Cellular TAS and Dynamic Budget Sharing Validation Test Report

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Revision History

Rev.	Date	Revisions	Revised By
V1	2025/1/13	Initial Issue	--
V2	2025/1/22	1. Added missing test sites to §1 2. Added verbiage denoting that WLAN is not controlled by the Cellular TAS feature in §2 3. Clearly denote which time averaging window was used in §5 4. Dynamic Budget Validation plot has been updated to accurately reflect the test case performed in §6.1	Nathan Sousa

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1. Test Specifications, Methods/Procedures, and Facilities

The tests documented in this report were performed following the OEM's pre-approval guidance (KDB 388624 D02 Pre-Approval Guidance List v18r06, PWRCNG).

The test sites and measurement facilities used to collect data are located at:

47266 Benicia Street	5440 Patrick Henry Drive
SAR Labs 12 to 19	SAR Labs PHD 1 to 4

2. Introduction

The modem is enabled with Cellular TAS technology feature with dynamic budgeting to control and manage transmitting power, in real time (the version implemented is v1.0.0). Only cellular technologies implement dynamic budgeting. All other technologies will use static budget assignments (WLAN/Bluetooth). WLAN implements its own independent algorithm that is not controlled by this modem.

This DUT supports a time-averaged method of transmit power control for Cellular and MSS technologies. Consumed SAR from active radios is tracked and stored for the duration of the applicable regulatory averaging window. Rolling time-averaged SAR values are calculated from the consumed SAR reported from active radios. The time-averaged SAR is always maintained less than the appliable $SAR_{Design\ Limit}$.

The purpose of this document is to demonstrate the validity of the Cellular TAS and Budget Sharing v1.0.0 feature implemented in the modem.

The table(s) below define the applicable time-averaging durations per regulatory body:

Table 2-1: FCC Time-averaging Duration

Frequency (GHz)	Cellular (s)	MSS (s)
< 3	100	99.84
3 - 6	60	N/A

3. Key TAS Parameters

This section defines the relevant power and RF Exposure parameters related to the cellular TAS mechanism for this DUT.

3.1. On-Body Detection (OBD)/Operating State Summary (OPS)

The table below summarizes the operating states supported by the DUT:

Table 3-1: DUT Supported OBD/OPS

OBD/OPS	Description
0	Head
1	Body

3.2. TAS Parameter Definitions

$P_{Max, nom}$: The maximum possible instantaneous power, excluding total device uncertainty
P_{Max}: The maximum possible instantaneous power
$P_{Limit, nom}$: The listed target power, excluding total device uncertainty
P_{Limit}: The maximum possible time-averaged power
$SAR_{Design Target}$: The maximum spatial peak averaged SAR value corresponding to the $P_{Limit, nom}$
$SAR_{Design Limit}$: The maximum spatial peak averaged SAR value inclusive of the total device uncertainty

$P_{Limit, nom}$, P_{Limit}, $P_{Max, nom}$, and P_{Max} values are defined for all antennas, technologies, bands, and OBD/OPS combinations supporting TAS on the DUT. The $P_{Limit, nom}$ value is defined to ensure measured SAR is not greater than the $SAR_{Design Target}$. Instantaneous power for the specified antenna/technology/band/OBD/OPS combinations is capped at P_{Max}.

