ULCA B5 PCC: RB 50 Offset 0, SCC: RB 50 Offset 0 – High Channel)

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OPERATING FREQUENCY (PCC):	829.00	MHz
OPERATING FREQUENCY (SCC):	838.90	
CHANNEL (PCC):	20450	
CHANNEL (SCC):	20549	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	H	-	-	-75.67	8.35	-67.32	-54.3
2487.00	H	111	312	-67.87	8.45	-59.42	-46.4
3316.00	H	-	-	-73.83	9.84	-63.99	-51.0

Table 7-60. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	831.50	MHz
OPERATING FREQUENCY (SCC):	841.50	
CHANNEL (PCC):	20600	
CHANNEL (SCC):	20575	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1663.00	H	-	-	-75.75	8.45	-67.30	-54.3
2494.50	H	199	51	-70.96	8.75	-62.21	-49.2
3326.00	H	-	-	-73.28	9.73	-63.55	-50.6

Table 7-61. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)

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OPERATING FREQUENCY (PCC):	834.10	MHz
OPERATING FREQUENCY (SCC):	844.00	
CHANNEL (PCC):	20501	
CHANNEL (SCC):	20600	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1668.20	H	-	-	-74.85	8.40	-66.45	-53.5
2502.30	H	349	312	-69.71	9.19	-60.52	-47.5
3336.40	H	-	-	-72.67	9.52	-63.15	-50.1

Table 7-62. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC):	829.00	MHz
OPERATING FREQUENCY (SCC):	838.90	
CHANNEL (PCC):	20450	
CHANNEL (SCC):	20549	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	H	104	194	-74.13	8.35	-65.78	-52.8
2487.00	H	-	-	-72.52	8.45	-64.07	-51.1

Table 7-63. Radiated Spurious Data with WCP (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)

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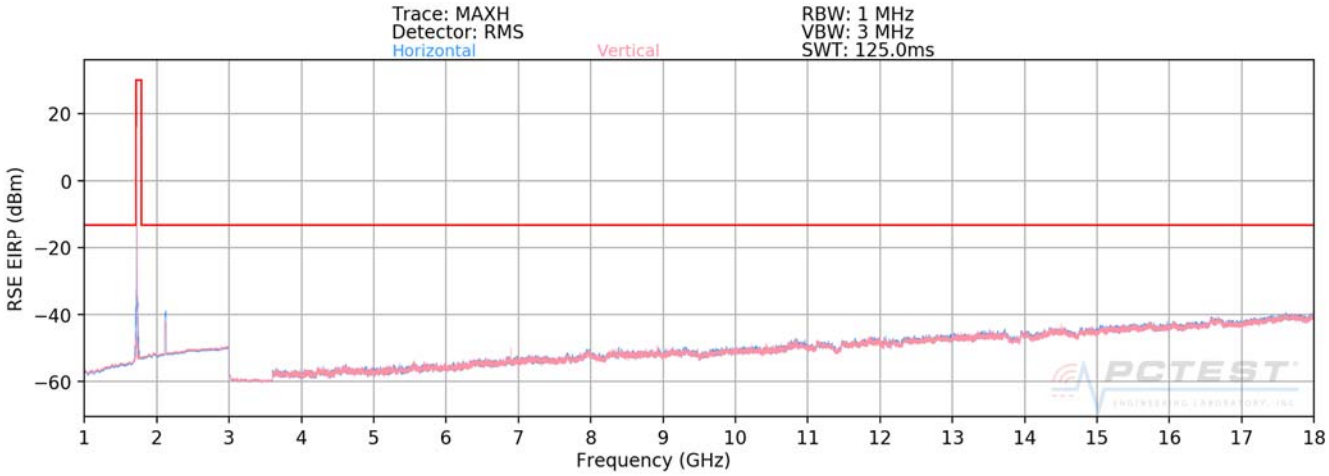
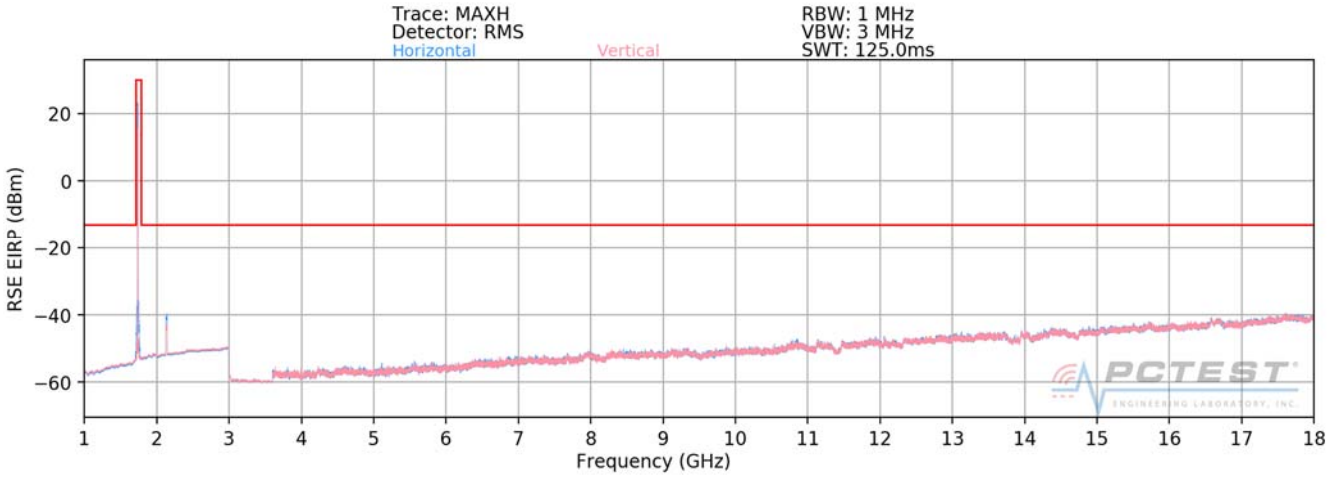
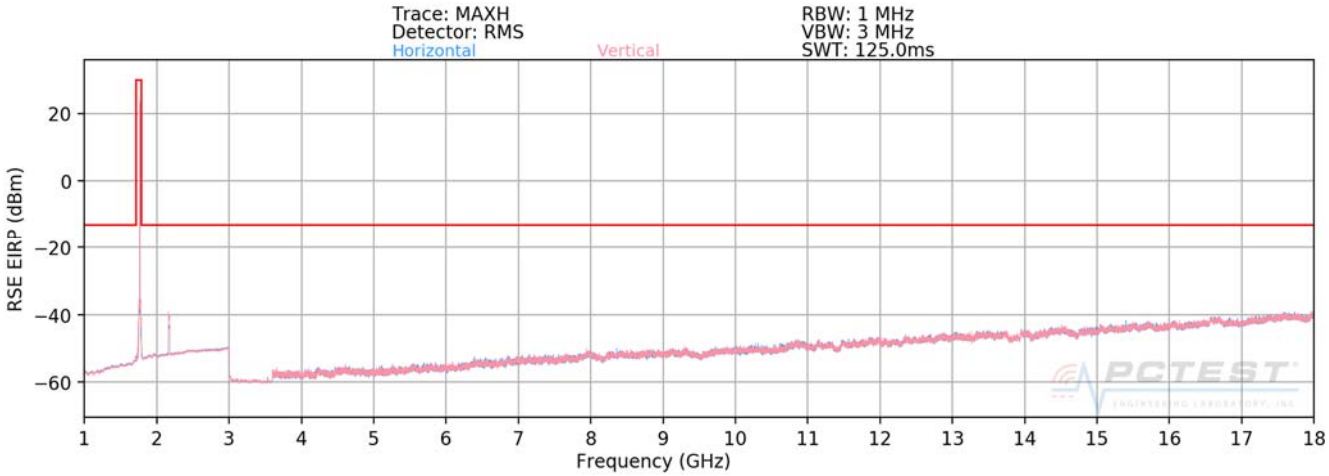
Uplink CA Configuration 66B



Plot 7-482. Radiated Spruious Plot (ULCA B66 PCC: RB 1 Offset 74, SCC: RB 1 Offset 0 – Low Channel)



Plot 7-483. Radiated Spruious Plot (ULCA B66 PCC: RB 1 Offset 74, SCC: RB 1 Offset 0 – Mid Channel)



Plot 7-484. Radiated Spruious Plot (ULCA B66 PCC: RB 1 Offset 74, SCC: RB 1 Offset 0 – High Channel)

