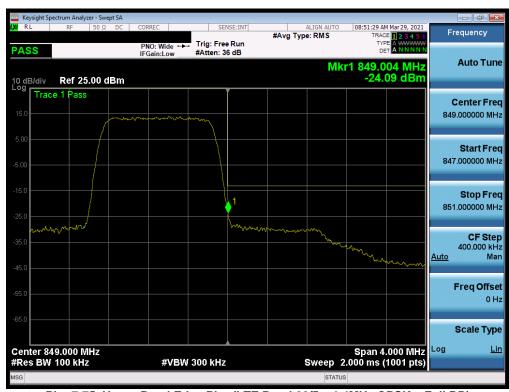




Plot 7-74. Lower Band Edge Plot (LTE Band 26/5 - 1.4MHz QPSK - Full RB)



Plot 7-75. Upper Band Edge Plot (LTE Band 26/5 – 1.4MHz QPSK – Full RB)

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#### NR Band n5



Plot 7-76. Lower Band Edge Plot (NR Band n5 - 20.0MHz DFT-s-OFDM-QPSK - Full RB)



Plot 7-77. Upper Band Edge Plot (NR Band n5 – 20.0MHz DFT-s-OFDM-QPSK - Full RB)

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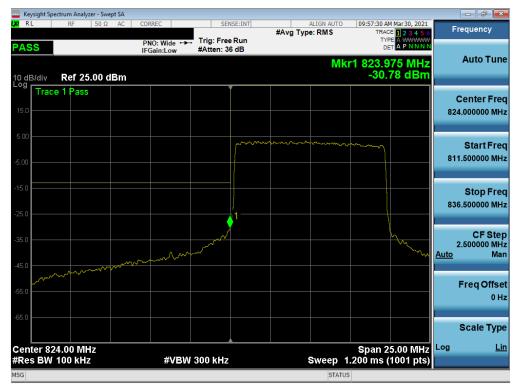
Plot 7-78. Lower Band Edge Plot (NR Band n5 - 15.0MHz DFT-s-OFDM-QPSK - Full RB)



Plot 7-79. Upper Band Edge Plot (NR Band n5 – 15.0MHz DFT-s-OFDM-QPSK - Full RB)

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Plot 7-80. Lower Band Edge Plot (NR Band n5 – 10.0MHz DFT-s-OFDM-QPSK - Full RB)



Plot 7-81. Upper Band Edge Plot (NR Band n5 – 10.0MHz DFT-s-OFDM-QPSK - Full RB)

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Plot 7-82. Lower Band Edge Plot (NR Band n5 - 5.0MHz DFT-s-OFDM-QPSK - Full RB)



Plot 7-83. Upper Band Edge Plot (NR Band n5 - 5.0MHz DFT-s-OFDM-QPSK - Full RB)

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# 7.5 Radiated Power (ERP)

#### **Test Overview**

Effective Radiated Power (ERP) 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 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  $\geq 2 \times \text{span} / \text{RBW}$
- 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.

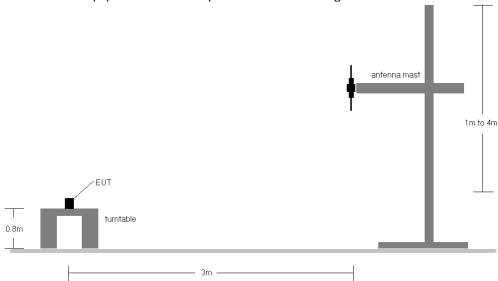


Figure 7-4. Radiated Test Setup <1GHz

### **Test Notes**

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 3) 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.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 6) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.20	GSM850	Н	215	327	22.12	6.75	26.72	0.470	38.45	-11.73
836.60	GSM850	Н	223	341	22.71	6.68	27.24	0.530	38.45	-11.21
848.80	GSM850	Н	225	345	21.19	6.71	25.75	0.375	38.45	-12.71
836.60	GSM850	V	334	93	18.34	6.38	22.57	0.181	38.45	-15.88
836.60	EDGE850	Н	223	341	18.12	6.68	22.65	0.184	38.45	-15.80
836.60	Closed	Н	347	338	21.51	6.68	26.04	0.402	38.45	-12.41
836.60	GSM850 (WCP)	Н	140	228	15.89	6.68	20.42	0.110	38.45	-18.03

Table 7-2. ERP Data (GPRS Cell) - AntA + AntB

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.20	GSM850	I	230	342	21.57	7.34	26.76	0.475	38.45	-11.69
836.60	GSM850	Н	223	331	21.54	7.74	27.13	0.516	38.45	-11.32
848.80	GSM850	Н	150	319	19.71	7.73	25.29	0.338	38.45	-13.16
836.60	GSM850	V	216	244	19.52	7.74	25.11	0.324	38.45	-13.34
836.60	EDGE850	Н	223	331	11.95	7.74	17.54	0.057	38.45	-20.91
836.60	GSM850 (WCP)	V	169	271	20.52	7.74	26.11	0.408	38.45	-12.34

# Table 7-3. ERP Data (GPRS Cell) - AntA

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
826.40	WCDMA850	Н	208	103	13.90	6.77	18.52	0.071	38.45	-19.93
836.60	WCDMA850	Н	209	105	13.21	6.68	17.74	0.059	38.45	-20.71
846.60	WCDMA850	Η	205	337	14.27	6.68	18.80	0.076	38.45	-19.65
846.60	WCDMA850	V	143	159	13.16	6.37	17.38	0.055	38.45	-21.07
826.40	Closed	Н	147	91	13.68	6.77	18.30	0.068	38.45	-20.15
846.60	WCDMA850 (WCP)	Н	119	231	12.30	6.77	16.92	0.049	38.45	-21.53

# Table 7-4. ERP Data (WCDMA Cell) - AntA + AntB

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
826.40	WCDMA850	Н	239	330	12.43	7.40	17.68	0.059	38.45	-20.77
836.60	WCDMA850	Н	135	332	12.60	7.74	18.19	0.066	38.45	-20.26
846.60	WCDMA850	I	141	335	12.67	7.76	18.28	0.067	38.45	-20.17
846.60	WCDMA850	V	216	159	12.19	7.76	17.80	0.060	38.45	-20.65
846.60	WCDMA850 (WCP)	V	222	216	12.11	7.76	17.72	0.059	38.45	-20.73