Table 3-2: FCC SAR Characterizations

Transmitter	Technology	1-g Averaging Volume																							
		OBD: 0 (Head)												OBD: 1 (Body)											
		Uncert.	Uncert.	Standalone					$P_{Cell On + Wi-Fi On}$					Uncert.	Uncert.	Standalone					$P_{Cell On + Wi-Fi On}$				
		(+)	(-)	$P_{Limit, nom}$	P_{Limit}	P_{Max}	$SAR_{Design Target}$	$SAR_{Design Limit}$	$P_{Limit, nom}$	P_{Limit}	P_{Max}	$SAR_{Design Target}$	$SAR_{Design Limit}$	(+)	(-)	$P_{Limit, nom}$	P_{Limit}	P_{Max}	$SAR_{Design Target}$	$SAR_{Design Limit}$	$P_{Limit, nom}$	P_{Limit}	P_{Max}	$SAR_{Design Target}$	$SAR_{Design Limit}$
ANT 1	GSM 850 GMSK 1 Slot	1.2	-1.2	32.3	33.5	33.5	0.346	0.456	32.3	33.5	33.5	0.346	0.456	0.9	-0.9	32.6	33.5	33.5	0.456	0.561	32.6	33.5	33.5	0.456	0.561
ANT 1	GSM 850 GMSK 2 Slot(s)	1.2	-1.2	31.3	32.5	32.5	0.549	0.723	31.3	32.5	32.5	0.549	0.723	0.9	-0.9	31.6	32.5	32.5	0.723	0.890	31.6	32.5	32.5	0.723	0.890
ANT 1	GSM 850 8PSK 1 Slot	1.2	-1.2	26.8	28.0	28.0	0.098	0.129	26.8	28.0	28.0	0.098	0.129	0.9	-0.9	27.1	28.0	28.0	0.129	0.158	27.1	28.0	28.0	0.129	0.158
ANT 1	GSM 850 8PSK 2 Slot(s)	1.2	-1.2	25.8	27.0	27.0	0.155	0.204	25.8	27.0	27.0	0.155	0.204	0.9	-0.9	26.1	27.0	27.0	0.204	0.251	26.1	27.0	27.0	0.204	0.251
ANT 1	GSM 1900 GMSK 1 Slot	1.0	-1.0	31.0	32.0	32.0	0.257	0.323	31.0	32.0	32.0	0.257	0.323	0.8	-0.8	27.9	28.7	32.0	0.998	1.200	27.1	27.9	32.0	0.832	1.000
ANT 1	GSM 1900 GMSK 2 Slot(s)	1.0	-1.0	30.0	31.0	31.0	0.691	0.869	30.0	31.0	31.0	0.691	0.869	0.8	-0.8	24.9	25.7	31.0	0.998	1.200	24.1	24.9	31.0	0.832	1.000
ANT 1	GSM 1900 8PSK 1 Slot	1.0	-1.0	26.0	27.0	27.0	0.081	0.102	26.0	27.0	27.0	0.081	0.102	0.8	-0.8	26.2	27.0	27.0	0.675	0.811	26.2	27.0	27.0	0.675	0.811
ANT 1	GSM 1900 8PSK 2 Slot(s)	1.0	-1.0	25.0	26.0	26.0	0.218	0.275	25.0	26.0	26.0	0.218	0.275	0.8	-0.8	24.9	25.7	26.0	0.998	1.200	24.1	24.9	26.0	0.832	1.000
ANT 1	W-CDMA B2 Rel. 99	0.7	-0.7	25.0	25.7	25.7	0.998	1.173	24.3	25.0	25.7	0.851	1.000	1.0	-1.0	18.7	19.7	25.7	0.953	1.200	17.9	18.9	25.7	0.794	1.000
ANT 1	W-CDMA B2 HSDPA	0.7	-0.7	25.0	25.7	25.7	0.998	1.173	24.3	25.0	25.7	0.851	1.000	1.0	-1.0	18.7	19.7	25.7	0.953	1.200	17.9	18.9	25.7	0.794	1.000
ANT 1	W-CDMA B2 HSUPA	0.7	-0.7	25.0	25.7	25.7	0.998	1.173	24.3	25.0	25.7	0.851	1.000	1.0	-1.0	18.7	19.7	25.7	0.953	1.200	17.9	18.9	25.7	0.794	1.000
ANT 1	W-CDMA B2 HSPA+	0.7	-0.7	25.0	25.7	25.7	0.998	1.173	24.3	25.0	25.7	0.851	1.000	1.0	-1.0	18.7	19.7	25.7	0.953	1.200	17.9	18.9	25.7	0.794	1.000
ANT 1	W-CDMA B4 Rel. 99	1.0	-1.0	24.2	25.2	25.7	0.953	1.200	23.4	24.4	25.7	0.794	1.000	0.9	-0.9	18.7	19.6	25.7	0.975	1.200	17.9	18.8	25.7	0.813	1.000
ANT 1	W-CDMA B4 HSDPA	1.0	-1.0	24.2	25.2	25.7	0.953	1.200	23.4	24.4	25.7	0.794	1.000	0.9	-0.9	18.7	19.6	25.7	0.975	1.200	17.9	18.8	25.7	0.813	1.000
ANT 1	W-CDMA B4 HSUPA	1.0	-1.0	24.2	25.2	25.7	0.953	1.200	23.4	24.4	25.7	0.794	1.000	0.9	-0.9	18.7	19.6	25.7	0.975	1.200	17.9	18.8	25.7	0.813	1.000
ANT 1	W-CDMA B4 HSPA+	1.0	-1.0	24.2	25.2	25.7	0.953	1.200	23.4	24.4	25.7	0.794	1.000	0.9	-0.9	18.7	19.6	25.7	0.975	1.200	17.9	18.8	25.7	0.813	1.000
ANT 1	W-CDMA B5 Rel. 99	1.0	-1.0	24.7	25.7	25.7	0.478	0.601	24.7	25.7	25.7	0.478	0.601	0.9	-0.9	24.8	25.7	25.7	0.574	0.707	24.8	25.7	25.7	0.574	0.707
ANT 1	W-CDMA B5 HSDPA	1.0	-1.0	24.7	25.7	25.7	0.478	0.601	24.7	25.7	25.7	0.478	0.601	0.9	-0.9	24.8	25.7	25.7	0.574	0.707	24.8	25.7	25.7	0.574	0.707
ANT 1	W-CDMA B5 HSUPA	1.0	-1.0	24.7	25.7	25.7	0.478	0.601	24.7	25.7	25.7	0.478	0.601	0.9	-0.9	24.8	25.7	25.7	0.574	0.707	24.8	25.7	25.7	0.574	0.707
ANT 1	W-CDMA B5 HSPA+	1.0	-1.0	24.7	25.7	25.7	0.478	0.601	24.7	25.7	25.7	0.478	0.601	0.9	-0.9	24.8	25.7	25.7	0.574	0.707	24.8	25.7	25.7	0.574	0.707
ANT 1	LTE Band 2 PC3	1.2	-1.2	24.5	25.7	25.7	0.869	1.146	23.9	25.1	25.7	0.759	1.000	1.1	-1.1	18.6	19.7	25.7	0.931	1.200	17.8	18.9	25.7	0.776	1.000
ANT 1	LTE Band 4 PC3	1.1	-1.1	24.6	25.7	25.7	0.757	0.975	24.6	25.7	25.7	0.757	0.975	1.2	-1.2	18.4	19.6	25.7	0.910	1.200	17.6	18.8	25.7	0.759	1.000
ANT 1	LTE Band 5 PC3	1.3	-1.3	24.4	25.7	25.7	0.407	0.549	24.4	25.7	25.7	0.407	0.549	1.0	-1.0	24.7	25.7	25.7	0.574	0.723	24.7	25.7	25.7	0.574	0.723
ANT 1	LTE Band 7 PC3	1.5	-1.5	24.2	25.7	25.7	0.723	1.021	24.1	25.6	25.7	0.708	1.000	1.5	-1.5	19.5	21.0	25.7	0.850	1.200	18.7	20.2	25.7	0.708	1.000
ANT 1	LTE Band 12 PC3	1.5	-1.5	24.2	25.7	25.7	0.436	0.615	24.2	25.7	25.7	0.436	0.615	1.3	-1.3	24.4	25.7	25.7	0.601	0.811	24.4	25.7	25.7	0.601	0.811