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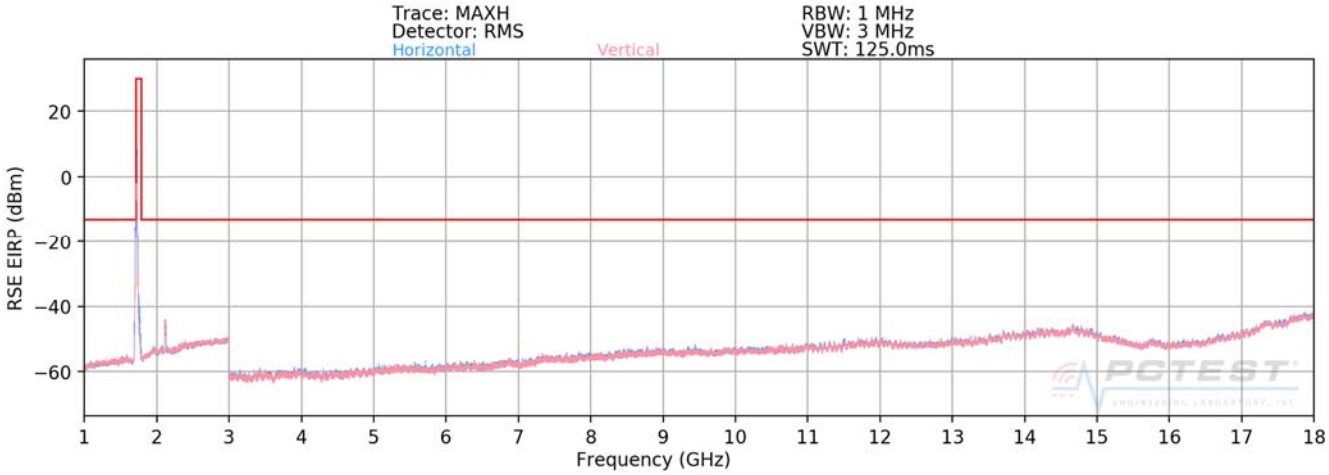
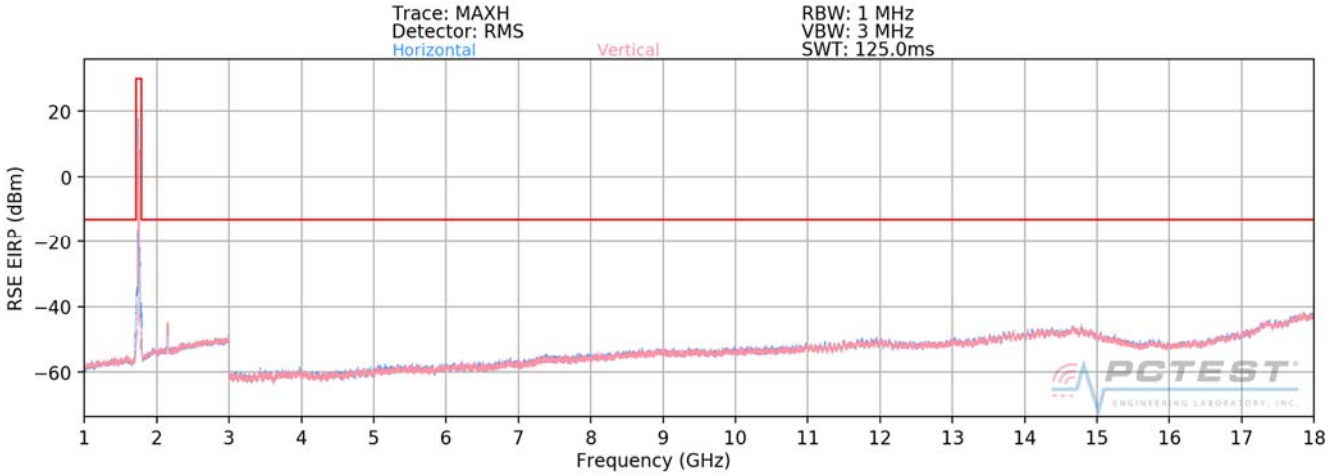
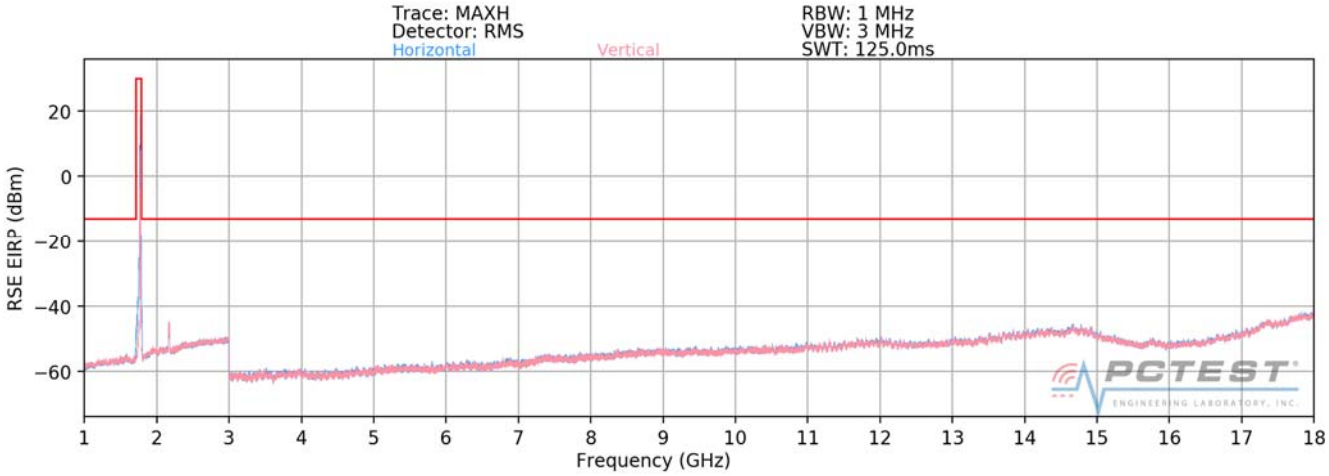


Plot 7-485. Radiated Spruious Plot (ULCA B66 PCC: RB 75 Offset 0, SCC: RB 25 Offset 0 – Low Channel)



Plot 7-486. Radiated Spruious Plot (ULCA B66 PCC: RB 75 Offset 0, SCC: RB 25 Offset 0 – Mid Channel)



Plot 7-487. Radiated Spruious Plot (ULCA B66 PCC: RB 75 Offset 0, SCC: RB 25 Offset 0 – High Channel)

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OPERATING FREQUENCY (PCC):	1715.00	MHz
OPERATING FREQUENCY (SCC):	1724.90	
CHANNEL (PCC):	132022	
CHANNEL (SCC):	132121	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3430.00	V	376	9	-71.82	9.84	-61.98	-49.0
5145.00	V	-	-	-72.28	10.70	-61.58	-48.6
6860.00	V	102	75	-66.74	11.67	-55.08	-42.1
8575.00	V	-	-	-67.99	11.10	-56.89	-43.9

Table 7-64. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	1745.00	MHz
OPERATING FREQUENCY (SCC):	1754.90	
CHANNEL (PCC):	132322	
CHANNEL (SCC):	132421	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	330	125	-72.58	9.91	-62.67	-49.7
5235.00	H	-	-	-72.35	10.73	-61.62	-48.6
6980.00	H	235	29	-69.85	11.82	-58.02	-45.0
8725.00	H	-	-	-67.94	11.00	-56.94	-43.9

Table 7-65. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)

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OPERATING FREQUENCY (PCC):	1775.00	MHz
OPERATING FREQUENCY (SCC):	1765.10	
CHANNEL (PCC):	132622	
CHANNEL (SCC):	132523	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3550.00	H	199	362	-71.34	9.89	-61.45	-48.4
5325.00	H	-	-	-72.32	10.69	-61.63	-48.6
7100.00	H	300	307	-70.14	11.77	-58.37	-45.4
8875.00	H	-	-	-66.86	11.01	-55.85	-42.9

Table 7-66. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC):	1715.00	MHz
OPERATING FREQUENCY (SCC):	1724.90	
CHANNEL (PCC):	132022	
CHANNEL (SCC):	132121	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3430.00	V	104	62	-72.89	9.84	-63.05	-50.1
5145.00	V	-	-	-76.77	10.70	-66.07	-53.1
6860.00	V	160	160	-72.70	11.67	-61.03	-48.0
8575.00	V	-	-	-73.12	11.10	-62.02	-49.0

Table 7-67. Radiated Spurious Data with WCP (ULCA B66 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)

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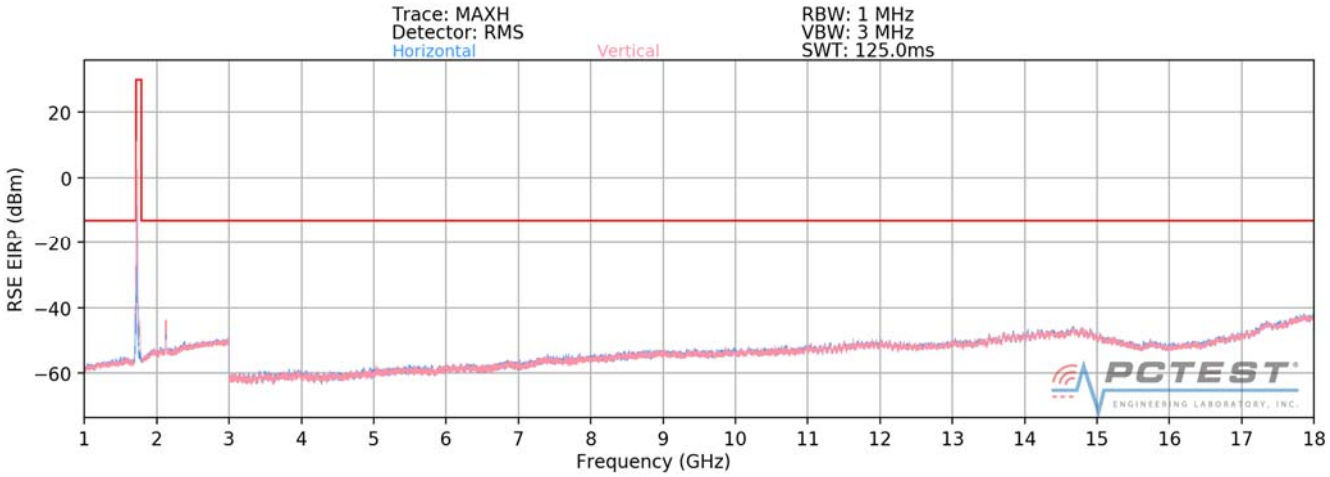
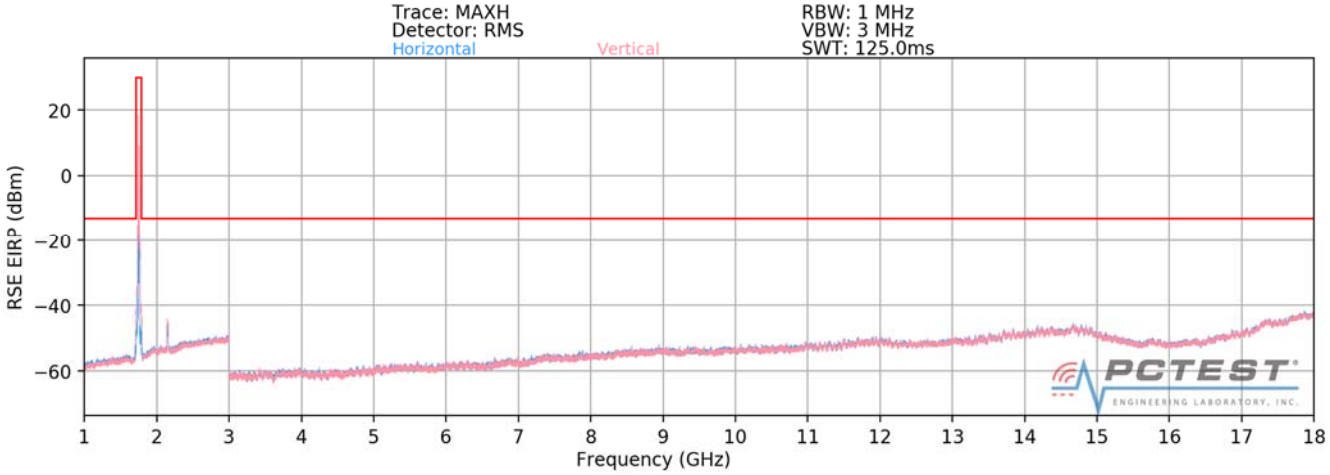
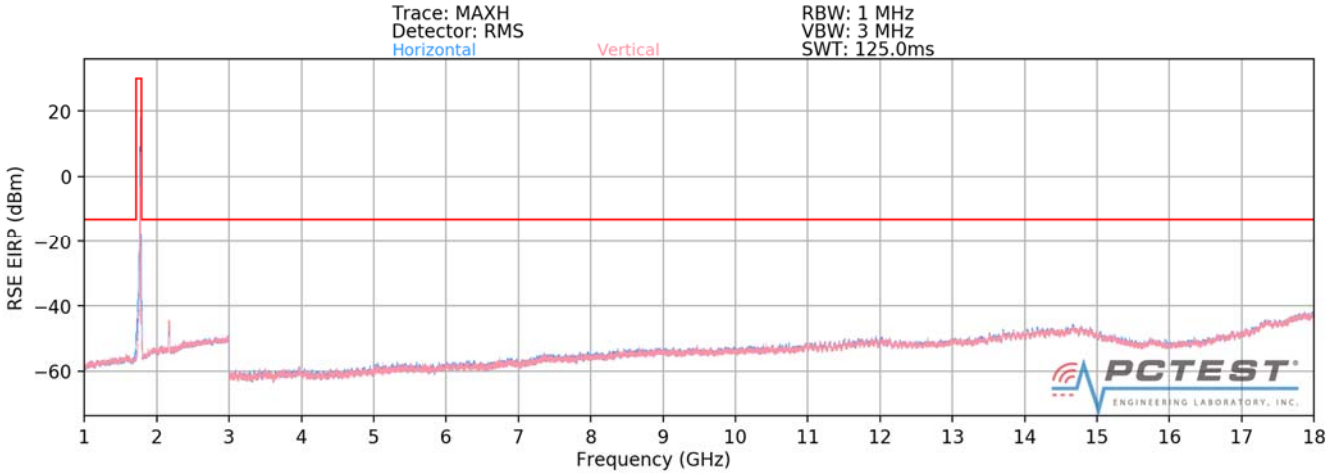
Uplink CA Configuration 66C