Table 7-5. ERP Data (WCDMA Cell) - AntA

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
15MHz		831.5	Н	212	113	6.73	1/0	13.82	18.40	0.069	38.45	-20.05	20.55	0.113	40.61	-20.06
(Band 26	QPSK	836.5	Η	206	112	6.68	1/0	13.58	18.11	0.065	38.45	-20.34	20.26	0.106	40.61	-20.35
		841.5	Н	211	109	6.63	1/0	13.43	17.91	0.062	38.45	-20.54	20.06	0.101	40.61	-20.55
only)	16-QAM	831.5	Н	212	113	6.73	1/0	13.05	17.63	0.058	38.45	-20.82	19.78	0.095	40.61	-20.83
		829.0	Н	212	113	6.80	1/0	13.91	18.56	0.072	38.45	-19.89	20.71	0.118	40.61	-19.90
10 MHz	QPSK	836.5	Н	206	112	6.68	1/0	13.73	18.26	0.067	38.45	-20.19	20.41	0.110	40.61	-20.20
10 10112		844.0	Н	211	109	6.66	1/0	13.58	18.09	0.064	38.45	-20.36	20.24	0.106	40.61	-20.37
	16-QAM	829.0	Н	212	113	6.80	1/0	13.41	18.06	0.064	38.45	-20.39	20.21	0.105	40.61	-20.39
		826.5	Н	212	113	6.77	1/0	13.95	18.58	0.072	38.45	-19.87	20.73	0.118	40.61	-19.88
5 MHz	QPSK	836.5	Н	206	112	6.68	1 / 24	13.87	18.40	0.069	38.45	-20.05	20.55	0.113	40.61	-20.06
3 1411 12		846.5	Н	211	109	6.68	1/0	13.62	18.15	0.065	38.45	-20.30	20.30	0.107	40.61	-20.30
	16-QAM	836.5	Н	206	112	6.68	1 / 24	13.39	17.92	0.062	38.45	-20.53	20.07	0.102	40.61	-20.53
		825.5	Н	212	113	6.76	1 / 14	14.13	18.74	0.075	38.45	-19.71	20.89	0.123	40.61	-19.72
3 MHz	QPSK	836.5	Н	206	112	6.68	1/0	13.84	18.37	0.069	38.45	-20.08	20.52	0.113	40.61	-20.09
3 1411 12		847.5	Н	211	109	6.69	1 / 14	13.51	18.05	0.064	38.45	-20.40	20.20	0.105	40.61	-20.41
	16-QAM	825.5	Н	212	113	6.76	1 / 14	13.30	17.92	0.062	38.45	-20.54	20.07	0.102	40.61	-20.54
		824.7	Н	212	113	6.76	1/3	14.00	18.61	0.073	38.45	-19.84	20.76	0.119	40.61	-19.85
1.4 MHz	QPSK	836.5	Н	206	112	6.68	1/3	13.78	18.31	0.068	38.45	-20.14	20.46	0.111	40.61	-20.14
1.4 101112		848.3	Н	211	109	6.70	1/0	13.43	17.98	0.063	38.45	-20.47	20.13	0.103	40.61	-20.48
	16-QAM	836.5	Н	206	112	6.68	1/3	13.25	17.78	0.060	38.45	-20.67	19.93	0.098	40.61	-20.68
	QPSK (Opposite Pol.)	831.5	V	141	57	6.43	0.00	13.59	17.87	0.061	38.45	-20.58	20.02	0.100	40.61	-20.59
15MHz	Closed	836.5	Н	141	57	6.43	0.00	13.63	17.91	0.062	38.45	-20.54	20.06	0.101	40.61	-20.55
	QPSK (WCP)	831.5	Н	206	90	6.73	0.00	12.12	16.70	0.047	38.45	-21.75	18.85	0.077	40.61	-21.76

Table 7-6. ERP Data (LTE Band 26/5 AntA + AntB)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
		831.5	Н	202	144	6.73	1 / 37	6.62	11.20	0.013	38.45	-27.25	13.35	0.022	40.61	-27.26
15MHz	QPSK	836.5	Н	217	152	6.68	1/0	6.85	11.38	0.014	38.45	-27.07	13.53	0.023	40.61	-27.08
(Band 26		841.5	Н	204	144	6.63	1/0	5.18	9.66	0.009	38.45	-28.79	11.81	0.015	40.61	-28.80
only)	16-QAM	836.5	Н	217	152	6.68	1/0	6.23	10.76	0.012	38.45	-27.69	12.91	0.020	40.61	-27.70
Offig)	64-QAM	836.5	Н	217	152	6.68	1/0	5.25	9.78	0.010	38.45	-28.67	11.93	0.016	40.61	-28.68
	256-QAM	836.5	Н	217	152	6.68	1/0	3.15	7.68	0.006	38.45	-30.77	9.83	0.010	40.61	-30.78
		829.0	Н	202	144	6.80	1/0	6.71	11.36	0.014	38.45	-27.09	13.51	0.022	40.61	-27.10
	QPSK	836.5	Н	217	152	6.68	1/0	7.00	11.53	0.014	38.45	-26.92	13.68	0.023	40.61	-26.93
10 MHz		844.0	Н	204	144	6.66	1/0	5.33	9.84	0.010	38.45	-28.61	11.99	0.016	40.61	-28.62
TO WITH	16-QAM	836.5	H	217	152	6.68	1/0	6.61	11.14	0.013	38.45	-27.31	13.29	0.021	40.61	-27.32
	64-QAM	836.5	H	217	152	6.68	1/0	5.25	9.78	0.009	38.45	-28.67	11.93	0.016	40.61	-28.68
	256-QAM	836.5	Н	217	152	6.68	1/0	3.56	8.09	0.006	38.45	-30.36	10.24	0.011	40.61	-30.36
		826.5	Н	202	144	6.77	1/0	6.75	11.38	0.014	38.45	-27.07	13.53	0.023	40.61	-27.08
	QPSK	836.5	Н	217	152	6.68	1 / 24	7.14	11.67	0.015	38.45	-26.78	13.82	0.024	40.61	-26.79
5 MHz		846.5	Н	204	144	6.68	1/0	5.37	9.90	0.010	38.45	-28.55	12.05	0.016	40.61	-28.55
3 WITIZ	16-QAM	836.5	Н	217	152	6.68	1 / 24	6.69	11.22	0.013	38.45	-27.23	13.37	0.022	40.61	-27.23
	64-QAM	836.5	Н	217	152	6.68	1 / 24	5.42	9.95	0.010	38.45	-28.50	12.10	0.016	40.61	-28.51
	256-QAM	836.5	Н	217	152	6.68	1 / 24	3.84	8.37	0.007	38.45	-30.08	10.52	0.011	40.61	-30.09
		825.5	Н	202	144	6.76	1 / 14	6.93	11.54	0.014	38.45	-26.91	13.69	0.023	40.61	-26.92
	QPSK	836.5	Н	217	152	6.68	1/0	7.11	11.64	0.015	38.45	-26.81	13.79	0.024	40.61	-26.82
3 MHz		847.5	Н	204	144	6.69	1 / 14	5.26	9.80	0.010	38.45	-28.65	11.95	0.016	40.61	-28.66
3 141112	16-QAM	836.5	Н	217	152	6.68	1/0	6.41	10.94	0.012	38.45	-27.51	13.09	0.020	40.61	-27.52
	64-QAM	836.5	Н	217	152	6.68	1/0	5.49	10.02	0.010	38.45	-28.43	12.17	0.016	40.61	-28.44
	256-QAM	836.5	Н	217	152	6.68	1/0	3.64	8.17	0.007	38.45	-30.28	10.32	0.011	40.61	-30.29
		824.7	Н	202	144	6.76	1/3	6.80	11.41	0.014	38.45	-27.04	13.56	0.023	40.61	-27.05
	QPSK	836.5	Н	217	152	6.68	1/3	7.05	11.58	0.014	38.45	-26.87	13.73	0.024	40.61	-26.87
1.4 MHz		848.3	Н	204	144	6.70	1/0	5.18	9.73	0.009	38.45	-28.72	11.88	0.015	40.61	-28.73
1. <del>4</del> WII12	16-QAM	836.5	Н	217	152	6.68	1/3	6.55	11.08	0.013	38.45	-27.37	13.23	0.021	40.61	-27.38
	64-QAM	836.5	Н	217	152	6.68	1/3	5.61	10.14	0.010	38.45	-28.31	12.29	0.017	40.61	-28.32
	256-QAM	836.5	H	217	152	6.68	1/3	3.75	8.28	0.007	38.45	-30.18	10.43	0.011	40.61	-30.18