ANT 1	LTE Band 13 PC3	1.1	-1.1	24.6	25.7	25.7	0.407	0.524	24.6	25.7	25.7	0.407	0.524	0.8	-0.8	24.9	25.7	25.7	0.757	0.910	24.9	25.7	25.7	0.757	0.910
ANT 1	LTE Band 14 PC3	1.1	-1.1	24.6	25.7	25.7	0.467	0.601	24.6	25.7	25.7	0.467	0.601	1.4	-1.4	24.3	25.7	25.7	0.675	0.931	24.3	25.7	25.7	0.675	0.931
ANT 1	LTE Band 25 PC3	1.2	-1.2	24.5	25.7	25.7	0.869	1.146	23.9	25.1	25.7	0.759	1.000	1.1	-1.1	18.6	19.7	25.7	0.931	1.200	17.8	18.9	25.7	0.776	1.000
ANT 1	LTE Band 26 PC3	1.5	-1.5	24.2	25.7	25.7	0.416	0.588	24.2	25.7	25.7	0.416	0.588	1.2	-1.2	24.5	25.7	25.7	0.561	0.740	24.5	25.7	25.7	0.561	0.740
ANT 1	LTE Band 30 PC3	1.2	-1.2	24.5	25.7	25.7	0.456	0.601	24.5	25.7	25.7	0.456	0.601	0.8	-0.8	22.1	22.9	25.7	0.998	1.200	21.3	22.1	25.7	0.832	1.000
ANT 1	LTE Band 41 PC3	1.6	-1.6	24.1	25.7	25.7	0.213	0.308	24.1	25.7	25.7	0.213	0.308	1.6	-1.6	22.3	23.9	25.7	0.830	1.200	21.5	23.1	25.7	0.692	1.000
ANT 1	LTE Band 41 PC2	1.6	-1.6	27.1	28.7	28.7	0.426	0.615	27.1	28.7	28.7	0.426	0.615	1.6	-1.6	22.3	23.9	28.7	0.830	1.200	21.5	23.1	28.7	0.692	1.000
ANT 1	LTE Band 53 PC3	1.1	-1.1	19.6	20.7	20.7	0.117	0.151	19.6	20.7	20.7	0.117	0.151	1.1	-1.1	19.6	20.7	20.7	0.446	0.574	19.6	20.7	20.7	0.446	0.574
ANT 1	LTE Band 66 PC3	1.1	-1.1	24.6	25.7	25.7	0.757	0.975	24.6	25.7	25.7	0.757	0.975	1.2	-1.2	18.4	19.6	25.7	0.910	1.200	17.6	18.8	25.7	0.759	1.000
ANT 1	LTE Band 71 PC3	1.9	-1.9	23.8	25.7	25.7	0.204	0.316	23.8	25.7	25.7	0.204	0.316	1.4	-1.4	24.3	25.7	25.7	0.536	0.740	24.3	25.7	25.7	0.536	0.740
ANT 1	FR1 n2 PC3	1.0	-1.0	24.7	25.7	25.7	0.830	1.045	24.5	25.5	25.7	0.794	1.000	1.2	-1.2	18.5	19.7	25.7	0.910	1.200	17.7	18.9	25.7	0.759	1.000
ANT 1	FR1 n5 PC3	1.2	-1.2	24.5	25.7	25.7	0.446	0.588	24.5	25.7	25.7	0.446	0.588	1.1	-1.1	24.6	25.7	25.7	0.524	0.675	24.6	25.7	25.7	0.524	0.675
ANT 1	FR1 n7 PC3	1.2	-1.2	24.5	25.7	25.7	0.644	0.850	24.5	25.7	25.7	0.644	0.850	1.5	-1.5	19.5	21.0	25.7	0.850	1.200	18.7	20.2	25.7	0.708	1.000
ANT 1	FR1 n12 PC3	1.4	-1.4	24.3	25.7	25.7	0.354	0.489	24.3	25.7	25.7	0.354	0.489	1.2	-1.2	24.5	25.7	25.7	0.659	0.869	24.5	25.7	25.7	0.659	0.869
ANT 1	FR1 n14 PC3	1.3	-1.3	24.4	25.7	25.7	0.379	0.512	24.4	25.7	25.7	0.379	0.512	1.2	-1.2	24.5	25.7	25.7	0.615	0.811	24.5	25.7	25.7	0.615	0.811
ANT 1	FR1 n25 PC3	1.0	-1.0	24.7	25.7	25.7	0.830	1.045	24.5	25.5	25.7	0.794	1.000	1.2	-1.2	18.5	19.7	25.7	0.910	1.200	17.7	18.9	25.7	0.759	1.000
ANT 1	FR1 n26 PC3	1.2	-1.2	24.5	25.7	25.7	0.489	0.644	24.5	25.7	25.7	0.489	0.644	0.9	-0.9	24.8	25.7	25.7	0.601	0.740	24.8	25.7	25.7	0.601	0.740
ANT 1	FR1 n30 PC3	1.4	-1.4	24.3	25.7	25.7	0.397	0.549	24.3	25.7	25.7	0.397	0.549	1.0	-1.0	21.9	22.9	25.7	0.953	1.200	21.1	22.1	25.7	0.794	1.000
ANT 1	FR1 n41 PC3	1.0	-1.0	24.7	25.7	25.7	0.478	0.601	24.7	25.7	25.7	0.478	0.601	1.4	-1.4	20.5	21.9	25.7	0.869	1.200	19.7	21.1	25.7	0.724	1.000
ANT 1	FR1 n41 PC2	1.0	-1.0	27.7	28.7	28.7	0.953	1.200	26.9	27.9	28.7	0.794	1.000	1.4	-1.4	20.5	21.9	28.7	0.869	1.200	19.7	21.1	28.7	0.724	1.000
ANT 1	FR1 n53 PC3	1.1	-1.1	19.6	20.7	20.7	0.257	0.331	19.6	20.7	20.7	0.257	0.331	1.6	-1.6	19.1	20.7	20.7	0.630	0.910	19.1	20.7	20.7	0.630	0.910
ANT 1	FR1 n66 PC3	1.0	-1.0	24.7	25.7	25.7	0.850	1.070	24.4	25.4	25.7	0.794	1.000	1.3	-1.3	18.3	19.6	25.7	0.890	1.200	17.5	18.8	25.7	0.741	1.000
ANT 1	FR1 n70 PC3	0.9	-0.9	24.8	25.7	25.7	0.890	1.094	24.4	25.3	25.7	0.813	1.000	1.2	-1.2	18.4	19.6	25.7	0.910	1.200	17.6	18.8	25.7	0.759	1.000
ANT 1	FR1 n71 PC3	1.8	-1.8	23.9	25.7	25.7	0.338	0.512	23.9	25.7	25.7	0.338	0.512	1.3	-1.3	24.4	25.7	25.7	0.489	0.659	24.4	25.7	25.7	0.489	0.659
ANT 1	MSS (L-Band)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ANT 2	GSM 850 GMSK 1 Slot	1.0	-1.0	31.5	32.5	32.5	0.953	1.200	30.7	31.7	32.5	0.794	1.000	0.9	-0.9	31.6	32.5	32.5	0.478	0.588	31.6	32.5	32.5	0.478	0.588
ANT 2	GSM 850 GMSK 2 Slot(s)	1.0	-1.0	28.5	29.5	31.5	0.953	1.200	27.7	28.7	31.5	0.794	1.000	0.9	-0.9	30.6	31.5	31.5	0.757	0.931	30.6	31.5	31.5	0.757	0.931
ANT 2	GSM 850 8PSK 1 Slot	1.0	-1.0	26.0	27.0	27.0	0.269	0.338	26.0	27.0	27.0	0.269	0.338	0.9	-0.9	26.1	27.0	27.0	0.135	0.166	26.1	27.0	27.0	0.135	0.166
ANT 2	GSM 850 8PSK 2 Slot(s)	1.0	-1.0	25.0	26.0	26.0	0.426	0.536	25.0	26.0	26.0	0.426	0.536	0.9	-0.9	25.1	26.0	26.0	0.213	0.263	25.1	26.0	26.0	0.213	0.263
ANT 2	GSM 1900 GMSK 1 Slot	1.4	-1.4	28.1	29.5	29.5	0.436	0.601	28.1	29.5	29.5	0.436	0.601	0.8	-0.8	28.7	29.5	29.5	0.830	0.998	28.7	29.5	29.5	0.830	0.998