Plot 7-488. Radiated Spruious Plot (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)



Plot 7-489. Radiated Spruious Plot (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)



Plot 7-490. Radiated Spruious Plot (ULCA B66 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

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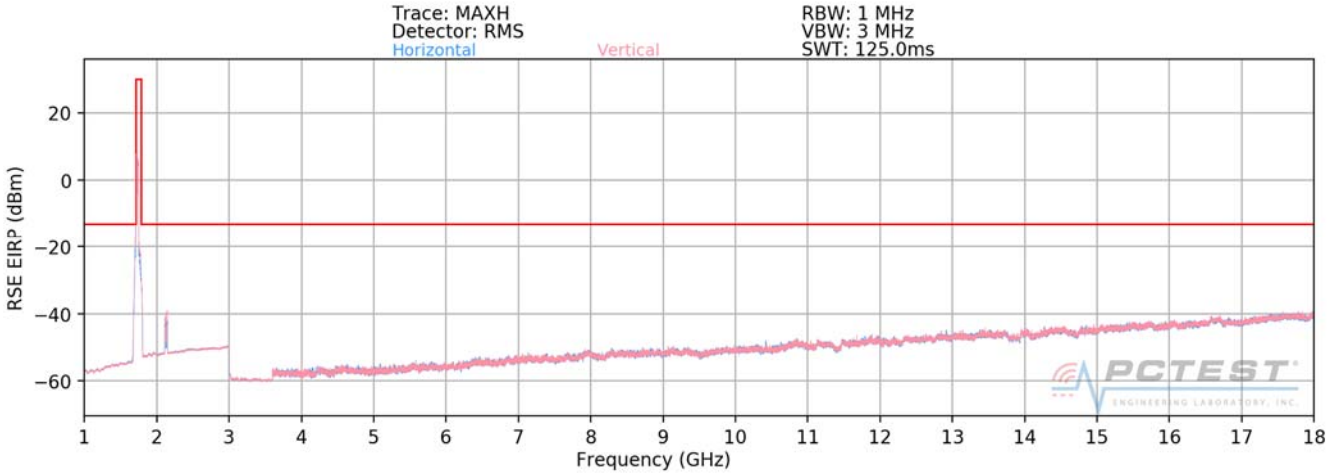
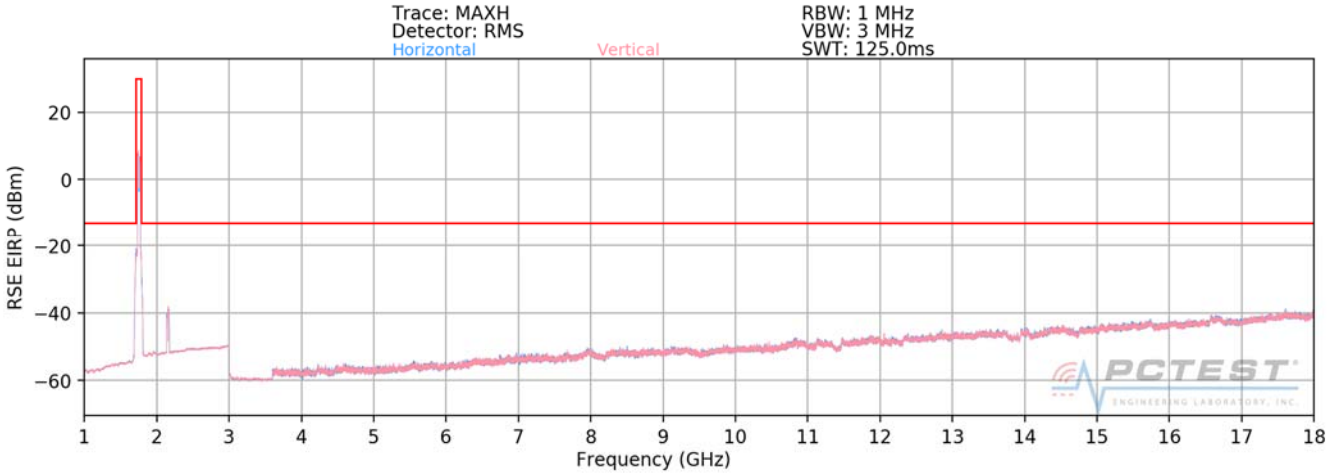
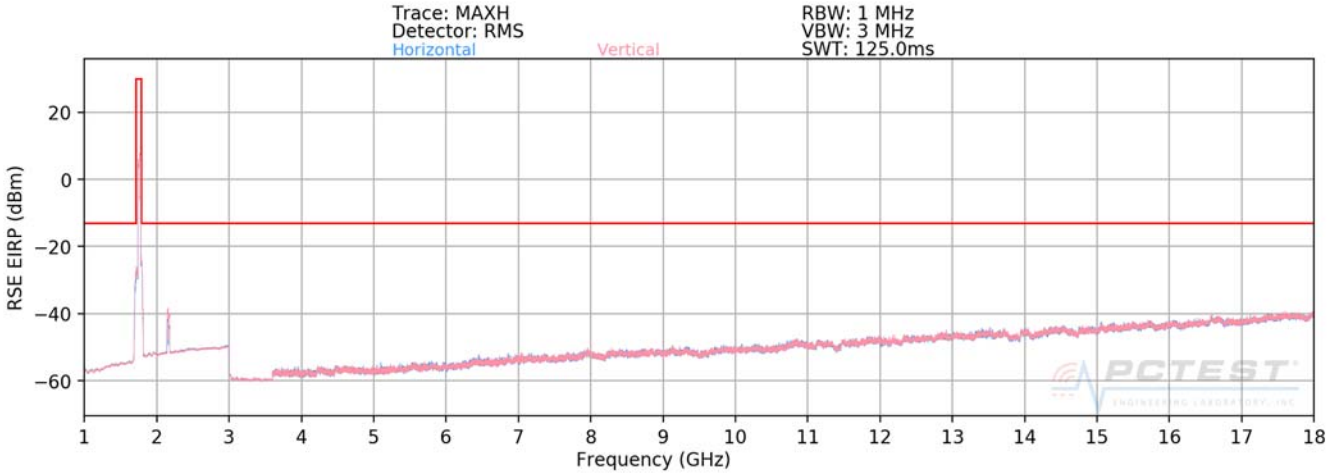


Plot 7-491. Radiated Spruious Plot (ULCA B66 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Low Channel)



Plot 7-492. Radiated Spruious Plot (ULCA B66 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Mid Channel)



Plot 7-493. Radiated Spruious Plot (ULCA B66 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – High Channel)

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OPERATING FREQUENCY (PCC):	1720.00	MHz
OPERATING FREQUENCY (SCC):	1731.70	
CHANNEL (PCC):	132072	
CHANNEL (SCC):	132189	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 5	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	V	267	24	-72.44	9.84	-62.59	-49.6
5160.00	V	-	-	-73.15	10.71	-62.44	-49.4
6880.00	V	118	67	-64.09	11.68	-52.41	-39.4
8600.00	V	-	-	-65.84	11.08	-54.76	-41.8

Table 7-68. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	1745.00	MHz
OPERATING FREQUENCY (SCC):	1756.70	
CHANNEL (PCC):	132322	
CHANNEL (SCC):	132439	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 5	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	300	57	-71.83	9.91	-61.92	-48.9
5235.00	H	-	-	-73.09	10.73	-62.36	-49.4
6980.00	H	228	66	-67.39	11.82	-55.56	-42.6
8725.00	H	-	-	-67.24	11.00	-56.24	-43.2