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

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
		834.0	Н	220.0	336.0	6.75	1 / 26	15.00	19.60	0.091	38.45	-18.85	21.75	0.150	40.61	-18.85
	TT/2 BPSK	836.5	Н	202.0	333.0	6.68	1 / 53	14.61	19.14	0.082	38.45	-19.31	21.29	0.135	40.61	-19.32
		839.0	Н	222.0	333.0	6.70	1 / 26	14.89	19.44	0.088	38.45	-19.01	21.59	0.144	40.61	-19.01
		834.0	Н	220.0	336.0	6.75	1 / 26	15.06	19.66	0.093	38.45	-18.79	21.81	0.152	40.61	-18.79
20 MHz	QPSK	836.5	Н	202.0	333.0	6.68	1 / 53	14.56	19.09	0.081	38.45	-19.36	21.24	0.133	40.61	-19.37
		839.0	Н	222.0	333.0	6.70	1 / 26	14.83	19.38	0.087	38.45	-19.07	21.53	0.142	40.61	-19.07
l	16-QAM	834.0	Н	220.0	336.0	6.75	1 / 26	13.80	18.40	0.069	38.45	-20.05	20.55	0.114	40.61	-20.05
İ	64-QAM	834.0	Н	220.0	336.0	6.75	1 / 26	12.06	16.66	0.046	38.45	-21.79	18.81	0.076	40.61	-21.79
	256-QAM	834.0	Н	220.0	336.0	6.75	1 / 26	10.96	15.56	0.036	38.45	-22.89	17.71	0.059	40.61	-22.89
		831.5	Н	220.0	336.0	6.73	1 / 39	15.04	19.62	0.092	38.45	-18.83	21.77	0.150	40.61	-18.84
	π/2 BPSK	836.5	н	202.0	333.0	6.68	1 / 20	14.66	19.19	0.083	38.45	-19.26	21.34	0.136	40.61	-19.26
		841.5	Н	222.0	333.0	6.63	1 / 20	14.94	19.42	0.087	38.45	-19.03	21.57	0.144	40.61	-19.04
l		831.5	н	220.0	336.0	6.73	1 / 39	14.96	19.54	0.090	38.45	-18.91	21.69	0.148	40.61	-18.92
15 MHz	QPSK	836.5	Н	202.0	333.0	6.68	1 / 20	14.46	18.99	0.079	38.45	-19.46	21.14	0.130	40.61	-19.47
		841.5	Н	222.0	333.0	6.63	1 / 20	14.89	19.37	0.086	38.45	-19.08	21.52	0.142	40.61	-19.09
İ	16-QAM	831.5	Н	220.0	336.0	6.73	1 / 39	13.66	18.24	0.067	38.45	-20.21	20.39	0.109	40.61	-20.22
	64-QAM	841.5	Н	222.0	333.0	6.63	1 / 20	11.93	16.41	0.044	38.45	-22.04	18.56	0.072	40.61	-22.04
l	256-QAM	831.5	н	220.0	336.0	6.73	1 / 39	10.97	15.55	0.036	38.45	-22.90	17.70	0.059	40.61	-22.91
		829.0	Н	220.0	336.0	6.80	1 / 13	14.80	19.46	0.088	38.45	-19.00	21.61	0.145	40.61	-19.00
	π/2 BPSK	836.5	Н	202.0	333.0	6.68	1 / 13	14.49	19.01	0.080	38.45	-19.44	21.16	0.131	40.61	-19.44
		844.0	н	222.0	333.0	6.66	1 / 26	14.76	19.27	0.084	38.45	-19.18	18.91         21.69         0.148         40.61         -1           19.46         21.14         0.130         40.61         -1           19.08         21.52         0.142         40.61         -1           20.21         20.39         0.109         40.61         -2           22.04         18.56         0.072         40.61         -2           22.90         17.70         0.059         40.61         -1           19.00         21.61         0.145         40.61         -1           19.44         21.16         0.131         40.61         -1           19.18         21.42         0.139         40.61         -1           19.74         20.86         0.122         40.61         -1           19.15         21.45         0.140         40.61         -1           19.16         20.56         0.114         40.61         -2           20.04         20.56         0.114         40.61         -2	-19.19		
	829.0	829.0	н	220.0	336.0	6.80	1 / 13	14.75	19.40	0.087	38.45	-19.05	21.55	0.143	40.61	-19.06
10 MHz	QPSK	836.5	н	202.0	333.0	6.68	1 / 13	14.18	18.71	0.074	38.45	-19.74	20.86	0.122	40.61	-19.75
		844.0	н	222.0	333.0	6.66	1 / 26	14.80	19.30	0.085	38.45	-19.15	21.45	0.140	40.61	-19.15
l i	16-QAM	829.0	Н	220.0	336.0	6.80	1 / 13	13.76	18.41	0.069	38.45	-20.04	20.56	0.114	40.61	-20.04
	64-QAM	844.0	Н	222.0	333.0	6.66	1 / 26	12.03	16.54	0.045	38.45	-21.91	18.69	0.074	40.61	-21.92
l	256-QAM	829.0	Н	220.0	336.0	6.80	1 / 13	10.91	15.56	0.036	38.45	-22.89	17.71	0.059	40.61	-22.89
ĺ		829.0	Н	220.0	336.0	6.77	1/6	14.86	19.48	0.089	38.45	-18.97	21.63	0.146	40.61	-18.97
	π/2 BPSK	836.5	н	202.0	333.0	6.68	1/6	14.47	19.00	0.079	38.45	-19.45	21.15	0.130	40.61	-19.46
		844.0	Н	222.0	333.0	6.68	1 / 12	14.47	19.00	0.079	38.45	-19.45	21.15	0.130	40.61	-19.46
l i		829.0	Н	220.0	336.0	6.77	1/6	14.89	19.52	0.089	38.45	-18.93	21.67	0.147	40.61	-18.94
5 MHz	QPSK	836.5	н	202.0	333.0	6.68	1/6	14.58	19.11	0.081	38.45	-19.34	21.26	0.134	40.61	-19.35
		844.0	н	222.0	333.0	6.68	1 / 12	14.56	19.09	0.081	38.45	-19.36	21.24	0.133	40.61	-19.37
l	16-QAM	829.0	Н	220.0	336.0	6.77	1/6	13.54	18.17	0.066	38.45	-20.28	20.32	0.108	40.61	-20.29
	64-QAM	829.0	н	220.0	336.0	6.77	1/6	11.78	16.40	0.044	38.45	-22.05	18.55	0.072	40.61	-22.06
	256-QAM	829.0	Н	220.0	336.0	6.77	1/6	10.93	15.55	0.036	38.45	-22.90	17.70	0.059	40.61	-22.90
	QPSK (CP-OFDM)	834.0	Н	218.0	343.0	6.68	0.00	13.48	18.01	0.063	38.45	-20.44	20.16	0.104	40.61	-20.45
	QPSK (Opposite Pol.)	834.0	V	174.0	121.0	6.68	0.00	14.01	18.54	0.071	38.45	-19.91	20.69	0.117	40.61	-19.92
20 MHz	Closed	834.0	Н	230.0	127.0	6.68	0.00	11.36	15.89	0.039	38.45	-22.56	18.04	0.064	40.61	-22.57
	QPSK (WCP)	834.0	V	139.0	106.0	6.68	0.00	8.57	13.10	0.020	38.45	-25.35	15.25	0.033	40.61	-25.36
	2. 2()	99 119	,	Table		DD D		Donal		4 A -	00.10		10.20	0.000	10.01	20.00

Table 7-8. ERP Data (NR Band n5 – AntA + AntB)