ANT 2	GSM 1900 GMSK 2 Slot(s)	1.4	-1.4	25.6	27.0	28.5	0.869	1.200	24.8	26.2	28.5	0.724	1.000	0.8	-0.8	26.5	27.3	28.5	0.998	1.200	25.7	26.5	28.5	0.832	1.000
ANT 2	GSM 1900 8PSK 1 Slot	1.4	-1.4	23.1	24.5	24.5	0.138	0.190	23.1	24.5	24.5	0.138	0.190	0.8	-0.8	23.7	24.5	24.5	0.263	0.316	23.7	24.5	24.5	0.263	0.316
ANT 2	GSM 1900 8PSK 2 Slot(s)	1.4	-1.4	22.1	23.5	23.5	0.388	0.536	22.1	23.5	23.5	0.388	0.536	0.8	-0.8	22.7	23.5	23.5	0.416	0.500	22.7	23.5	23.5	0.416	0.500
ANT 2	W-CDMA B2 Rel. 99	1.4	-1.4	19.6	21.0	23.7	0.869	1.200	18.8	20.2	23.7	0.724	1.000	0.9	-0.9	20.4	21.3	23.7	0.975	1.200	19.6	20.5	23.7	0.813	1.000
ANT 2	W-CDMA B2 HSDPA	1.4	-1.4	19.6	21.0	23.7	0.869	1.200	18.8	20.2	23.7	0.724	1.000	0.9	-0.9	20.4	21.3	23.7	0.975	1.200	19.6	20.5	23.7	0.813	1.000
ANT 2	W-CDMA B2 HSUPA	1.4	-1.4	19.6	21.0	23.7	0.869	1.200	18.8	20.2	23.7	0.724	1.000	0.9	-0.9	20.4	21.3	23.7	0.975	1.200	19.6	20.5	23.7	0.813	1.000
ANT 2	W-CDMA B2 HSPA+	1.4	-1.4	19.6	21.0	23.7	0.869	1.200	18.8	20.2	23.7	0.724	1.000	0.9	-0.9	20.4	21.3	23.7	0.975	1.200	19.6	20.5	23.7	0.813	1.000
ANT 2	W-CDMA B4 Rel. 99	0.6	-0.6	18.7	19.3	25.7	1.045	1.200	17.9	18.5	25.7	0.871	1.000	1.1	-1.1	17.9	19.0	25.7	0.931	1.200	17.1	18.2	25.7	0.776	1.000
ANT 2	W-CDMA B4 HSDPA	0.6	-0.6	18.7	19.3	25.7	1.045	1.200	17.9	18.5	25.7	0.871	1.000	1.1	-1.1	17.9	19.0	25.7	0.931	1.200	17.1	18.2	25.7	0.776	1.000
ANT 2	W-CDMA B4 HSUPA	0.6	-0.6	18.7	19.3	25.7	1.045	1.200	17.9	18.5	25.7	0.871	1.000	1.1	-1.1	17.9	19.0	25.7	0.931	1.200	17.1	18.2	25.7	0.776	1.000
ANT 2	W-CDMA B4 HSPA+	0.6	-0.6	18.7	19.3	25.7	1.045	1.200	17.9	18.5	25.7	0.871	1.000	1.1	-1.1	17.9	19.0	25.7	0.931	1.200	17.1	18.2	25.7	0.776	1.000
ANT 2	W-CDMA B5 Rel. 99	1.2	-1.2	22.3	23.5	24.7	0.910	1.200	21.5	22.7	24.7	0.759	1.000	0.9	-0.9	23.8	24.7	24.7	0.675	0.830	23.8	24.7	24.7	0.675	0.830
ANT 2	W-CDMA B5 HSDPA	1.2	-1.2	22.3	23.5	24.7	0.910	1.200	21.5	22.7	24.7	0.759	1.000	0.9	-0.9	23.8	24.7	24.7	0.675	0.830	23.8	24.7	24.7	0.675	0.830
ANT 2	W-CDMA B5 HSUPA	1.2	-1.2	22.3	23.5	24.7	0.910	1.200	21.5	22.7	24.7	0.759	1.000	0.9	-0.9	23.8	24.7	24.7	0.675	0.830	23.8	24.7	24.7	0.675	0.830
ANT 2	W-CDMA B5 HSPA+	1.2	-1.2	22.3	23.5	24.7	0.910	1.200	21.5	22.7	24.7	0.759	1.000	0.9	-0.9	23.8	24.7	24.7	0.675	0.830	23.8	24.7	24.7	0.675	0.830
ANT 2	LTE Band 2 PC3	1.6	-1.6	19.4	21.0	23.7	0.830	1.200	18.6	20.2	23.7	0.692	1.000	1.1	-1.1	20.2	21.3	23.7	0.931	1.200	19.4	20.5	23.7	0.776	1.000
ANT 2	LTE Band 4 PC3	1.2	-1.2	18.8	20.0	25.7	0.910	1.200	18.0	19.2	25.7	0.759	1.000	1.3	-1.3	18.1	19.4	25.7	0.890	1.200	17.3	18.6	25.7	0.741	1.000
ANT 2	LTE Band 5 PC3	1.3	-1.3	22.2	23.5	24.7	0.890	1.200	21.4	22.7	24.7	0.741	1.000	1.2	-1.2	23.5	24.7	24.7	0.644	0.850	23.5	24.7	24.7	0.644	0.850
ANT 2	LTE Band 7 PC3	1.6	-1.6	16.2	17.8	23.2	0.830	1.200	15.4	17.0	23.2	0.692	1.000	1.5	-1.5	17.4	18.9	23.2	0.850	1.200	16.6	18.1	23.2	0.708	1.000
ANT 2	LTE Band 12 PC3	1.5	-1.5	23.2	24.7	24.7	0.757	1.070	22.9	24.4	24.7	0.708	1.000	1.7	-1.7	23.0	24.7	24.7	0.379	0.561	23.0	24.7	24.7	0.379	0.561
ANT 2	LTE Band 13 PC3	1.4	-1.4	22.3	23.7	24.7	0.869	1.200	21.5	22.9	24.7	0.724	1.000	1.0	-1.0	23.7	24.7	24.7	0.740	0.931	23.7	24.7	24.7	0.740	0.931
ANT 2	LTE Band 14 PC3	1.6	-1.6	22.1	23.7	24.7	0.830	1.200	21.3	22.9	24.7	0.692	1.000	1.2	-1.2	23.5	24.7	24.7	0.675	0.890	23.5	24.7	24.7	0.675	0.890
ANT 2	LTE Band 25 PC3	1.6	-1.6	19.4	21.0	23.7	0.830	1.200	18.6	20.2	23.7	0.692	1.000	1.1	-1.1	20.2	21.3	23.7	0.931	1.200	19.4	20.5	23.7	0.776	1.000
ANT 2	LTE Band 26 PC3	1.2	-1.2	22.3	23.5	24.7	0.910	1.200	21.5	22.7	24.7	0.759	1.000	1.2	-1.2	23.5	24.7	24.7	0.707	0.931	23.5	24.7	24.7	0.707	0.931
ANT 2	LTE Band 30 PC3	2.3	-2.3	18.1	20.4	23.2	0.707	1.200	17.3	19.6	23.2	0.589	1.000	2.0	-2.0	17.2	19.2	23.2	0.757	1.200	16.4	18.4	23.2	0.631	1.000
ANT 2	LTE Band 41 PC3	1.8	-1.8	18.5	20.3	25.7	0.793	1.200	17.7	19.5	25.7	0.661	1.000	2.1	-2.1	19.1	21.2	25.7	0.740	1.200	18.3	20.4	25.7	0.617	1.000
ANT 2	LTE Band 41 PC2	1.8	-1.8	18.5	20.3	28.7	0.793	1.200	17.7	19.5	28.7	0.661	1.000	2.1	-2.1	19.1	21.2	28.7	0.740	1.200	18.3	20.4	28.7	0.617	1.000
ANT 2	LTE Band 53 PC3	1.9	-1.9	18.4	20.3	20.7	0.775	1.200	17.6	19.5	20.7	0.646	1.000	2.2	-2.2	18.5	20.7	20.7	0.644	1.070	18.2	20.4	20.7	0.603	1.000
ANT 2	LTE Band 66 PC3	1.2	-1.2	18.8	20.0	25.7	0.910	1.200	18.0	19.2	25.7	0.759	1.000	1.3	-1.3	18.1	19.4	25.7	0.890	1.200	17.3	18.6	25.7	0.741	1.000