Table 7-69. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

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OPERATING FREQUENCY (PCC):	1770.00	MHz
OPERATING FREQUENCY (SCC):	1758.30	
CHANNEL (PCC):	132572	
CHANNEL (SCC):	132455	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 5	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	157	350	-70.30	9.89	-60.41	-47.4
5310.00	H	-	-	-72.30	10.69	-61.61	-48.6
7080.00	H	256	153	-70.00	11.79	-58.22	-45.2
8850.00	H	-	-	-67.60	11.00	-56.61	-43.6

Table 7-70. Radiated Spurious Data (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC):	1770.00	MHz
OPERATING FREQUENCY (SCC):	1758.30	
CHANNEL (PCC):	132572	
CHANNEL (SCC):	132455	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 5	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	125	201	-73.66	9.89	-63.77	-50.8
5310.00	H	-	-	-72.67	10.69	-61.98	-49.0

Table 7-71. Radiated Spurious Data with WCP (ULCA B66 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

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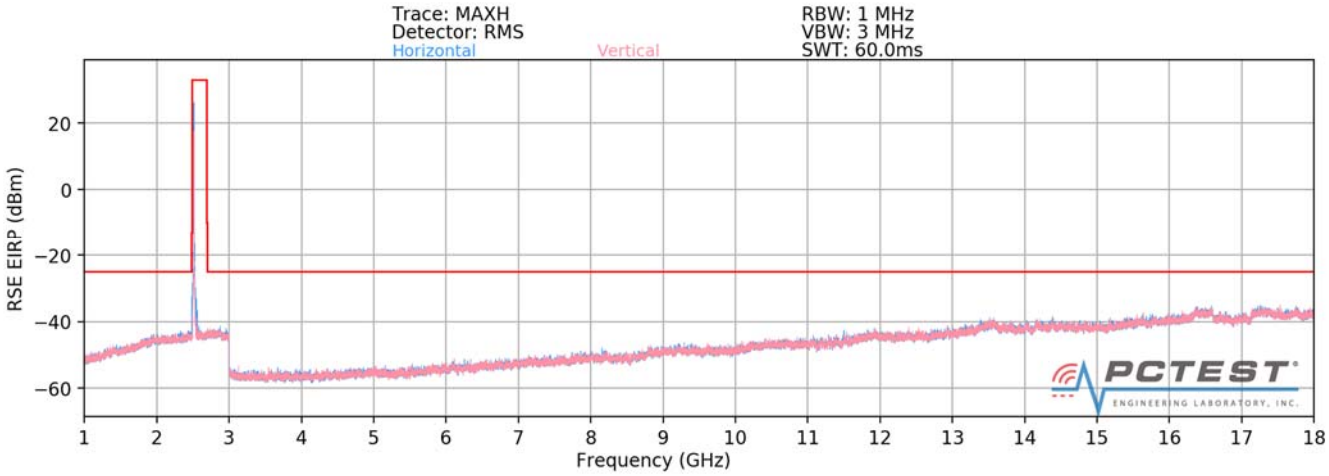
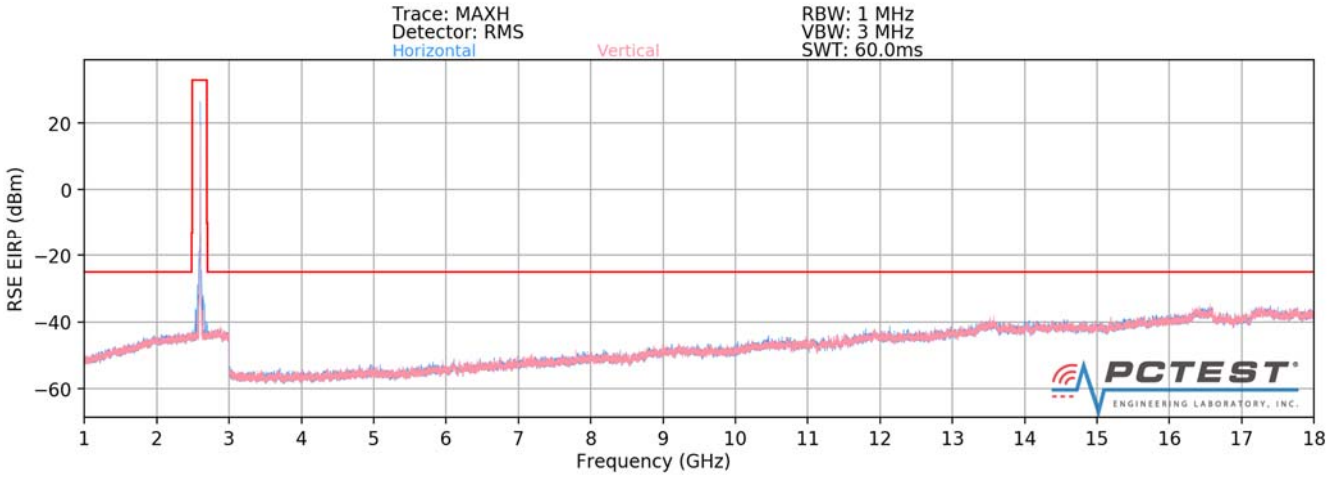
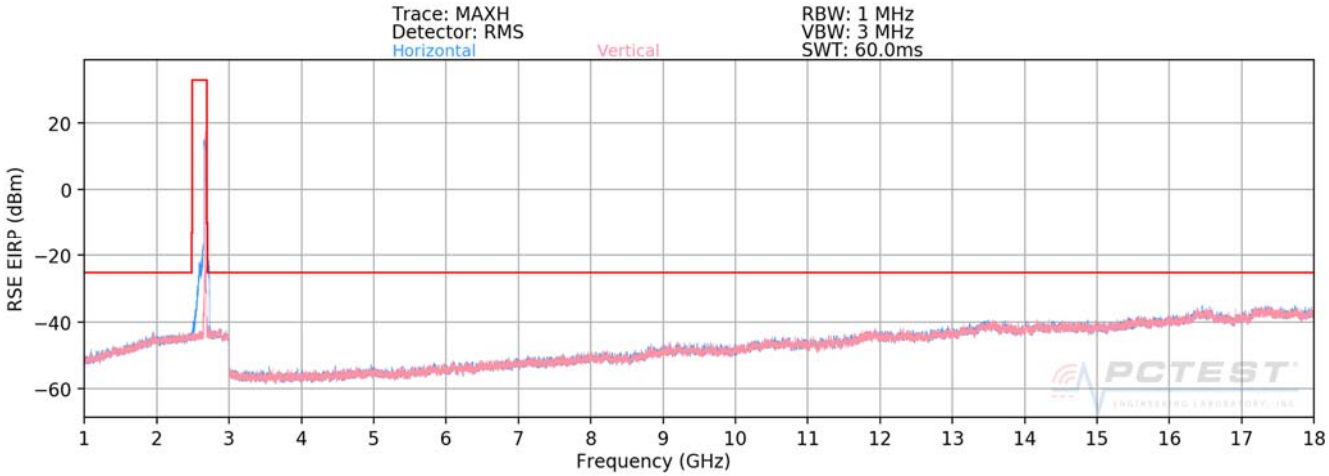
Uplink CA Configuration 41C



Plot 7-494. Radiated Spruious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)



Plot 7-495. Radiated Spruious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)



Plot 7-496. Radiated Spruious Plot (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

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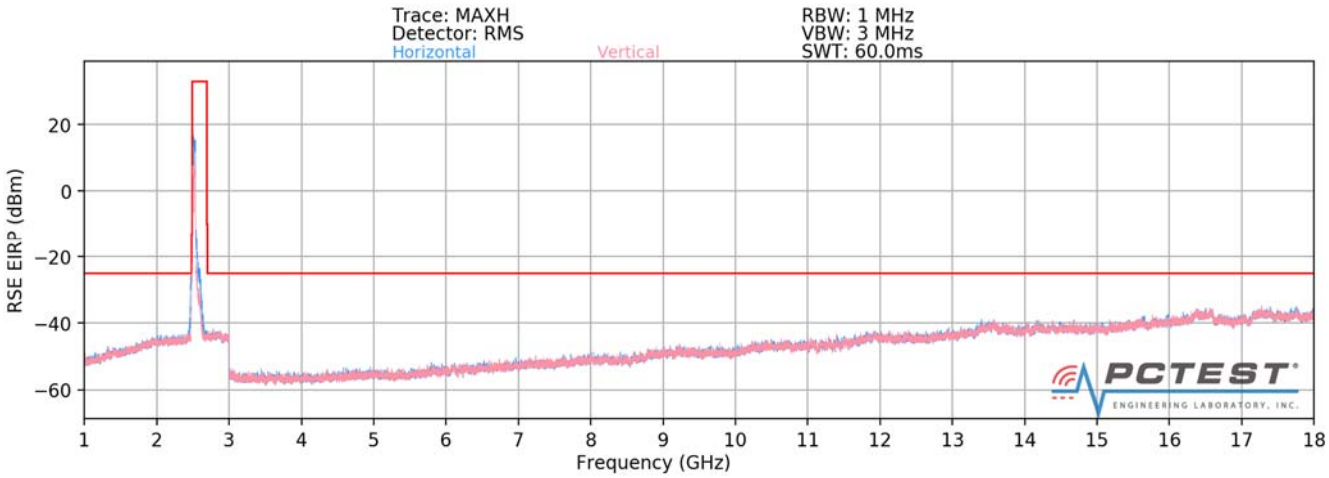
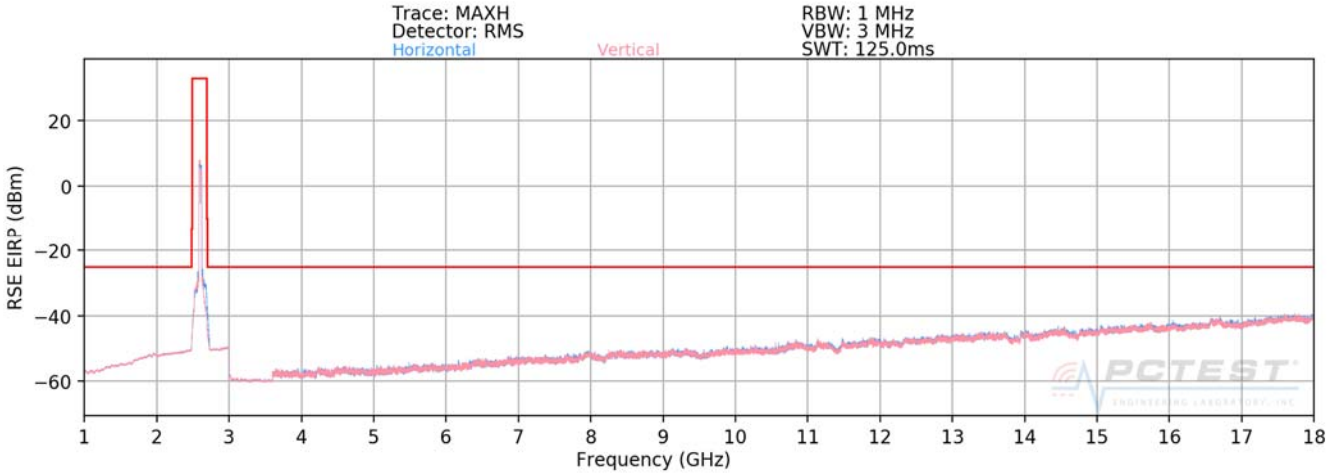
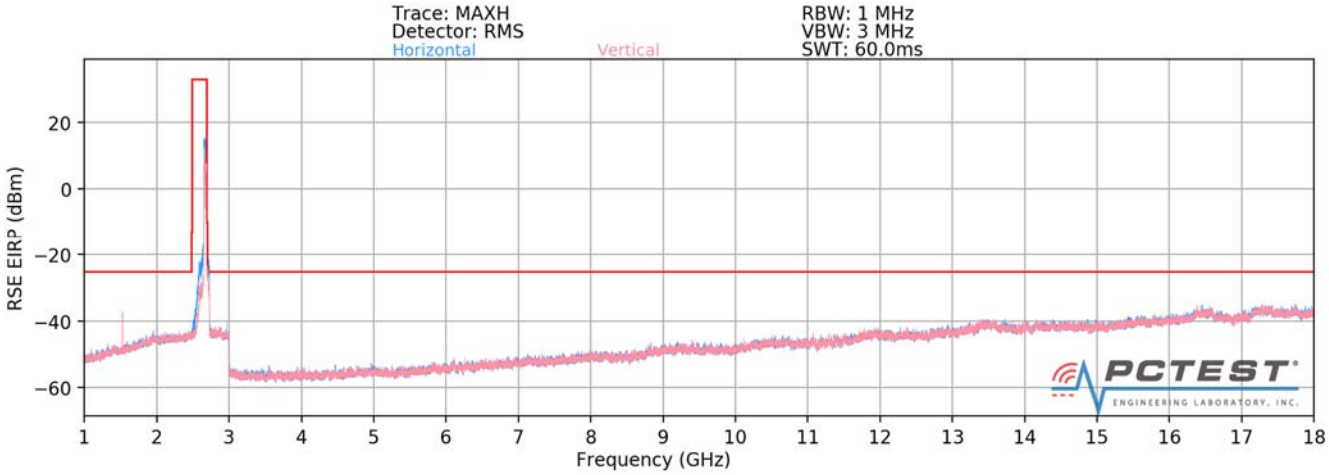