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
		834.0	Н	134	323	7.66	1 / 53	11.94	17.45	0.056	38.45	-21.01	19.60	0.091	40.61	-21.01
	π/2 BPSK	836.5	Н	143	330	7.74	1 / 53	12.03	17.62	0.058	38.45	-20.84	19.77	0.095	40.61	-20.84
		839.0	Н	135	331	7.79	1 / 53	12.23	17.87	0.061	38.45	-20.58	20.02	0.100	40.61	-20.59
		834.0	Н	134	323	7.66	1 / 53	11.63	17.14	0.052	38.45	-21.32	19.29	0.085	40.61	-21.32
20 MHz	QPSK	836.5	Н	143	330	7.74	1 / 53	11.85	17.44	0.055	38.45	-21.02	19.59	0.091	40.61	-21.02
		839.0	Н	135	331	7.79	1 / 53	11.87	17.51	0.056	38.45	-20.94	19.66	0.092	40.61	-20.95
	16-QAM	839.0	Н	135	331	7.79	1 / 53	10.71	16.35	0.043	38.45	-22.10	18.50	0.071	40.61	-22.11
	64-QAM	839.0	Н	135	331	7.79	1 / 53	8.87	14.51	0.028	38.45	-23.94	16.66	0.046	40.61	-23.95
	256-QAM	839.0	Н	135	331	7.79	1 / 53	7.45	13.09	0.020	38.45	-25.36	15.24	0.033	40.61	-25.37
		831.5	Н	134	323	7.56	1 / 20	14.22	19.63	0.092	38.45	-18.82	21.78	0.151	40.61	-18.83
	π/2 BPSK	836.5	Н	143	330	7.74	1 / 39	12.04	17.63	0.058	38.45	-20.82	19.78	0.095	40.61	-20.83
		841.5	Н	135	331	7.80	1 / 20	12.27	17.92	0.062	38.45	-20.53	20.07	0.102	40.61	-20.53
		831.5	Н	134	323	7.56	1 / 20	11.70	17.11	0.051	38.45	-21.34	19.26	0.084	40.61	-21.35
15 MHz	QPSK	836.5	Н	143	330	7.74	1 / 39	11.73	17.31	0.054	38.45	-21.14	19.46	0.088	40.61	-21.15
		841.5	Н	135	331	7.80	1 / 20	11.75	17.41	0.055	38.45	-21.04	19.56	0.090	40.61	-21.05
	16-QAM	841.5	Н	135	331	7.80	1 / 20	10.69	16.34	0.043	38.45	-22.11	18.49	0.071	40.61	-22.11
	64-QAM	841.5	Н	135	331	7.80	1 / 20	8.94	14.60	0.029	38.45	-23.85	16.75	0.047	40.61	-23.86
	256-QAM	841.5	Н	135	331	7.80	1 / 20	7.64	13.29	0.021	38.45	-25.16	15.44	0.035	40.61	-25.17
		829.0	Н	134	323	7.48	1 / 13	14.60	19.93	0.098	38.45	-18.52	22.08	0.161	40.61	-18.53
	π/2 BPSK	836.5	Н	143	330	7.74	1 / 13	11.88	17.47	0.056	38.45	-20.98	19.62	44 0.035 40.61 - 08 0.161 40.61 - 62 0.092 40.61 -	-20.99	
		844.0	Н	135	331	7.79	1 / 13	12.10	17.74	0.059	38.45	-20.71	19.89	0.098	40.61	-20.71
		829.0	Н	134	323	7.48	1 / 26	11.63	16.96	0.050	38.45	-21.49	19.11	0.081	40.61	-21.50
10 MHz	QPSK	836.5	Н	143	330	7.74	1 / 13	11.58	17.17	0.052	38.45	-21.28	19.32	0.086	40.61	-21.29
		844.0	Н	135	331	7.79	1 / 13	11.48	17.13	0.052	38.45	-21.32	19.28	0.085	40.61	-21.33
	16-QAM	844.0	Н	135	331	7.79	1 / 13	10.36	16.00	0.040	38.45	-22.45	18.15	0.065	40.61	-22.46
	64-QAM	844.0	Н	135	331	7.79	1 / 13	8.85	14.50	0.028	38.45	-23.96	16.65	0.046	40.61	-23.96
	256-QAM	844.0	Н	135	331	7.79	1 / 13	7.74	13.38	0.022	38.45	-25.07	15.53	0.036	40.61	-25.07
		829.0	Н	134	323	7.40	1 / 12	14.55	19.80	0.096	38.45	-18.65	21.95	0.157	40.61	-18.66
	π/2 BPSK	836.5	Н	143	330	7.74	1/6	11.91	17.50	0.056	38.45	-20.95	19.65	0.092	40.61	-20.96
		844.0	Н	135	331	7.76	1/6	12.12	17.73	0.059	38.45	-20.72	19.88	0.097	40.61	-20.73
		829.0	Н	134	323	7.40	1 / 12	11.44	16.69	0.047	38.45	-21.76	18.84	0.077	40.61	-21.77
5 MHz	QPSK	836.5	Н	143	330	7.74	1/6	11.70	17.29	0.054	38.45	-21.16	19.44	0.088	40.61	-21.17
		844.0	Н	135	331	7.76	1/6	11.92	17.53	0.057	38.45	-20.92	19.68	0.093	40.61	-20.93
	16-QAM	844.0	Н	135	331	7.76	1/6	10.58	16.20	0.042	38.45	-22.25	18.35	0.068	40.61	-22.26
	64-QAM	844.0	Н	135	331	7.76	1/6	9.00	14.61	0.029	38.45	-23.84	16.76	0.047	40.61	-23.85
	256-QAM	829.0	Н	134	323	7.40	1 / 12	6.77	12.02	0.016	38.45	-26.44	14.17	0.026	40.61	-26.44
	QPSK (CP-OFDM)	839.0	Н	135	330	7.74	0.00	9.90	15.49	0.035	38.45	-22.96	17.64	0.058	40.61	-22.97
20 MHz	QPSK (Opposite Pol.)	839.0	V	241	349	7.74	0.00	9.21	14.80	0.030	38.45	-23.65	16.95	0.050	40.61	-23.66
	QPSK (WCP)	839.0	V	221.0	165.0	7.74	0.00	9.90	15.49	0.035	38.45	-22.96	17.64	0.058	40.61	-22.97

Table 7-9. ERP Data (NR Band n5 - AntA)

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# 7.6 Radiated Spurious Emissions Measurements

#### **Test Overview**

Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically 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 maximum power, and at the appropriate frequencies.

### **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.8

#### **Test Settings**

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW  $\geq$  3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 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.

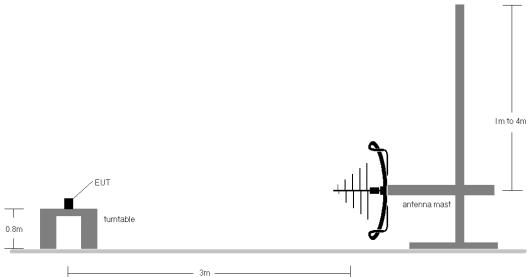


Figure 7-5. Test Instrument & Measurement Setup < 1GHz

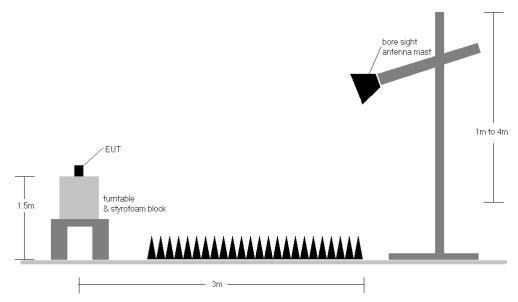


Figure 7-6. Test Instrument & Measurement Setup >1 GHz

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#### **Test Notes**

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
  - b) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
  - d) EIRP (dBm) =  $E(dB\mu V/m) + 20logD 104.8$ ; where D is the measurement distance in meters.
- 2) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is reported in GPRS mode while transmitting with one slot active.
- 3) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 4) 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.
- 5) This unit was tested with its standard battery.