1-g Averaging Volume — OBD: 0 (Head)

Transmitter	Technology	Uncert. (+)	Uncert. (-)	Standalone $P_{Limit, nom}$	Standalone P_{Limit}	Standalone P_{Max}	Standalone $SAR_{Design Target}$	Standalone $SAR_{Design Limit}$	$P_{Cell On + Wi-Fi On}$ $P_{Limit, nom}$	$P_{Cell On + Wi-Fi On}$ P_{Limit}	$P_{Cell On + Wi-Fi On}$ P_{Max}	$P_{Cell On + Wi-Fi On}$ $SAR_{Design Target}$	$P_{Cell On + Wi-Fi On}$ $SAR_{Design Limit}$
ANT 2	LTE Band 71 PC3	1.7	-1.7	23.0	24.7	24.7	0.588	0.869	23.0	24.7	24.7	0.588	0.869
ANT 2	FR1 n2 PC3	1.6	-1.6	19.4	21.0	23.7	0.830	1.200	18.6	20.2	23.7	0.692	1.000
ANT 2	FR1 n5 PC3	1.4	-1.4	22.1	23.5	24.7	0.869	1.200	21.3	22.7	24.7	0.724	1.000
ANT 2	FR1 n7 PC3	1.6	-1.6	16.2	17.8	23.2	0.830	1.200	15.4	17.0	23.2	0.692	1.000
ANT 2	FR1 n12 PC3	1.8	-1.8	22.9	24.7	24.7	0.740	1.120	22.4	24.2	24.7	0.661	1.000
ANT 2	FR1 n14 PC3	1.6	-1.6	22.1	23.7	24.7	0.830	1.200	21.3	22.9	24.7	0.692	1.000
ANT 2	FR1 n25 PC3	1.6	-1.6	19.4	21.0	23.7	0.830	1.200	18.6	20.2	23.7	0.692	1.000
ANT 2	FR1 n26 PC3	1.5	-1.5	22.0	23.5	24.7	0.850	1.200	21.2	22.7	24.7	0.708	1.000
ANT 2	FR1 n30 PC3	2.3	-2.3	18.1	20.4	23.2	0.707	1.200	17.3	19.6	23.2	0.589	1.000
ANT 2	FR1 n41 PC3	1.8	-1.8	16.5	18.3	25.7	0.793	1.200	15.7	17.5	25.7	0.661	1.000
ANT 2	FR1 n41 PC2	1.8	-1.8	16.5	18.3	28.7	0.793	1.200	15.7	17.5	28.7	0.661	1.000
ANT 2	FR1 n53 PC3	1.5	-1.5	16.8	18.3	20.7	0.850	1.200	16.0	17.5	20.7	0.708	1.000
ANT 2	FR1 n66 PC3	1.6	-1.6	18.4	20.0	25.7	0.830	1.200	17.6	19.2	25.7	0.692	1.000
ANT 2	FR1 n70 PC3	1.4	-1.4	18.6	20.0	25.7	0.869	1.200	17.8	19.2	25.7	0.724	1.000
ANT 2	FR1 n71 PC3	1.7	-1.7	23.0	24.7	24.7	0.561	0.830	23.0	24.7	24.7	0.561	0.830
ANT 3	GSM 1900 GMSK 1 Slot	1.1	-1.1	30.4	31.5	31.5	0.331	0.426	30.4	31.5	31.5	0.331	0.426
ANT 3	GSM 1900 GMSK 2 Slot(s)	1.1	-1.1	29.4	30.5	30.5	0.524	0.675	29.4	30.5	30.5	0.524	0.675
ANT 3	GSM 1900 8PSK 1 Slot	1.1	-1.1	25.4	26.5	26.5	0.105	0.135	25.4	26.5	26.5	0.105	0.135
ANT 3	GSM 1900 8PSK 2 Slot(s)	1.1	-1.1	24.4	25.5	25.5	0.166	0.213	24.4	25.5	25.5	0.166	0.213
ANT 3	W-CDMA B2 Rel. 99	0.8	-0.8	23.7	24.5	25.2	0.998	1.200	22.9	23.7	25.2	0.832	1.000
ANT 3	W-CDMA B2 HSDPA	0.8	-0.8	23.7	24.5	25.2	0.998	1.200	22.9	23.7	25.2	0.832	1.000
ANT 3	W-CDMA B2 HSUPA	0.8	-0.8	23.7	24.5	25.2	0.998	1.200	22.9	23.7	25.2	0.832	1.000
ANT 3	W-CDMA B2 HSPA+	0.8	-0.8	23.7	24.5	25.2	0.998	1.200	22.9	23.7	25.2	0.832	1.000
ANT 3	W-CDMA B4 Rel. 99	0.8	-0.8	23.4	24.2	25.2	0.998	1.200	22.6	23.4	25.2	0.832	1.000
ANT 3	W-CDMA B4 HSDPA	0.8	-0.8	23.4	24.2	25.2	0.998	1.200	22.6	23.4	25.2	0.832	1.000
ANT 3	W-CDMA B4 HSUPA	0.8	-0.8	23.4	24.2	25.2	0.998	1.200	22.6	23.4	25.2	0.832	1.000
ANT 3	W-CDMA B4 HSPA+	0.8	-0.8	23.4	24.2	25.2	0.998	1.200	22.6	23.4	25.2	0.832	1.000
ANT 3	LTE Band 2 PC3	0.9	-0.9	23.6	24.5	25.2	0.975	1.200	22.8	23.7	25.2	0.813	1.000
ANT 3	LTE Band 4 PC3	1.4	-1.4	22.8	24.2	25.2	0.869	1.200	22.0	23.4	25.2	0.724	1.000
ANT 3	LTE Band 7 PC3	1.3	-1.3	21.8	23.1	25.2	0.890	1.200	21.0	22.3	25.2	0.741	1.000
ANT 3	LTE Band 25 PC3	0.9	-0.9	23.6	24.5	25.2	0.975	1.200	22.8	23.7	25.2	0.813	1.000
ANT 3	LTE Band 30 PC3	1.1	-1.1	22.9	24.0	25.0	0.931	1.200	22.1	23.2	25.0	0.776	1.000
ANT 3	LTE Band 41 PC3	2.0	-2.0	23.7	25.7	25.7	0.426	0.675	23.7	25.7	25.7	0.426	0.675
ANT 3	LTE Band 41 PC2	2.0	-2.0	25.3	27.3	28.0	0.615	0.975	25.3	27.3	28.0	0.615	0.975
ANT 3	LTE Band 66 PC3	1.4	-1.4	22.8	24.2	25.2	0.869	1.200	22.0	23.4	25.2	0.724	1.000
ANT 3	FR1 n2 PC3	1.1	-1.1	23.4	24.5	25.2	0.931	1.200	22.6	23.7	25.2	0.776	1.000
ANT 3	FR1 n7 PC3	1.5	-1.5	21.6	23.1	25.2	0.850	1.200	20.8	22.3	25.2	0.708	1.000
ANT 3	FR1 n25 PC3	1.1	-1.1	23.4	24.5	25.2	0.931	1.200	22.6	23.7	25.2	0.776	1.000
ANT 3	FR1 n30 PC3	1.2	-1.2	22.8	24.0	25.0	0.910	1.200	22.0	23.2	25.0	0.759	1.000
ANT 3	FR1 n41 PC3	1.8	-1.8	23.5	25.3	25.7	0.793	1.200	22.7	24.5	25.7	0.661	1.000
ANT 3	FR1 n41 PC2	1.8	-1.8	23.5	25.3	28.0	0.793	1.200	22.7	24.5	28.0	0.661	1.000
ANT 3	FR1 n66 PC3	1.4	-1.4	22.8	24.2	25.2	0.869	1.200	22.0	23.4	25.2	0.724	1.000
ANT 3	FR1 n70 PC3	1.0	-1.0	23.2	24.2	25.2	0.953	1.200	22.4	23.4	25.2	0.794	1.000
ANT 4	GSM 1900 GMSK 1 Slot	1.0	-1.0	27.0	28.0	29.0	0.793	0.998	27.0	28.0	29.0	0.793	0.998
ANT 4	GSM 1900 GMSK 2 Slot(s)	1.0	-1.0	24.8	25.8	28.0	0.953	1.200	24.0	25.0	28.0	0.794	1.000
ANT 4	GSM 1900 8PSK 1 Slot	1.0	-1.0	23.0	24.0	24.0	0.316	0.397	23.0	24.0	24.0	0.316	0.397
ANT 4	GSM 1900 8PSK 2 Slot(s)	1.0	-1.0	22.0	23.0	23.0	0.500	0.630	22.0	23.0	23.0	0.500	0.630
ANT 4	W-CDMA B2 Rel. 99	0.9	-0.9	19.1	20.0	23.2	0.975	1.200	18.3	19.2	23.2	0.813	1.000
ANT 4	W-CDMA B2 HSDPA	0.9	-0.9	19.1	20.0	23.2	0.975	1.200	18.3	19.2	23.2	0.813	1.000
ANT 4	W-CDMA B2 HSUPA	0.9	-0.9	19.1	20.0	23.2	0.975	1.200	18.3	19.2	23.2	0.813	1.000
ANT 4	W-CDMA B2 HSPA+	0.9	-0.9	19.1	20.0	23.2	0.975	1.200	18.3	19.2	23.2	0.813	1.000
ANT 4	W-CDMA B4 Rel. 99	0.7	-0.7	19.1	19.8	25.7	1.021	1.200	18.3	19.0	25.7	0.851	1.000
ANT 4	W-CDMA B4 HSDPA	0.7	-0.7	19.1	19.8	25.7	1.021	1.200	18.3	19.0	25.7	0.851	1.000
ANT 4	W-CDMA B4 HSUPA	0.7	-0.7	19.1	19.8	25.7	1.021	1.200	18.3	19.0	25.7	0.851	1.000
ANT 4	W-CDMA B4 HSPA+	0.7	-0.7	19.1	19.8	25.7	1.021	1.200	18.3	19.0	25.7	0.851	1.000
ANT 4	LTE Band 2 PC3	1.0	-1.0	18.8	19.8	23.2	0.953	1.200	18.0	19.0	23.2	0.794	1.000
ANT 4	LTE Band 4 PC3	1.3	-1.3	18.7	20.0	24.2	0.890	1.200	17.9	19.2	24.2	0.741	1.000
ANT 4	LTE Band 7 PC3	1.4	-1.4	20.1	21.5	23.2	0.869	1.200	19.3	20.7	23.2	0.724	1.000
ANT 4	LTE Band 25 PC3	1.0	-1.0	18.8	19.8	23.2	0.953	1.200	18.0	19.0	23.2	0.794	1.000
ANT 4	LTE Band 30 PC3	1.2	-1.2	19.2	20.4	23.2	0.910	1.200	18.4	19.6	23.2	0.759	1.000
ANT 4	LTE Band 41 PC3	1.7	-1.7	22.7	24.4	25.7	0.811	1.200	21.9	23.6	25.7	0.676	1.000
ANT 4	LTE Band 41 PC2	1.7	-1.7	22.7	24.4	28.0	0.811	1.200	21.9	23.6	28.0	0.676	1.000
ANT 4	LTE Band 48 PC3	1.4	-1.4	19.1	20.5	25.0	0.869	1.200	18.3	19.7	25.0	0.724	1.000
ANT 4	LTE Band 66 PC3	1.3	-1.3	18.7	20.0	24.2	0.890	1.200	17.9	19.2	24.2	0.741	1.000
ANT 4	FR1 n2 PC3	1.2	-1.2	18.4	19.6	23.2	0.910	1.200	17.6	18.8	23.2	0.759	1.000
ANT 4	FR1 n7 PC3	1.3	-1.3	20.2	21.5	23.2	0.890	1.200	19.4	20.7	23.2	0.741	1.000
ANT 4	FR1 n25 PC3	1.2	-1.2	18.4	19.6	23.2	0.910	1.200	17.6	18.8	23.2	0.759	1.000
ANT 4	FR1 n30 PC3	1.1	-1.1	19.3	20.4	23.2	0.931	1.200	18.5	19.6	23.2	0.776	1.000
ANT 4	FR1 n41 PC3	1.5	-1.5	20.9	22.4	25.7	0.850	1.200	20.1	21.6	25.7	0.708	1.000
ANT 4	FR1 n41 PC2	1.5	-1.5	20.9	22.4	28.0	0.850	1.200	20.1	21.6	28.0	0.708	1.000
ANT 4	FR1 n48 PC3	1.4	-1.4	17.1	18.5	25.0	0.869	1.200	16.3	17.7	25.0	0.724	1.000
ANT 4	FR1 n66 PC3	1.3	-1.3	18.7	20.0	24.2	0.890	1.200	17.9	19.2	24.2	0.741	1.000
ANT 4	FR1 n70 PC3	1.0	-1.0	19.0	20.0	24.2	0.953	1.200	18.2	19.2	24.2	0.794	1.000
ANT 4	FR1 n77 PC3	1.1	-1.1	17.8	18.9	25.0	0.931	1.200	17.0	18.1	25.0	0.776	1.000
ANT 4	FR1 n77 PC2	1.1	-1.1	17.8	18.9	25.0	0.931	1.200	17.0	18.1	25.0	0.776	1.000
ANT 4	MSS (L-Band)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25.8	N/A	N/A
ANT 7	LTE Band 48 PC3	2.6	-2.6	23.0	25.6	25.6	0.323	0.588	23.0	25.6	25.6	0.323	0.588
ANT 7	FR1 n48 PC3	2.6	-2.6	22.7	25.3	25.6	0.659	1.200	21.9	24.5	25.6	0.550	1.000
ANT 7	FR1 n77 PC3	2.2	-2.2	21.6	23.8	25.7	0.723	1.200	20.8	23.0	25.7	0.603	1.000
ANT 7	FR1 n77 PC2	2.2	-2.2	21.6	23.8	28.7	0.723	1.200	20.8	23.0	28.7	0.603	1.000
ANT 8	LTE Band 48 PC3	2.7	-2.7	23.0	25.7	25.7	0.426	0.793	23.0	25.7	25.7	0.426	0.793
ANT 8	FR1 n48 PC3	2.4	-2.4	22.1	24.5	25.7	0.691	1.200	21.3	23.7	25.7	0.575	1.000
ANT 8	FR1 n77 PC3	2.0	-2.0	21.6	23.6	25.7	0.757	1.200	20.8	22.8	25.7	0.631	1.000
ANT 8	FR1 n77 PC2	2.0	-2.0	21.6	23.6	26.5	0.757	1.200	20.8	22.8	26.5	0.631	1.000
ANT 9	LTE Band 48 PC3	0.9	-0.9	22.8	23.7	23.7	0.975	1.200	22.5	23.4	23.7	0.813	1.000
ANT 9	FR1 n48 PC3	1.2	-1.2	21.0	22.2	23.7	0.910	1.200	20.2	21.4	23.7	0.759	1.000
ANT 9	FR1 n77 PC3	1.2	-1.2	20.4	21.6	25.7	0.910	1.200	19.6	20.8	25.7	0.759	1.000
ANT 9	FR1 n77 PC2	1.2	-1.2	20.4	21.6	28.7	0.910	1.200	19.6	20.8	28.7	0.759	1.000