Plot 7-497. Radiated Spruious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Low Channel)



Plot 7-498. Radiated Spruious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Mid Channel)



Plot 7-499. Radiated Spruious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – High Channel)

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OPERATING FREQUENCY (PCC):	2498.50	MHz
OPERATING FREQUENCY (SCC):	2510.20	
CHANNEL (PCC):	39675	
CHANNEL (SCC):	39792	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5 + 20	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4997.00	H	-	-	-59.06	8.35	-50.72	-25.7
7495.50	H	113	34	-55.56	8.45	-47.11	-22.1
9994.00	H	-	-	-54.51	9.84	-44.67	-19.7

Table 7-72. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 24, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	2593.00	MHz
OPERATING FREQUENCY (SCC):	2604.70	
CHANNEL (PCC):	40620	
CHANNEL (SCC):	40737	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5 + 20	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	-	-	-60.87	8.45	-52.42	-27.4
7779.00	H	291	112	-56.59	8.75	-47.84	-22.8
10372.00	H	-	-	-54.43	9.73	-44.71	-19.7

Table 7-73. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 24, SCC: RB 1 Offset 0 – Mid Channel)

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OPERATING FREQUENCY (PCC):	2687.50	MHz
OPERATING FREQUENCY (SCC):	2675.80	
CHANNEL (PCC):	41565	
CHANNEL (SCC):	41448	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5 + 20	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5375.00	H	-	-	-58.81	8.40	-50.41	-25.4
8062.50	H	-	-	-56.06	9.19	-46.88	-21.9

Table 7-74. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 24, SCC: RB 1 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC):	2498.50	MHz
OPERATING FREQUENCY (SCC):	2510.20	
CHANNEL (PCC):	39675	
CHANNEL (SCC):	39792	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5 + 20	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	V	-	-	-60.54	8.35	-52.20	-27.2
7530.00	V	-	-	-56.98	8.45	-48.53	-23.5

Table 7-75. Radiated Spurious Data with WCP (ULCA B41 PCC: RB 1 Offset 1, SCC: RB 24 Offset 0 – High Channel)

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7.11 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency. For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

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Band 71 Frequency Stability Measurements

OPERATING FREQUENCY: 680,500,000 Hz

CHANNEL: 133297

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	680,499,771	0	0.0000000
100 %		- 30	680,499,612	-159	-0.0000234
100 %		- 20	680,499,883	112	0.0000165
100 %		- 10	680,500,002	231	0.0000339
100 %		0	680,499,630	-141	-0.0000207
100 %		+ 10	680,499,906	135	0.0000198
100 %		+ 20	680,499,638	-133	-0.0000195
100 %		+ 30	680,499,706	-65	-0.0000096
100 %		+ 40	680,500,158	387	0.0000569
100 %		+ 50	680,499,707	-64	-0.0000094
BATT. ENDPOINT	3.67	+ 20	680,499,894	123	0.0000181

Table 7-76. Frequency Stability Data (Band 71)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Band 71 Frequency Stability Measurements

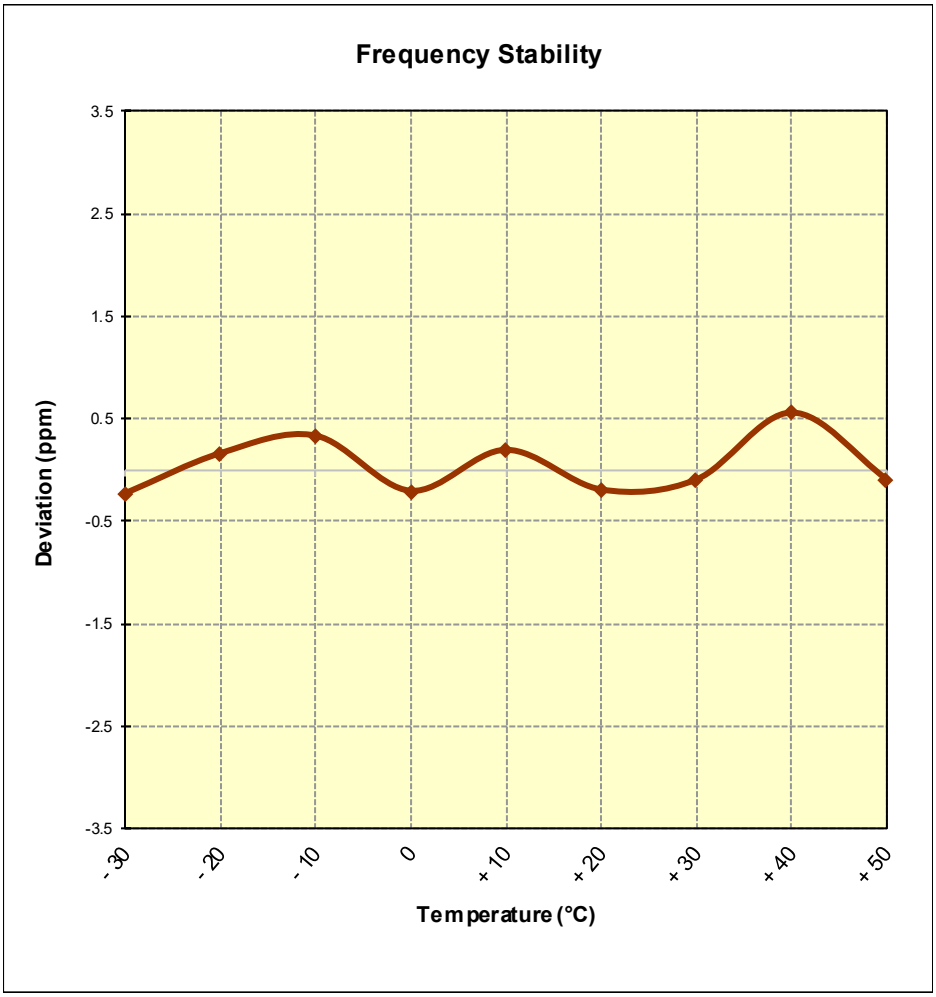

Figure 7-11. Frequency Stability Graph (Band 71)

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Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz

CHANNEL: 23790

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	707,500,126	0	0.0000000
100 %		- 30	707,500,324	198	0.0000280
100 %		- 20	707,500,266	140	0.0000198
100 %		- 10	707,500,063	-63	-0.0000089
100 %		0	707,500,084	-42	-0.0000059
100 %		+ 10	707,500,221	95	0.0000134
100 %		+ 20	707,499,796	-330	-0.0000466
100 %		+ 30	707,500,159	33	0.0000047
100 %		+ 40	707,500,072	-54	-0.0000076
100 %		+ 50	707,500,009	-117	-0.0000165
BATT. ENDPOINT	3.67	+ 20	707,500,108	-18	-0.0000025

Table 7-77. Frequency Stability Data (Band 12)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Band 12 Frequency Stability Measurements