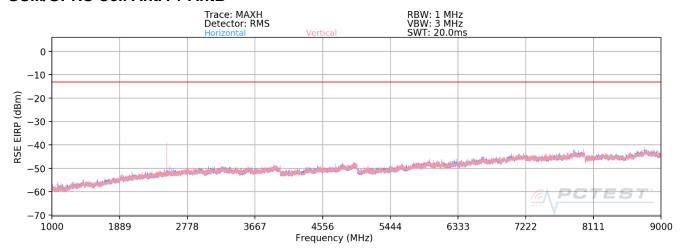
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- 6) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 7) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 8) 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.
- 9) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 10) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.
- 11) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device, is subject to the rules under which the NR carrier operates. Spurious emission caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

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### GSM/GPRS Cell AntA + AntB



Plot 7-84. Radiated Spurious Plot (GPRS Cell) - OPEN

Mode:	GPRS 1 Tx Slot
Channel:	128
Frequency (MHz):	824.2

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1648.4	V	244	44	-70.26	1.00	37.74	-57.52	-13.00	-44.52
2472.6	V	122	191	-59.48	5.29	52.81	-42.45	-13.00	-29.45
3296.8	V	-	-	-71.58	7.34	42.76	-52.50	-13.00	-39.50
4121.0	V	-	-	-72.33	8.05	42.72	-52.54	-13.00	-39.54
4945.2	V	-	-	-79.34	9.97	37.63	-57.62	-13.00	-44.62

Table 7-10. Radiated Spurious Data (GPRS Cell - Low Channel) - OPEN

Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.2	V	379	7	-70.27	1.17	37.90	-57.36	-13.00	-44.36
2509.8	V	128	12	-59.11	5.23	53.12	-42.13	-13.00	-29.13
3346.4	V	-	-	-72.00	7.12	42.12	-53.14	-13.00	-40.14
4183.0	V	-	-	-72.94	8.58	42.64	-52.61	-13.00	-39.61
5019.6	V	-	-	-71.99	10.73	45.74	-49.51	-13.00	-36.51

Table 7-11. Radiated Spurious Data (GPRS Cell – Mid Channel) - OPEN

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Mode:	GPRS 1 Tx Slot
Channel:	251
Frequency (MHz):	848.8

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1697.6	V	102	305	-70.40	1.81	38.41	-56.85	-13.00	-43.85
2546.4	V	236	163	-64.85	5.72	47.87	-47.39	-13.00	-34.39
3395.2	V	-	-	-72.02	7.28	42.26	-52.99	-13.00	-39.99
4244.0	V	-	-	-72.30	8.22	42.92	-52.33	-13.00	-39.33
5092.8	V	-	-	-73.44	10.31	43.87	-51.39	-13.00	-38.39

Table 7-12. Radiated Spurious Data (GPRS Cell – High Channel) – OPEN

Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

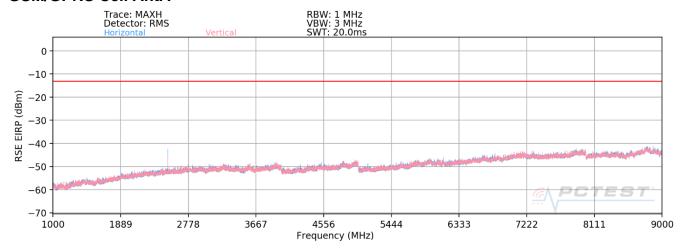
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.2	V	195	16	-66.70	1.17	41.47	-53.79	-13.00	-40.79
2509.8	V	184	209	-60.29	5.23	51.94	-43.31	-13.00	-30.31
3346.4	V	-	-	-72.19	7.12	41.93	-53.33	-13.00	-40.33
4183.0	V	-	-	-71.92	8.58	43.66	-51.59	-13.00	-38.59
5019.6	V	-	-	-72.56	10.73	45.17	-50.08	-13.00	-37.08

Table 7-13. Radiated Spurious Data (GPRS Cell – Mid Channel) – WCP

FCC ID: A3LSMF926B	PCTEST* Poud to be part of @ Pietners	PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 70 of 88
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# **GSM/GPRS Cell AntA**



Plot 7-85. Radiated Spurious Plot (GPRS Cell) - CLOSED

Mode:	GPRS 1 Tx Slot
Channel:	128
Frequency (MHz):	824.2

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1648.4	V	244	44	-70.26	1.00	37.74	-57.52	-13.00	-44.52
2472.6	V	122	191	-59.48	5.29	52.81	-42.45	-13.00	-29.45
3296.8	V	-	-	-71.58	7.34	42.76	-52.50	-13.00	-39.50
4121.0	V	-	-	-72.33	8.05	42.72	-52.54	-13.00	-39.54
4945.2	V	-	-	-79.34	9.97	37.63	-57.62	-13.00	-44.62

Table 7-14. Radiated Spurious Data (GPRS Cell – Low Channel) - CLOSED

Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.2	V	379	7	-70.27	1.17	37.90	-57.36	-13.00	-44.36
2509.8	V	128	12	-59.11	5.23	53.12	-42.13	-13.00	-29.13
3346.4	V	-	-	-72.00	7.12	42.12	-53.14	-13.00	-40.14
4183.0	V	-	-	-72.94	8.58	42.64	-52.61	-13.00	-39.61
5019.6	V	-	-	-71.99	10.73	45.74	-49.51	-13.00	-36.51

Table 7-15. Radiated Spurious Data (GPRS Cell - Mid Channel) - CLOSED

FCC ID: A3LSMF926B	POTEST Poud to be part of sectores	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 71 of 99	
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Mode:	GPRS 1 Tx Slot
Channel:	251
Frequency (MHz):	848.8

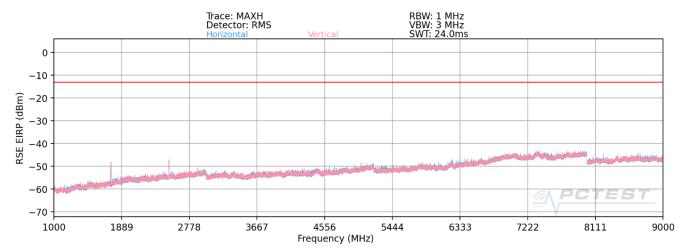
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1697.6	V	102	305	-70.40	1.81	38.41	-56.85	-13.00	-43.85
2546.4	V	236	163	-64.85	5.72	47.87	-47.39	-13.00	-34.39
3395.2	V	-	-	-72.02	7.28	42.26	-52.99	-13.00	-39.99
4244.0	V	-	-	-72.30	8.22	42.92	-52.33	-13.00	-39.33
5092.8	V	-	-	-73.44	10.31	43.87	-51.39	-13.00	-38.39

Table 7-16. Radiated Spurious Data (GPRS Cell – High Channel) - CLOSED

FCC ID: A3LSMF926B	PCTEST* Poud to be part of @ rieners	PART 22 MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dags 70 of 00	
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### WCDMA Cell AntA + AntB



Plot 7-86. Radiated Spurious Plot (WCDMA Cell) - OPEN

Mode:	WCDMA RMC
Channel:	4132
Frequency (MHz):	826.4

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1652.8	V	-	-	-69.94	-0.23	36.83	-58.43	-13.00	-45.43
2479.2	V	102	107	-63.09	3.43	47.34	-47.92	-13.00	-34.92
3305.6	V	-	-	-69.25	4.28	42.03	-53.23	-13.00	-40.23
4132.0	V	-	-	-69.72	5.80	43.08	-52.18	-13.00	-39.18
4958.4	V	-	-	-69.65	7.02	44.37	-50.89	-13.00	-37.89

Table 7-17. Radiated Spurious Data (WCDMA Cell – Low Channel) - OPEN

Mode:	WCDMA RMC
Channel:	4183
Frequency (MHz):	836.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.2	V	-	-	-67.73	-0.23	39.04	-56.22	-13.00	-43.22
2509.8	V	100	104	-61.31	3.55	49.24	-46.02	-13.00	-33.02
3346.4	V	-	-	-69.59	5.04	42.45	-52.80	-13.00	-39.80
4183.0	V	-	-	-69.90	5.76	42.86	-52.40	-13.00	-39.40
5019.6	V	-	-	-70.08	6.47	43.39	-51.87	-13.00	-38.87