1-g Averaging Volume — OBD: 1 (Body)

Transmitter	Technology	Uncert. (+)	Uncert. (-)	Standalone $P_{Limit, nom}$	Standalone P_{Limit}	Standalone P_{Max}	Standalone $SAR_{Design Target}$	Standalone $SAR_{Design Limit}$	$P_{Cell On + Wi-Fi On}$ $P_{Limit, nom}$	$P_{Cell On + Wi-Fi On}$ P_{Limit}	$P_{Cell On + Wi-Fi On}$ P_{Max}	$P_{Cell On + Wi-Fi On}$ $SAR_{Design Target}$	$P_{Cell On + Wi-Fi On}$ $SAR_{Design Limit}$
ANT 2	LTE Band 71 PC3	1.2	-1.2	23.5	24.7	24.7	0.354	0.467	23.5	24.7	24.7	0.354	0.467
ANT 2	FR1 n2 PC3	1.1	-1.1	20.2	21.3	23.7	0.931	1.200	19.4	20.5	23.7	0.776	1.000
ANT 2	FR1 n5 PC3	1.2	-1.2	23.5	24.7	24.7	0.588	0.775	23.5	24.7	24.7	0.588	0.775
ANT 2	FR1 n7 PC3	1.4	-1.4	17.5	18.9	23.2	0.869	1.200	16.7	18.1	23.2	0.724	1.000
ANT 2	FR1 n12 PC3	1.8	-1.8	22.9	24.7	24.7	0.388	0.588	22.9	24.7	24.7	0.388	0.588
ANT 2	FR1 n14 PC3	1.2	-1.2	23.5	24.7	24.7	0.675	0.890	23.5	24.7	24.7	0.675	0.890
ANT 2	FR1 n25 PC3	1.1	-1.1	20.2	21.3	23.7	0.931	1.200	19.4	20.5	23.7	0.776	1.000
ANT 2	FR1 n26 PC3	1.2	-1.2	23.5	24.7	24.7	0.588	0.775	23.5	24.7	24.7	0.588	0.775
ANT 2	FR1 n30 PC3	2.0	-2.0	17.2	19.2	23.2	0.757	1.200	16.4	18.4	23.2	0.631	1.000
ANT 2	FR1 n41 PC3	1.7	-1.7	17.5	19.2	25.7	0.811	1.200	16.7	18.4	25.7	0.676	1.000
ANT 2	FR1 n41 PC2	1.7	-1.7	17.5	19.2	28.7	0.811	1.200	16.7	18.4	28.7	0.676	1.000
ANT 2	FR1 n53 PC3	1.7	-1.7	17.5	19.2	20.7	0.811	1.200	16.7	18.4	20.7	0.676	1.000
ANT 2	FR1 n66 PC3	1.6	-1.6	17.8	19.4	25.7	0.830	1.200	17.0	18.6	25.7	0.692	1.000
ANT 2	FR1 n70 PC3	1.6	-1.6	17.8	19.4	25.7	0.830	1.200	17.0	18.6	25.7	0.692	1.000
ANT 2	FR1 n71 PC3	1.2	-1.2	23.5	24.7	24.7	0.346	0.456	23.5	24.7	24.7	0.346	0.456
ANT 3	GSM 1900 GMSK 1 Slot	0.9	-0.9	29.9	30.8	31.5	0.975	1.200	29.1	30.0	31.5	0.813	1.000
ANT 3	GSM 1900 GMSK 2 Slot(s)	0.9	-0.9	26.9	27.8	30.5	0.975	1.200	26.1	27.0	30.5	0.813	1.000
ANT 3	GSM 1900 8PSK 1 Slot	0.9	-0.9	25.6	26.5	26.5	0.362	0.446	25.6	26.5	26.5	0.362	0.446
ANT 3	GSM 1900 8PSK 2 Slot(s)	0.9	-0.9	24.6	25.5	25.5	0.574	0.707	24.6	25.5	25.5	0.574	0.707
ANT 3	W-CDMA B2 Rel. 99	0.7	-0.7	21.1	21.8	25.2	1.021	1.200	20.3	21.0	25.2	0.851	1.000
ANT 3	W-CDMA B2 HSDPA	0.7	-0.7	21.1	21.8	25.2	1.021	1.200	20.3	21.0	25.2	0.851	1.000
ANT 3	W-CDMA B2 HSUPA	0.7	-0.7	21.1	21.8	25.2	1.021	1.200	20.3	21.0	25.2	0.851	1.000
ANT 3	W-CDMA B2 HSPA+	0.7	-0.7	21.1	21.8	25.2	1.021	1.200	20.3	21.0	25.2	0.851	1.000
ANT 3	W-CDMA B4 Rel. 99	1.0	-1.0	21.3	22.3	25.2	0.953	1.200	20.5	21.5	25.2	0.794	1.000
ANT 3	W-CDMA B4 HSDPA	1.0	-1.0	21.3	22.3	25.2	0.953	1.200	20.5	21.5	25.2	0.794	1.000
ANT 3	W-CDMA B4 HSUPA	1.0	-1.0	21.3	22.3	25.2	0.953	1.200	20.5	21.5	25.2	0.794	1.000
ANT 3	W-CDMA B4 HSPA+	1.0	-1.0	21.3	22.3	25.2	0.953	1.200	20.5	21.5	25.2	0.794	1.000
ANT 3	LTE Band 2 PC3	0.9	-0.9	20.9	21.8	25.2	0.975	1.200	20.1	21.0	25.2	0.813	1.000
ANT 3	LTE Band 4 PC3	1.4	-1.4	20.7	22.1	25.2	0.869	1.200	19.9	21.3	25.2	0.724	1.000
ANT 3	LTE Band 7 PC3	1.5	-1.5	19.6	21.1	25.2	0.850	1.200	18.8	20.3	25.2	0.708	1.000
ANT 3	LTE Band 25 PC3	0.9	-0.9	20.9	21.8	25.2	0.975	1.200	20.1	21.0	25.2	0.813	1.000
ANT 3	LTE Band 30 PC3	1.1	-1.1	21.2	22.3	25.0	0.931	1.200	20.4	21.5	25.0	0.776	1.000
ANT 3	LTE Band 41 PC3	1.2	-1.2	22.2	23.4	25.7	0.910	1.200	21.4	22.6	25.7	0.759	1.000
ANT 3	LTE Band 41 PC2	1.2	-1.2	22.2	23.4	28.0	0.910	1.200	21.4	22.6	28.0	0.759	1.000
ANT 3	LTE Band 66 PC3	1.4	-1.4	20.7	22.1	25.2	0.869	1.200	19.9	21.3	25.2	0.724	1.000
ANT 3	FR1 n2 PC3	1.0	-1.0	20.8	21.8	25.2	0.953	1.200	20.0	21.0	25.2	0.794	1.000
ANT 3	FR1 n7 PC3	1.8	-1.8	19.3	21.1	25.2	0.793	1.200	18.5	20.3	25.2	0.661	1.000
ANT 3	FR1 n25 PC3	1.0	-1.0	20.8	21.8	25.2	0.953	1.200	20.0	21.0	25.2	0.794	1.000
ANT 3	FR1 n30 PC3	1.2	-1.2	21.1	22.3	25.0	0.910	1.200	20.3	21.5	25.0	0.759	1.000
ANT 3	FR1 n41 PC3	1.1	-1.1	20.3	21.4	25.7	0.931	1.200	19.5	20.6	25.7	0.776	1.000
ANT 3	FR1 n41 PC2	1.1	-1.1	20.3	21.4	28.0	0.931	1.200	19.5	20.6	28.0	0.776	1.000
ANT 3	FR1 n66 PC3	1.4	-1.4	20.7	22.1	25.2	0.869	1.200	19.9	21.3	25.2	0.724	1.000