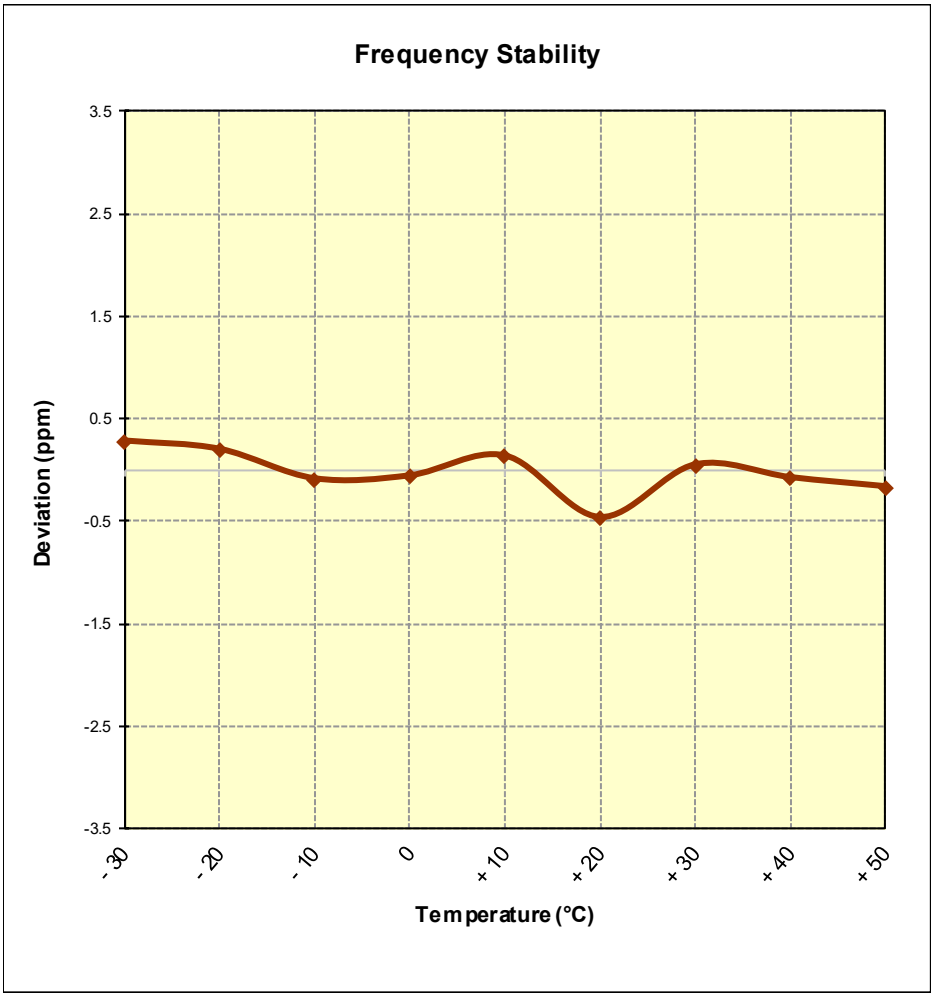

Figure 7-12. Frequency Stability Graph (Band 12)

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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY: 782,000,000 Hz

CHANNEL: 23230

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	782,000,071	0	0.0000000
100 %		- 30	782,000,006	-65	-0.0000083
100 %		- 20	782,000,023	-48	-0.0000061
100 %		- 10	782,000,066	-5	-0.0000006
100 %		0	781,999,868	-203	-0.0000260
100 %		+ 10	782,000,091	20	0.0000026
100 %		+ 20	781,999,932	-139	-0.0000178
100 %		+ 30	781,999,934	-137	-0.0000175
100 %		+ 40	781,999,699	-372	-0.0000476
100 %		+ 50	782,000,556	485	0.0000620
BATT. ENDPOINT	3.67	+ 20	782,000,126	55	0.0000070

Table 7-78. Frequency Stability Data (Band 13)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Band 13 Frequency Stability Measurements

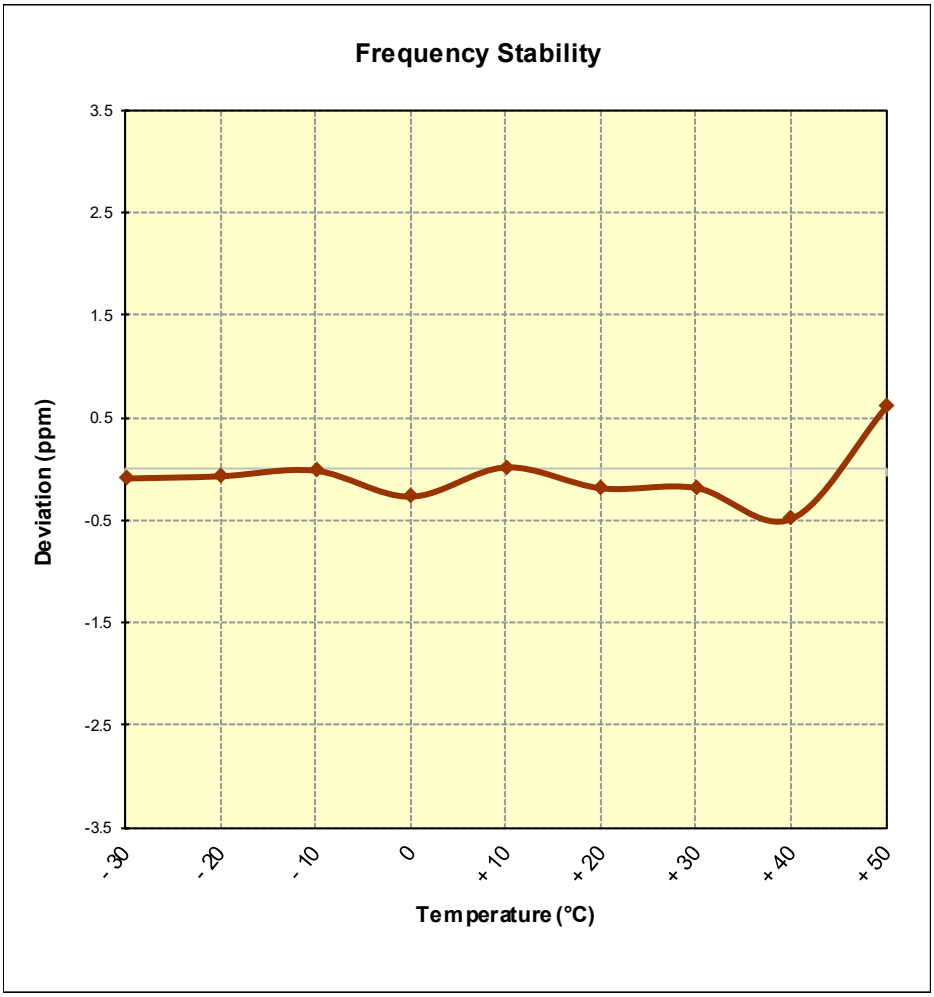

Figure 7-13. Frequency Stability Graph (Band 13)

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Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY: 831,500,000 Hz

CHANNEL: 26865

REFERENCE VOLTAGE: 4.29 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	831,500,029	0	0.0000000
100 %		- 30	831,500,132	103	0.0000124
100 %		- 20	831,499,842	-187	-0.0000225
100 %		- 10	831,500,508	479	0.0000576
100 %		0	831,499,915	-114	-0.0000137
100 %		+ 10	831,500,097	68	0.0000082
100 %		+ 20	831,500,057	28	0.0000034
100 %		+ 30	831,499,671	-358	-0.0000431
100 %		+ 40	831,500,442	413	0.0000497
100 %		+ 50	831,500,398	369	0.0000444
BATT. ENDPOINT	3.67	+ 20	831,500,231	202	0.0000243

Table 7-79. Frequency Stability Data (Band 26/5)

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Band 26/5 Frequency Stability Measurements

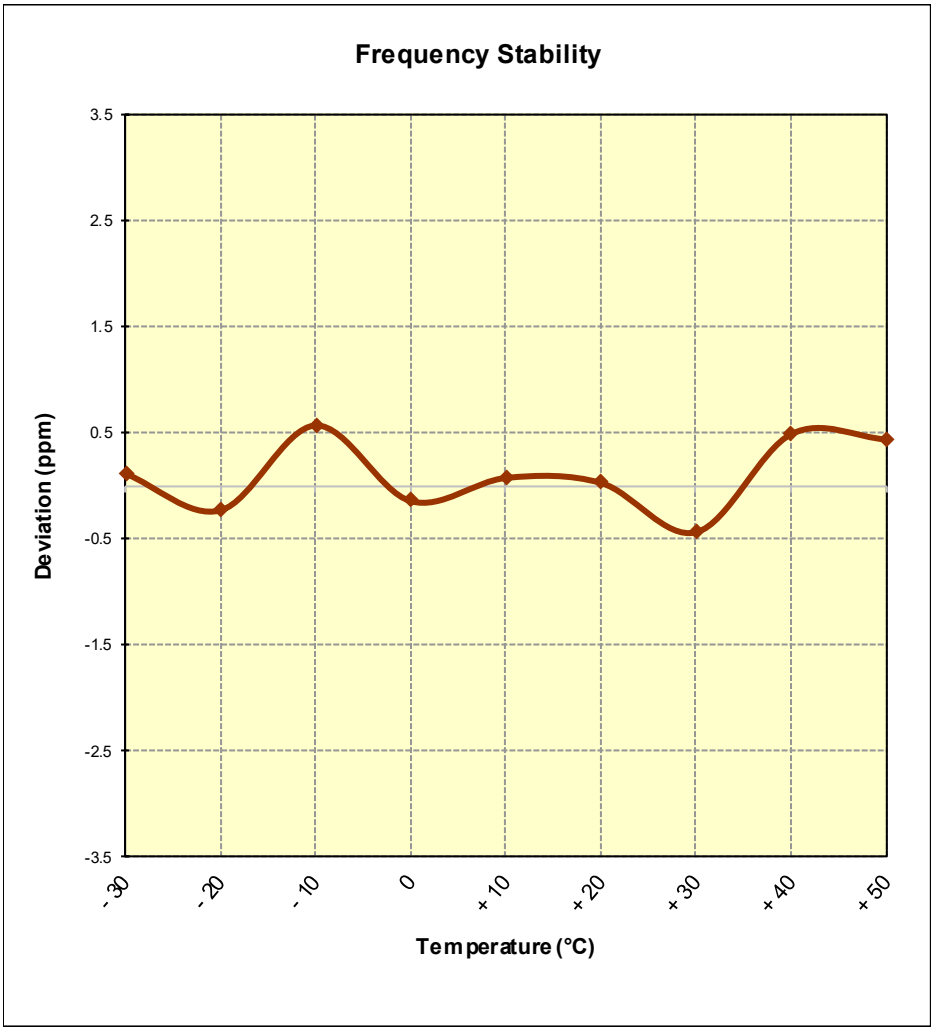

Figure 7-14. Frequency Stability Graph (Band 26/5)