Table 7-18. Radiated Spurious Data (WCDMA Cell – Mid Channel) - OPEN

FCC ID: A3LSMF926B	PCTEST*	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Mode:	WCDMA RMC
Channel:	4233
Frequency (MHz):	846.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1693.2	V	-	-	-68.52	0.02	38.50	-56.76	-13.00	-43.76
2539.8	V	169	97	-63.61	3.56	46.95	-48.31	-13.00	-35.31
3386.4	V	-	-	-69.65	4.93	42.28	-52.98	-13.00	-39.98
4233.0	V	-	-	-70.19	5.60	42.41	-52.85	-13.00	-39.85
5079.6	V	-	-	-69.91	7.20	44.29	-50.97	-13.00	-37.97

Table 7-19. Radiated Spurious Data (WCDMA Cell – High Channel) – OPEN

Mode:	WCDMA RMC
Channel:	4183
Frequency (MHz):	836.6
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

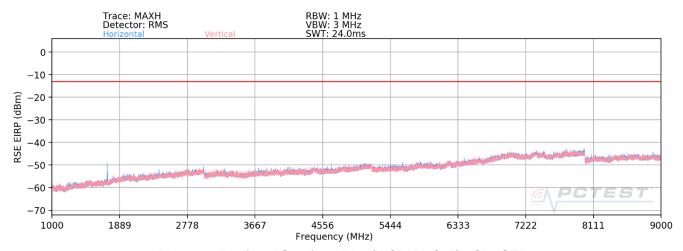
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height	Turntable Azimuth	Analyzer Level	AFCL [dB/m]	Field Strength	EIRP Spurious Emission Level	Limit [dBm]	Margin [dB]
1070.0		[cm]	[degree]	[dBm]		[dBµV/m]	[dBm]		
1673.2	V	-	-	-67.28	-0.23	39.49	-55.77	-13.00	-42.77
2509.8	V	207	339	-63.00	3.55	47.55	-47.71	-13.00	-34.71
3346.4	V	-	-	-69.62	5.04	42.42	-52.83	-13.00	-39.83
4183.0	V	-	-	-70.03	5.76	42.73	-52.53	-13.00	-39.53
5019.6	V	-	-	-69.51	6.47	43.96	-51.30	-13.00	-38.30

Table 7-20. Radiated Spurious Data (WCDMA Cell - Mid Channel) - WCP

FCC ID: A3LSMF926B	PCTEST* Poud to be part of @ Pietners	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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### WCDMA Cell AntA



Plot 7-87. Radiated Spurious Plot (WCDMA Cell) - CLOSED

Mode:	WCDMA RMC
Channel:	4132
Frequency (MHz):	826.4

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1652.8	Н	-	-	-69.01	1.02	39.01	-56.24	-13.00	-43.24
2479.2	Н	-	-	-68.00	5.34	44.34	-50.91	-13.00	-37.91
3305.6	Н	-	-	-67.49	7.21	46.72	-48.54	-13.00	-35.54

Table 7-21. Radiated Spurious Data (WCDMA Cell – Low Channel) - CLOSED

Mode:	WCDMA RMC
Channel:	4183
Frequency (MHz):	836.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.2	Н	-	-	-69.01	1.17	39.16	-56.10	-13.00	-43.10
2509.8	Н	-	-	-67.45	5.23	44.78	-50.47	-13.00	-37.47
3346.4	Н	-	-	-66.15	7.12	47.97	-47.29	-13.00	-34.29

Table 7-22. Radiated Spurious Data (WCDMA Cell – Mid Channel) – CLOSED

Mode:	WCDMA RMC
Channel:	4233
Frequency (MHz):	846.6

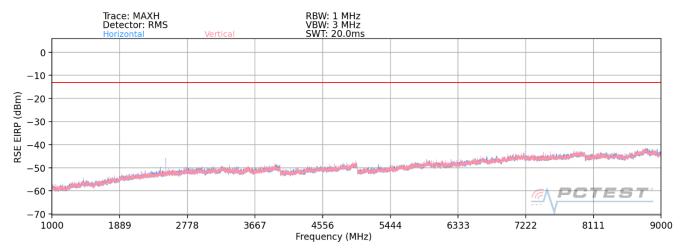
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1693.2	Н	-	-	-68.96	1.62	39.66	-55.59	-13.00	-42.59
2539.8	Н	-	-	-66.71	5.77	46.06	-49.20	-13.00	-36.20
3386.4	Н	-	-	-67.22	7.12	46.90	-48.36	-13.00	-35.36

Table 7-23. Radiated Spurious Data (WCDMA Cell - High Channel) - CLOSED

FCC ID: A3LSMF926B	POTEST Poud to be part of sectores	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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# LTE Band 26/5 - AntA



Plot 7-88. Radiated Spurious Plot (LTE Band 26/5) - CLOSED

Bandwidth (MHz):	10
Frequency (MHz):	836.5
RB / Offset:	1 / 25

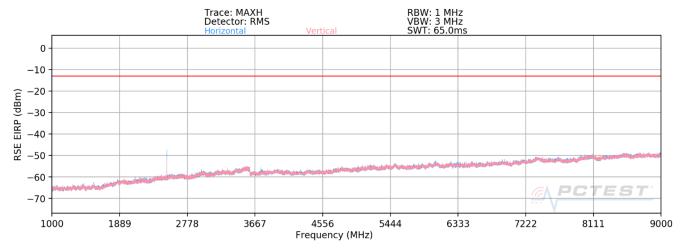
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.0	Н	142	147	-74.94	-5.40	26.66	-68.60	-13.00	-55.60
2509.5	Н	215	142	-57.57	-2.54	46.89	-48.37	-13.00	-35.37
3346.0	Н	-	-	-77.26	0.30	30.04	-65.21	-13.00	-52.21
4182.5	Н	-	-	-78.29	2.02	30.73	-64.53	-13.00	-51.53

Table 7-24. Radiated Spurious Data (LTE Band 26/5) - CLOSED

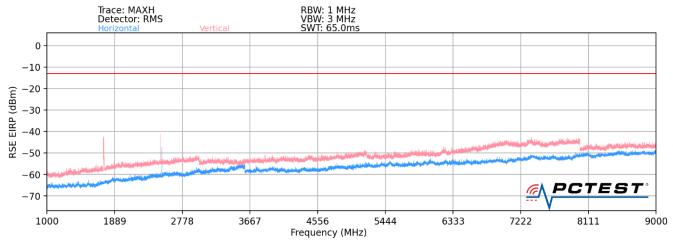
FCC ID: A3LSMF926B	POTEST* Proud to be part of # Primers	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogg 70 of 00	
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# LTE Band 26/5 - AntA + AntB



Plot 7-89. Radiated Spurious Plot (LTE Band 26/5) - OPEN



Plot 7-90. Radiated Spurious Plot (LTE Band 26/5) - CLOSED

Bandwidth (MHz):	10
Frequency (MHz):	829.0
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1658.0	Н	146	158	-75.43	-5.58	25.99	-69.27	-13.00	-56.27
2487.0	Н	140	142	-56.88	-2.55	47.57	-47.69	-13.00	-34.69
3316.0	Н	-	-	-77.44	0.54	30.10	-65.16	-13.00	-52.16
4145.0	Н	-	-	-78.58	1.77	30.19	-65.07	-13.00	-52.07

Table 7-25. Radiated Spurious Data (LTE Band 26/5 – Low Channel) - OPEN

FCC ID: A3LSMF926B	PCTEST* Poud to be part of @ rieners	PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
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Bandwidth (MHz):	10
Frequency (MHz):	836.5
RB / Offset:	1 / 25

	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
	1673.0	Н	142	147	-74.94	-5.40	26.66	-68.60	-13.00	-55.60
ſ	2509.5	Н	215	142	-57.57	-2.54	46.89	-48.37	-13.00	-35.37
	3346.0	Н	-	-	-77.26	0.30	30.04	-65.21	-13.00	-52.21
ſ	4182.5	Н	-	_	-78.29	2.02	30.73	-64.53	-13.00	-51.53