ANT 3	FR1 n70 PC3	1.2	-1.2	20.9	22.1	25.2	0.910	1.200	20.1	21.3	25.2	0.759	1.000
ANT 4	GSM 1900 GMSK 1 Slot	1.0	-1.0	27.0	28.0	29.0	0.512	0.644	27.0	28.0	29.0	0.512	0.644
ANT 4	GSM 1900 GMSK 2 Slot(s)	1.0	-1.0	26.7	27.7	28.0	0.953	1.200	25.9	26.9	28.0	0.794	1.000
ANT 4	GSM 1900 8PSK 1 Slot	1.0	-1.0	23.0	24.0	24.0	0.204	0.257	23.0	24.0	24.0	0.204	0.257
ANT 4	GSM 1900 8PSK 2 Slot(s)	1.0	-1.0	22.0	23.0	23.0	0.323	0.407	22.0	23.0	23.0	0.323	0.407
ANT 4	W-CDMA B2 Rel. 99	0.7	-0.7	20.9	21.6	23.2	1.021	1.200	20.1	20.8	23.2	0.851	1.000
ANT 4	W-CDMA B2 HSDPA	0.7	-0.7	20.9	21.6	23.2	1.021	1.200	20.1	20.8	23.2	0.851	1.000
ANT 4	W-CDMA B2 HSUPA	0.7	-0.7	20.9	21.6	23.2	1.021	1.200	20.1	20.8	23.2	0.851	1.000
ANT 4	W-CDMA B2 HSPA+	0.7	-0.7	20.9	21.6	23.2	1.021	1.200	20.1	20.8	23.2	0.851	1.000
ANT 4	W-CDMA B4 Rel. 99	0.7	-0.7	21.0	21.7	25.7	1.021	1.200	20.2	20.9	25.7	0.851	1.000
ANT 4	W-CDMA B4 HSDPA	0.7	-0.7	21.0	21.7	25.7	1.021	1.200	20.2	20.9	25.7	0.851	1.000
ANT 4	W-CDMA B4 HSUPA	0.7	-0.7	21.0	21.7	25.7	1.021	1.200	20.2	20.9	25.7	0.851	1.000
ANT 4	W-CDMA B4 HSPA+	0.7	-0.7	21.0	21.7	25.7	1.021	1.200	20.2	20.9	25.7	0.851	1.000
ANT 4	LTE Band 2 PC3	1.1	-1.1	20.6	21.7	23.2	0.931	1.200	19.8	20.9	23.2	0.776	1.000
ANT 4	LTE Band 4 PC3	1.1	-1.1	20.7	21.8	24.2	0.931	1.200	19.9	21.0	24.2	0.776	1.000
ANT 4	LTE Band 7 PC3	1.5	-1.5	19.7	21.2	23.2	0.850	1.200	18.9	20.4	23.2	0.708	1.000
ANT 4	LTE Band 25 PC3	1.1	-1.1	20.6	21.7	23.2	0.931	1.200	19.8	20.9	23.2	0.776	1.000
ANT 4	LTE Band 30 PC3	1.2	-1.2	18.7	19.9	23.2	0.910	1.200	17.9	19.1	23.2	0.759	1.000
ANT 4	LTE Band 41 PC3	1.9	-1.9	22.8	24.7	25.7	0.775	1.200	22.0	23.9	25.7	0.646	1.000
ANT 4	LTE Band 41 PC2	1.9	-1.9	22.8	24.7	28.0	0.775	1.200	22.0	23.9	28.0	0.646	1.000
ANT 4	LTE Band 48 PC3	1.6	-1.6	20.8	22.4	25.0	0.830	1.200	20.0	21.6	25.0	0.692	1.000
ANT 4	LTE Band 66 PC3	1.1	-1.1	20.7	21.8	24.2	0.931	1.200	19.9	21.0	24.2	0.776	1.000
ANT 4	FR1 n2 PC3	1.1	-1.1	20.6	21.7	23.2	0.931	1.200	19.8	20.9	23.2	0.776	1.000
ANT 4	FR1 n7 PC3	1.3	-1.3	19.9	21.2	23.2	0.890	1.200	19.1	20.4	23.2	0.741	1.000
ANT 4	FR1 n25 PC3	1.1	-1.1	20.6	21.7	23.2	0.931	1.200	19.8	20.9	23.2	0.776	1.000
ANT 4	FR1 n30 PC3	1.1	-1.1	18.8	19.9	23.2	0.931	1.200	18.0	19.1	23.2	0.776	1.000
ANT 4	FR1 n41 PC3	1.7	-1.7	21.0	22.7	25.7	0.811	1.200	20.2	21.9	25.7	0.676	1.000
ANT 4	FR1 n41 PC2	1.7	-1.7	21.0	22.7	28.0	0.811	1.200	20.2	21.9	28.0	0.676	1.000
ANT 4	FR1 n48 PC3	1.4	-1.4	19.0	20.4	25.0	0.869	1.200	18.2	19.6	25.0	0.724	1.000
ANT 4	FR1 n66 PC3	1.2	-1.2	20.6	21.8	24.2	0.910	1.200	19.8	21.0	24.2	0.759	1.000
ANT 4	FR1 n70 PC3	0.8	-0.8	21.0	21.8	24.2	0.998	1.200	20.2	21.0	24.2	0.832	1.000
ANT 4	FR1 n77 PC3	1.2	-1.2	19.1	20.3	25.0	0.910	1.200	18.3	19.5	25.0	0.759	1.000
ANT 4	FR1 n77 PC2	1.2	-1.2	19.1	20.3	25.0	0.910	1.200	18.3	19.5	25.0	0.759	1.000
ANT 4	MSS (L-Band)	0.6	-0.6	22.8	23.4	25.8	1.045	1.200	22.0	22.6	25.8	0.871	1.000
ANT 7	LTE Band 48 PC3	1.6	-1.6	22.4	24.0	25.6	0.830	1.200	21.6	23.2	25.6	0.692	1.000
ANT 7	FR1 n48 PC3	1.8	-1.8	20.2	22.0	25.6	0.793	1.200	19.4	21.2	25.6	0.661	1.000
ANT 7	FR1 n77 PC3	1.4	-1.4	17.6	19.0	25.7	0.869	1.200	16.8	18.2	25.7	0.724	1.000
ANT 7	FR1 n77 PC2	1.4	-1.4	17.6	19.0	28.7	0.869	1.200	16.8	18.2	28.7	0.724	1.000
ANT 8	LTE Band 48 PC3	1.8	-1.8	20.5	22.3	25.7	0.793	1.200	19.7	21.5	25.7	0.661	1.000
ANT 8	FR1 n48 PC3	2.0	-2.0	18.3	20.3	25.7	0.757	1.200	17.5	19.5	25.7	0.631	1.000
ANT 8	FR1 n77 PC3	1.5	-1.5	18.6	20.1	25.7	0.850	1.200	17.8	19.3	25.7	0.708	1.000
ANT 8	FR1 n77 PC2	1.5	-1.5	18.6	20.1	26.5	0.850	1.200	17.8	19.3	26.5	0.708	1.000
ANT 9	LTE Band 48 PC3	1.2	-1.2	20.3	21.5	23.7	0.910	1.200	19.5	20.7	23.7	0.759	1.000
ANT 9	FR1 n48 PC3	1.0	-1.0	18.5	19.5	23.7	0.953	1.200	17.7	18.7	23.7	0.794	1.000
ANT 9	FR1 n77 PC3	1.2	-1.2	17.7	18.9	25.7	0.910	1.200	16.9	18.1	25.7	0.759	1.000
ANT 9	FR1 n77 PC2	1.2	-1.2	17.7	18.9	28.7	0.910	1.200	16.9	18.1	28.7	0.759	1.000