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Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz

CHANNEL: 132322

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	1,745,000,292	0	0.0000000
100 %		- 30	1,745,000,255	-37	-0.0000021
100 %		- 20	1,745,000,188	-104	-0.0000060
100 %		- 10	1,745,000,587	295	0.0000169
100 %		0	1,745,000,039	-253	-0.0000145
100 %		+ 10	1,745,000,169	-123	-0.0000070
100 %		+ 20	1,745,000,444	152	0.0000087
100 %		+ 30	1,745,000,228	-64	-0.0000037
100 %		+ 40	1,744,999,976	-316	-0.0000181
100 %		+ 50	1,745,000,237	-55	-0.0000032
BATT. ENDPOINT	3.67	+ 20	1,744,999,797	-495	-0.0000284

Table 7-80. Frequency Stability Data (Band 66/4)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Band 66/4 Frequency Stability Measurements

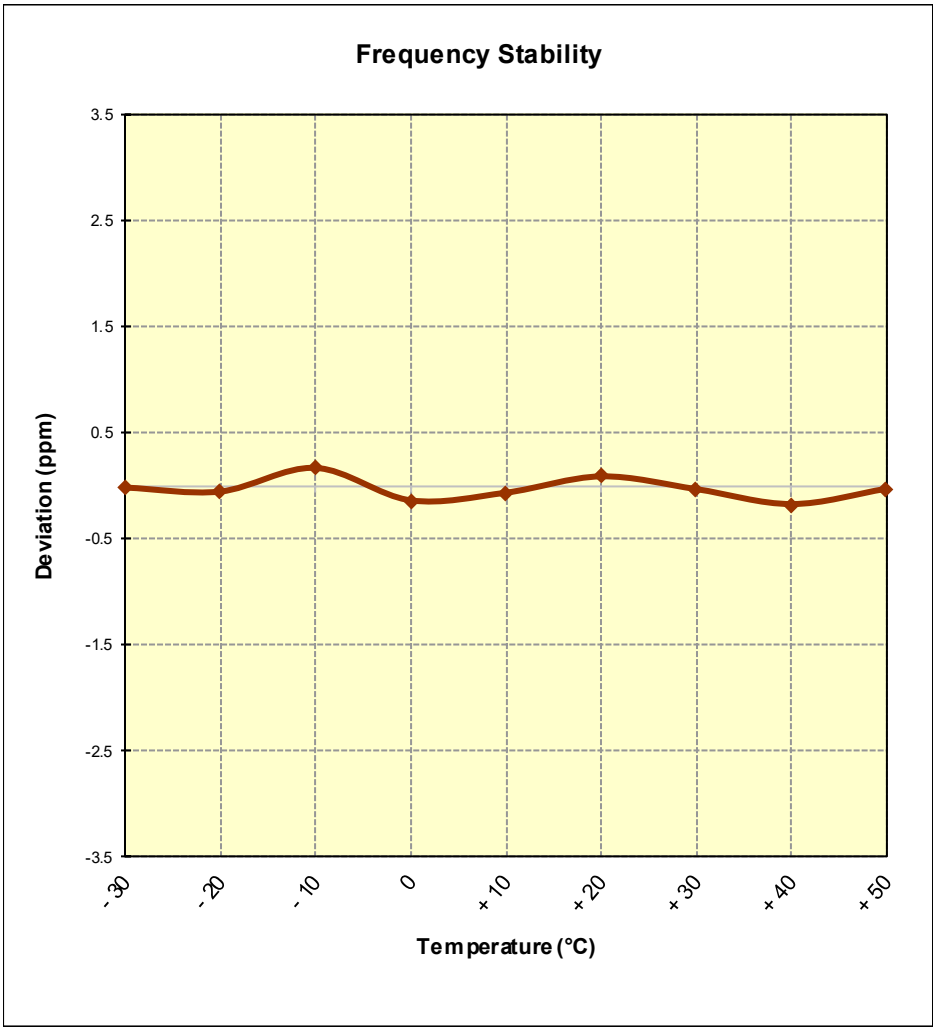

Figure 7-15. Frequency Stability Graph (Band 66/4)

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Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz

CHANNEL: 26365

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	1,882,500,000	0	0.0000000
100 %		- 30	1,882,499,819	-181	-0.0000096
100 %		- 20	1,882,499,958	-42	-0.0000022
100 %		- 10	1,882,499,994	-6	-0.0000003
100 %		0	1,882,500,156	156	0.0000083
100 %		+ 10	1,882,499,926	-74	-0.0000039
100 %		+ 20	1,882,500,133	133	0.0000071
100 %		+ 30	1,882,499,965	-35	-0.0000019
100 %		+ 40	1,882,499,814	-186	-0.0000099
100 %		+ 50	1,882,500,052	52	0.0000028
BATT. ENDPOINT	3.67	+ 20	1,882,500,133	133	0.0000071

Table 7-81. Frequency Stability Data (Band 25/2)

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Band 25/2 Frequency Stability Measurements

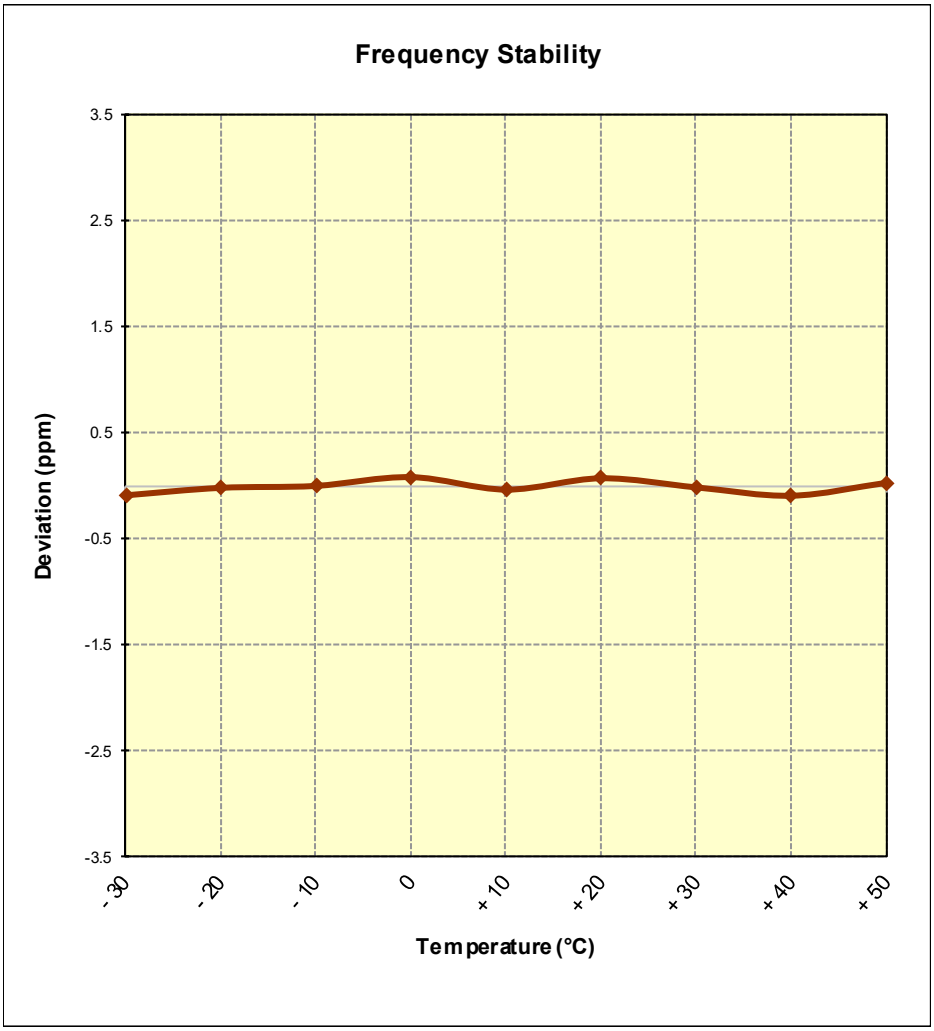

Figure 7-16. Frequency Stability Graph (Band 25/2)

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Band 30 Frequency Stability Measurements

OPERATING FREQUENCY: 2,310,000,000 Hz

CHANNEL: 27710

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	2,309,999,993	0	0.0000000
100 %		- 30	2,310,000,012	19	0.0000008
100 %		- 20	2,310,000,150	157	0.0000068
100 %		- 10	2,310,000,068	75	0.0000032
100 %		0	2,309,999,965	-28	-0.0000012
100 %		+ 10	2,309,999,637	-356	-0.0000154
100 %		+ 20	2,310,000,241	248	0.0000107
100 %		+ 30	2,309,999,781	-212	-0.0000092
100 %		+ 40	2,310,000,063	70	0.0000030
100 %		+ 50	2,310,000,247	254	0.0000110
BATT. ENDPOINT	3.67	+ 20	2,309,999,722	-271	-0.0000117

Table 7-82. Frequency Stability Data (Band 30)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Band 30 Frequency Stability Measurements