## Table 7-26. Radiated Spurious Data (LTE Band 26/5 - Mid Channel) - OPEN

Bandwidth (MHz):	10
Frequency (MHz):	844.0
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1688.00	Н	152	148	-75.12	-5.17	26.71	-68.55	-13.00	-55.55
2532.00	Н	129	135	-58.46	-1.83	46.71	-48.55	-13.00	-35.55
3376.00	Н	-	-	-77.74	0.30	29.56	-65.69	-13.00	-52.69
4220.00	Н	-	-	-78.35	1.85	30.50	-64.75	-13.00	-51.75

# Table 7-27. Radiated Spurious Data (LTE Band 26/5 - High Channel) - OPEN

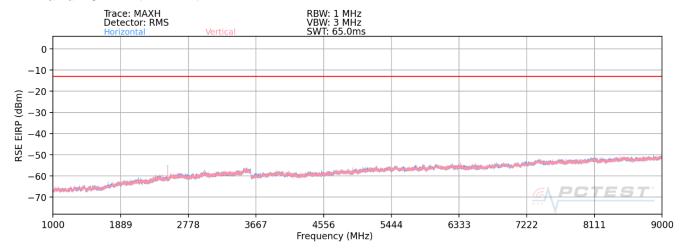
Bandwidth (MHz):	1	5							
Frequency (MHz):	83	6.5							
RB / Offset:	1/	36							
Detector / Trace Mode:	RMS / A	Average							
RBW/VBW:	1MHz	/ 3MHz							
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.0	V	296	75	-64.60	-5.40	37.00	-58.26	-13.00	-45.26
2509.5	V	143	337	-56.52	-2.54	47.94	-47.32	-13.00	-34.32
3346.0	V	-	-	-63.00	0.30	44.30	-50.95	-13.00	-37.95
4182.5	V	-	-	-62.71	2.02	46.31	-48.95	-13.00	-35.95

Table 7-28. Radiated Spurious Data (LTE Band 26/5 - Mid Channel) - WCP

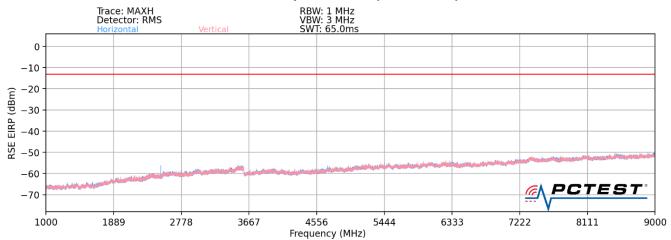
FCC ID: A3LSMF926B	POTEST Poud to be part of sectores	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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### NR Band n5 - AntA + AntB



Plot 7-91. Radiated Spurious Plot (NR Band n5) - OPEN



Plot 7-92. Radiated Spurious Plot (NR Band n5) - CLOSED

Bandwidth (MHz):	20
Frequency (MHz):	834.0
RB / Offset:	1 / 50
Mode:	Standalone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1668.0	Н	232	169	-74.61	-5.47	26.92	-68.34	-13.00	-55.34
2502.0	Н	116	250	-62.06	-2.60	42.34	-52.91	-13.00	-39.91
3336.0	Н	-	-	-74.52	0.33	32.81	-62.44	-13.00	-49.44
4170.0	Н	-	-	-77.06	1.95	31.89	-63.37	-13.00	-50.37

Table 7-29. Radiated Spurious Data (NR Band n5 - Low Channel) - OPEN

FCC ID: A3LSMF926B	PCTEST* Poud to be part of @ Pietners	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 50
Mode:	Standalone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.0	Н	-	-	-75.24	-5.40	26.36	-68.90	-13.00	-55.90
2509.5	Н	131	3	-56.75	-2.54	47.71	-47.55	-13.00	-34.55
3346.0	Н	-	-	-74.57	0.30	32.73	-62.52	-13.00	-49.52
4182.5	Н	-	-	-76.69	2.02	32.33	-62.93	-13.00	-49.93

Table 7-30. Radiated Spurious Data (NR Band n5 - Mid Channel) - OPEN

Bandwidth (MHz):	20
Frequency (MHz):	839.0
RB / Offset:	1 / 50
Mode:	Standalone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1678.0	Н	-	-	-75.33	-5.33	26.34	-68.92	-13.00	-55.92
2517.0	Н	161	337	-67.59	-2.33	37.08	-58.17	-13.00	-45.17
3356.0	Н	-	-	-74.56	0.28	32.72	-62.54	-13.00	-49.54
4195.0	Н	378	319	-75.50	1.95	33.45	-61.81	-13.00	-48.81
5034.0	Н	-	-	-77.63	4.36	33.73	-61.53	-13.00	-48.53
5873.0	Н	-	-	-77.88	6.35	35.47	-59.79	-13.00	-46.79

Table 7-31. Radiated Spurious Data (NR Band n5 - High Channel) - OPEN

Bandwidth (MHz):	20
Frequency (MHz):	836.5
RB / Offset:	1 / 50
Mode:	Standalone

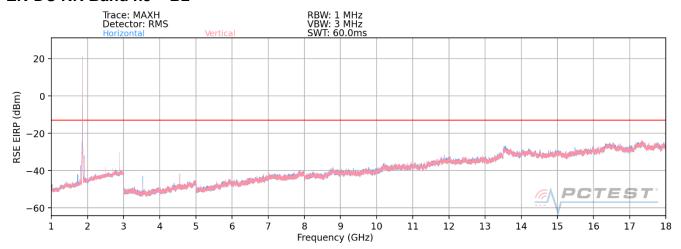
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.0	Н	-	-	-52.32	10.38	65.06	-30.19	-13.00	-17.19
2509.5	Н	-	-	-51.36	14.68	70.32	-24.94	-13.00	-11.94
3346.0	Н	-	-	-51.42	16.68	72.26	-23.00	-13.00	-10.00
4182.5	Н	-	-	-52.00	17.93	72.93	-22.33	-13.00	-9.33

Table 7-32. Radiated Spurious Data (NR Band n5 - Mid Channel) - OPEN - WCP

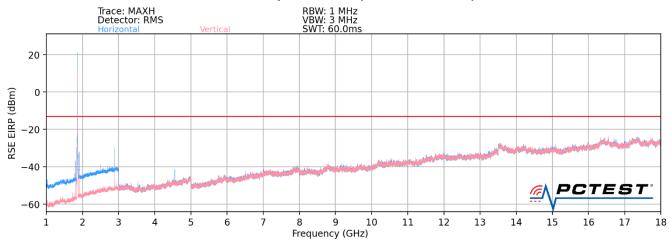
FCC ID: A3LSMF926B	POTEST Poud to be part of sectores	PART 22 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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### EN-DC NR Band n5 - B2



Plot 7-93. Radiated Spurious Plot (NR Band n5 + B2) - OPEN



Plot 7-94. Radiated Spurious Plot (NR Band n5 + B2) - CLOSED

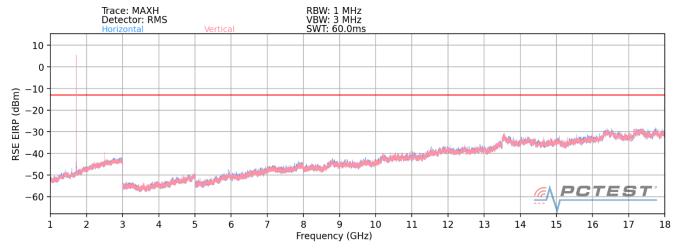
Bandwidth (MHz):	20	/ 20							
Frequency (MHz):	1860	/ 834							
RB / Offset:	1 / 50 8	ß 1 / 53							
Mode:	EN-	-DC							
Anchor Band:	В	32							
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1218.0	Н	-	-	-48.73	7.56	65.83	-29.43	-13.00	-16.43
2244.0	Н	-	-	-47.53	13.50	72.97	-22.29	-13.00	-9.29
2886.0	Н	155	67	-47.04	15.26	75.22	-20.04	-13.00	-7.04
3270.0	Н	-	-	-48.20	7.75	66.55	-28.71	-13.00	-15.71