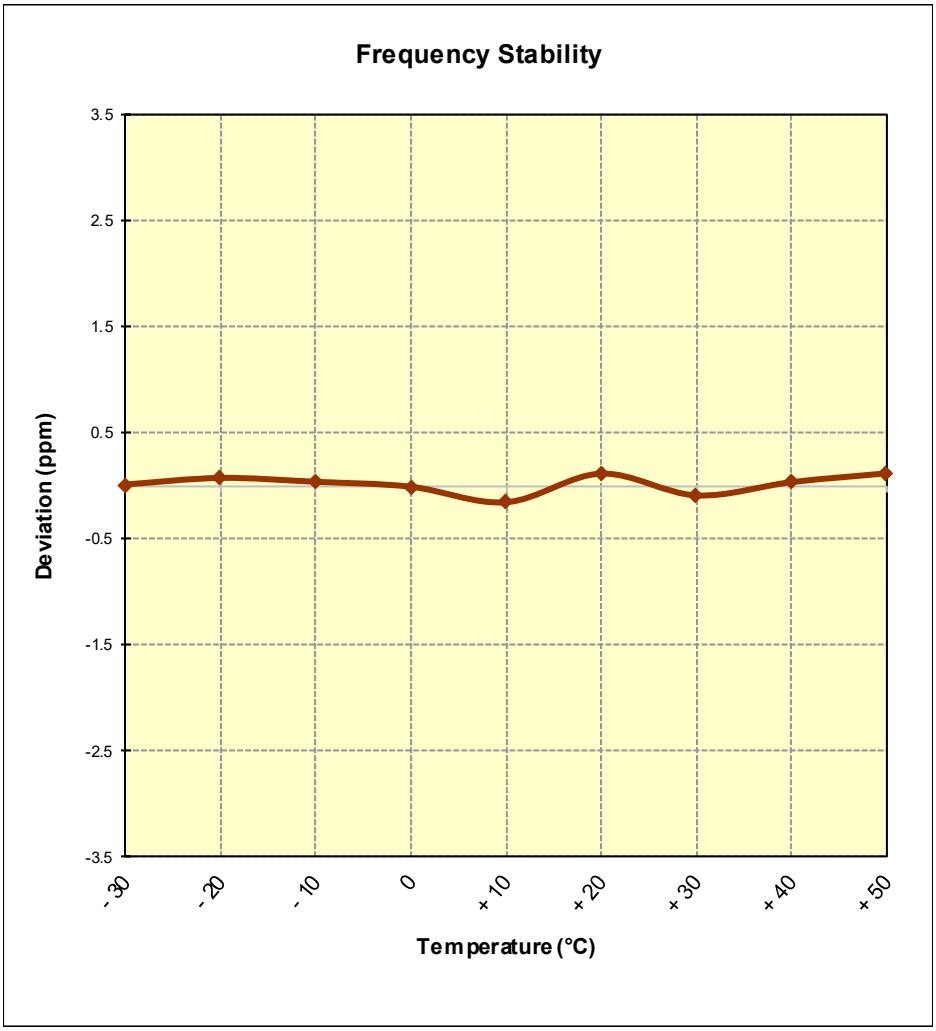

Figure 7-17. Frequency Stability Graph (Band 30)

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Band 7 Frequency Stability Measurements

OPERATING FREQUENCY: 2,535,000,000 Hz

CHANNEL: 21100

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	2,535,000,159	0	0.0000000
100 %		- 30	2,535,000,400	241	0.0000095
100 %		- 20	2,535,000,168	9	0.0000004
100 %		- 10	2,534,999,953	-206	-0.0000081
100 %		0	2,535,000,343	184	0.0000073
100 %		+ 10	2,534,999,927	-232	-0.0000092
100 %		+ 20	2,535,000,325	166	0.0000065
100 %		+ 30	2,535,000,270	111	0.0000044
100 %		+ 40	2,535,000,129	-30	-0.0000012
100 %		+ 50	2,535,000,310	151	0.0000060
BATT. ENDPOINT	3.67	+ 20	2,535,000,183	24	0.0000009

Table 7-83. Frequency Stability Data (Band 7)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Band 7 Frequency Stability Measurements

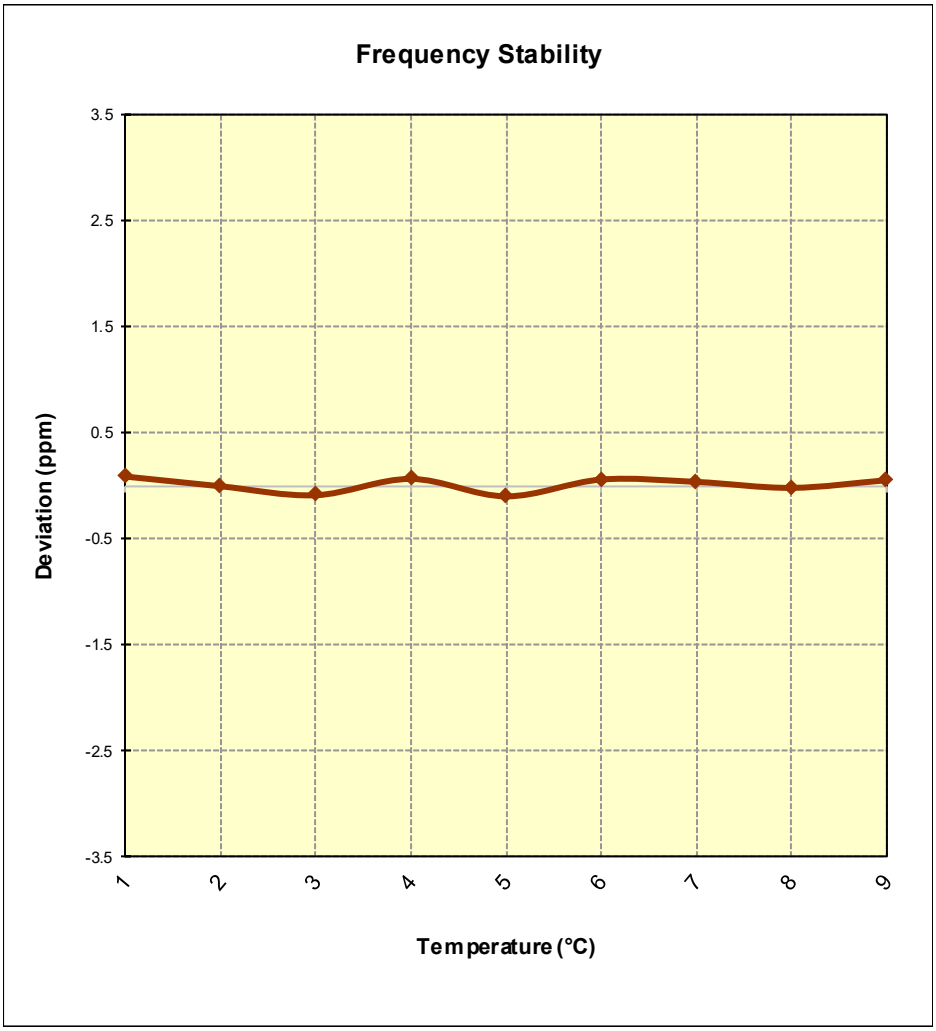

Figure 7-18. Frequency Stability Graph (Band 7)

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Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz

CHANNEL: 40620

REFERENCE VOLTAGE: 4.29 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.29	+ 20 (Ref)	2,592,999,626	0	0.0000000
100 %		- 30	2,592,999,687	61	0.0000024
100 %		- 20	2,592,999,707	81	0.0000031
100 %		- 10	2,592,999,723	97	0.0000037
100 %		0	2,592,999,580	-46	-0.0000018
100 %		+ 10	2,592,999,739	113	0.0000044
100 %		+ 20	2,592,999,774	148	0.0000057
100 %		+ 30	2,592,999,670	44	0.0000017
100 %		+ 40	2,592,999,360	-266	-0.0000103
100 %		+ 50	2,592,999,754	128	0.0000049
BATT. ENDPOINT	3.67	+ 20	2,592,999,694	68	0.0000026

Table 7-84. Frequency Stability Data (Band 41)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Band 41 Frequency Stability Measurements

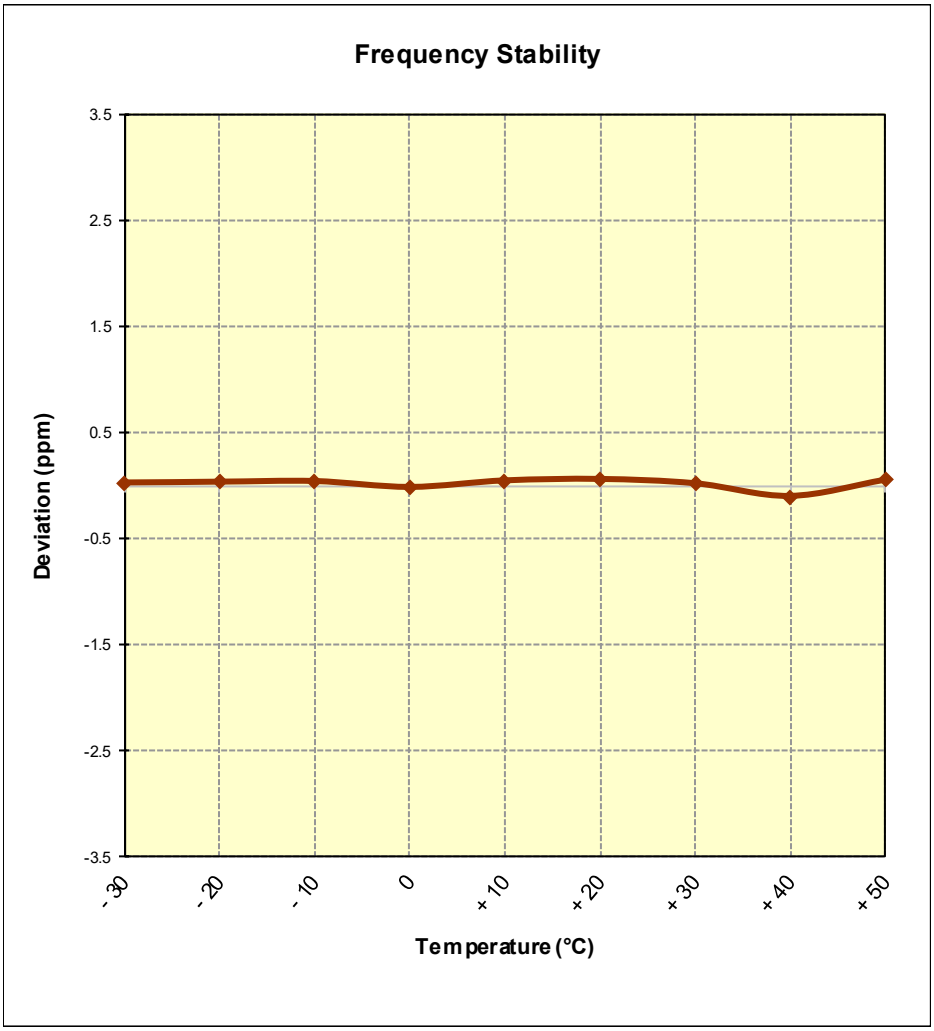

Figure 7-19. Frequency Stability Graph (Band 41)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG975U** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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