Table 7-33. Radiated Spurious Data (NR Band n5 + B2) - OPEN

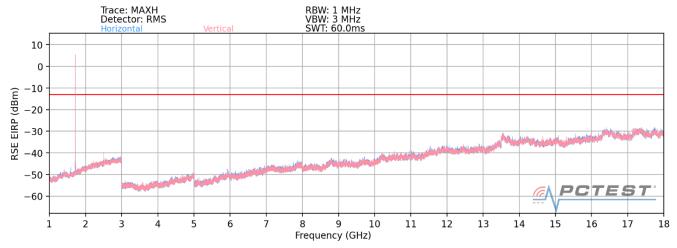
FCC ID: A3LSMF926B	Proad to be port of a recent	PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
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### EN-DC NR Band n5 - B66



Plot 7-95. Radiated Spurious Plot (NR Band n5 + B66) - OPEN



Plot 7-96. Radiated Spurious Plot (NR Band n5 + B66) - CLOSED

Bandwidth (MHz):	20	/ 20							
Frequency (MHz):	1745	/ 834							
RB / Offset:	1 / 50 8	ß 1 / 53							
Mode:	EN-	-DC							
Anchor Band:	6	6							
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1899.0	Н	-	-	-48.83	12.62	70.79	-24.47	-13.00	-11.47
2656.0	Н	-	-	-49.22	14.67	72.45	-22.81	-13.00	-9.81
2810.0	Н	-	-	-48.91	15.39	73.48	-21.78	-13.00	-8.78
3567.0	Н	-	-	-49.91	17.16	74.25	-21.01	-13.00	-8.01
	Table 7.3	4 Dadies	od Couri	nua Data	/ND Daw	d wE . DC	6) ODEN		

Table 7-34. Radiated Spurious Data (NR Band n5 + B66) - OPEN

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# 7.7 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 and RSS-132, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency.

#### **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**

issembly of contents thereof, please contact INFO@PCTEST.COM

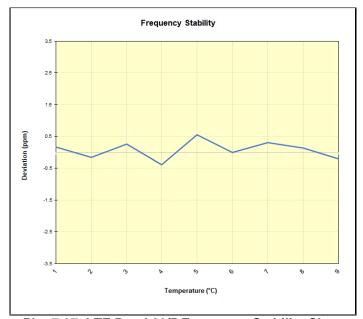
None

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The state of the s								
LTE Band 26/5								
	Operating F	requency (Hz):	836,500,000					
	Ref. Voltage (VDC):		4.	36	1			
		Deviation Limit:	± 0.00025%	or 2.5 ppm				
'					•			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)			
		- 30	831,542,493	146	0.0000176			
		- 20	831,542,212	-135	-0.0000162			
		- 10	831,542,563	216	0.0000260			
		0	831,542,021	-326	-0.0000392			
100 %	4.36	+ 10	831,542,808	461	0.0000554			
		+ 20 (Ref)	831,542,347	0	0.0000000			
		+ 30	831,542,604	257	0.0000309			
		+ 40	831,542,459	112	0.0000135			
		+ 50	831,542,179	-168	-0.0000202			
Battery Endpoint	2.46	+ 20	831,542,327	-20	-0.0000024			

Table 7-35. LTE Band 26/5 Frequency Stability Data



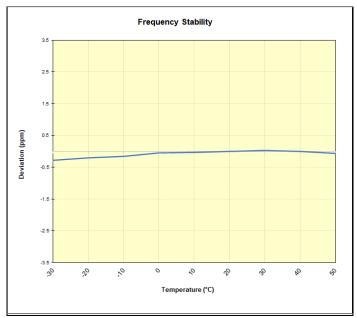
Plot 7-97. LTE Band 26/5 Frequency Stability Chart

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NR Band	n5				
	Operating Frequency (Hz):		836,50	00,000	
	Ref. Voltage (VDC):		4.	36	
		Deviation Limit:	± 0.00025%	or 2.5 ppm	
'					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
		- 30	836,046,413	-231	-0.0000276
		- 20	836,046,482	-162	-0.0000194
		- 10	836,046,512	-132	-0.0000158
		0	836,046,608	-36	-0.0000043
100 %	4.36	+ 10	836,046,621	-23	-0.0000028
		+ 20 (Ref)	836,046,644	0	0.0000000
		+ 30	836,046,669	25	0.0000030
		+ 40	836,046,641	-3	-0.0000004
		+ 50	836,046,598	-46	-0.0000055
Battery Endpoint	2.46	+ 20	836,046,609	-35	-0.0000042

Table 7-36. NR Band n5 Frequency Stability Data



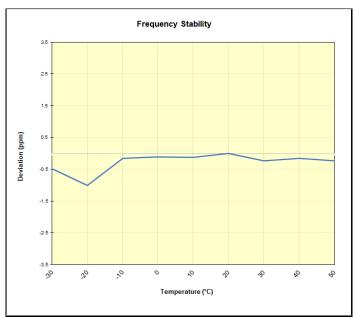
Plot 7-98. NR Band n5 Frequency Stability Chart

FCC ID: A3LSMF926B	POLITIEST Pound to be part of \$\infty\$ electrons	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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GSM/GPRS Cellular							
	Operating Frequency (Hz):		836,60	00,000			
	Ref.	Voltage (VDC):	4.	36			
		Deviation Limit:	± 0.00025%	or 2.5 ppm			
·							
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	836,601,515	-396	-0.0000473		
		- 20	836,601,071	-839	-0.0001003		
		- 10	836,601,781	-130	-0.0000155		
		0	836,601,821	-89	-0.0000106		
100 %	4.36	+ 10	836,601,811	-99	-0.0000118		
		+ 20 (Ref)	836,601,910	0	0.0000000		
		+ 30	836,601,713	-197	-0.0000235		
		+ 40	836,601,780	-131	-0.0000156		
		+ 50	836,601,716	-194	-0.0000232		
Battery Endpoint	2.46	+ 20	836,601,944	34	0.0000041		

Table 7-37. GSM/GPRS Cell Frequency Stability Data



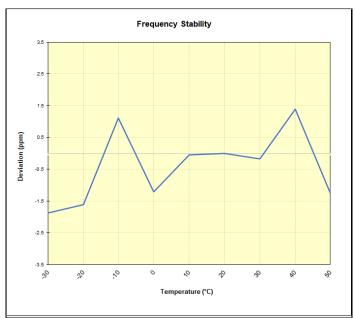
Plot 7-99. GSM/GPRS Cell Frequency Stability Chart

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WCDMA (	Cellular				
	Operating F	requency (Hz):	836,60	00,000	
	Ref.	Voltage (VDC):	4.36		
		Deviation Limit:	± 0.00025%	or 2.5 ppm	
<u>'</u>					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
		- 30	836,596,590	-1,564	-0.0001869
		- 20	836,596,812	-1,341	-0.0001603
		- 10	836,599,089	936	0.0001118
		0	836,597,148	-1,006	-0.0001202
100 %	4.36	+ 10	836,598,108	-45	-0.0000054
		+ 20 (Ref)	836,598,153	0	0.0000000
		+ 30	836,598,011	-142	-0.0000170
		+ 40	836,599,320	1,167	0.0001395
		+ 50	836,597,116	-1,038	-0.0001240
Battery Endpoint	2.46	+ 20	836,598,198	45	0.0000054

Table 7-38. WCDMA Cell Frequency Stability Data



Plot 7-100. WCDMA Cell Frequency Stability Chart

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#### CONCLUSION 8.0

The data collected relate only to the item(s) tested and show that the Samsung Portable Handset FCC ID: A3LSMF926B complies with all the requirements of Part 22 of the FCC rules.

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