4. Linearity Validation

To validate linearity, point SAR measurements are performed with TAS operation turned off. Per antenna, the mode with the largest difference between P_{Limit} and P_{Max} will be selected for measurement (highlighted in green within the characterization tables in §3). When possible, different frequency bands will be assessed per antenna.

Point SAR measurements are performed in 2 dB steps from P_{Max} to P_{Limit} minus 4 dB.

Linearity is sufficiently validated when the SAR versus requested power is within the defined device uncertainties.

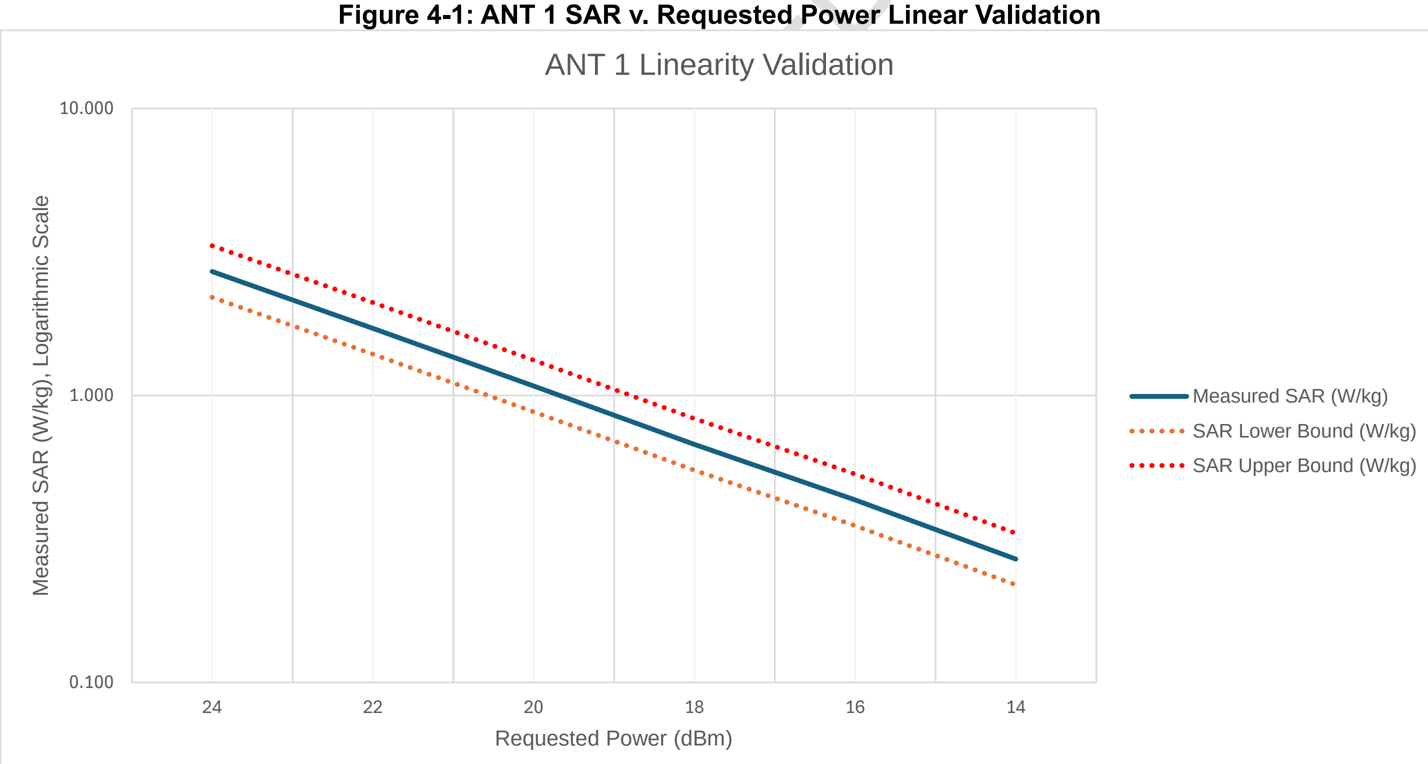
4.1. ANT 1

The table and figure below demonstrate that the linearity is sufficiently validated as the SAR versus requested power is within the expected uncertainties.

Table 4-1: ANT 1 SAR v. Requested Power

Transmitter	Technology	Uncert. (+)	Uncert. (-)	P_{Max}	P_{Limit}	Req. Power (dBm)	Req. Power (mW)	Meas. SAR (W/kg)	SAR Lower Bound	SAR Upper Bound
ANT 1	W-CDMA B4 Rel. 99	0.9	-0.9	25.7	19.6	24	251.2	2.707	2.200	3.330
						22	158.5	1.715	1.394	2.110
						20	100.0	1.079	0.877	1.327
						18	63.1	0.676	0.549	0.832
						16	39.8	0.433	0.352	0.533
						14	25.1	0.269	0.219	0.331

Figure 4-1: ANT 1 SAR v. Requested Power Linear Validation



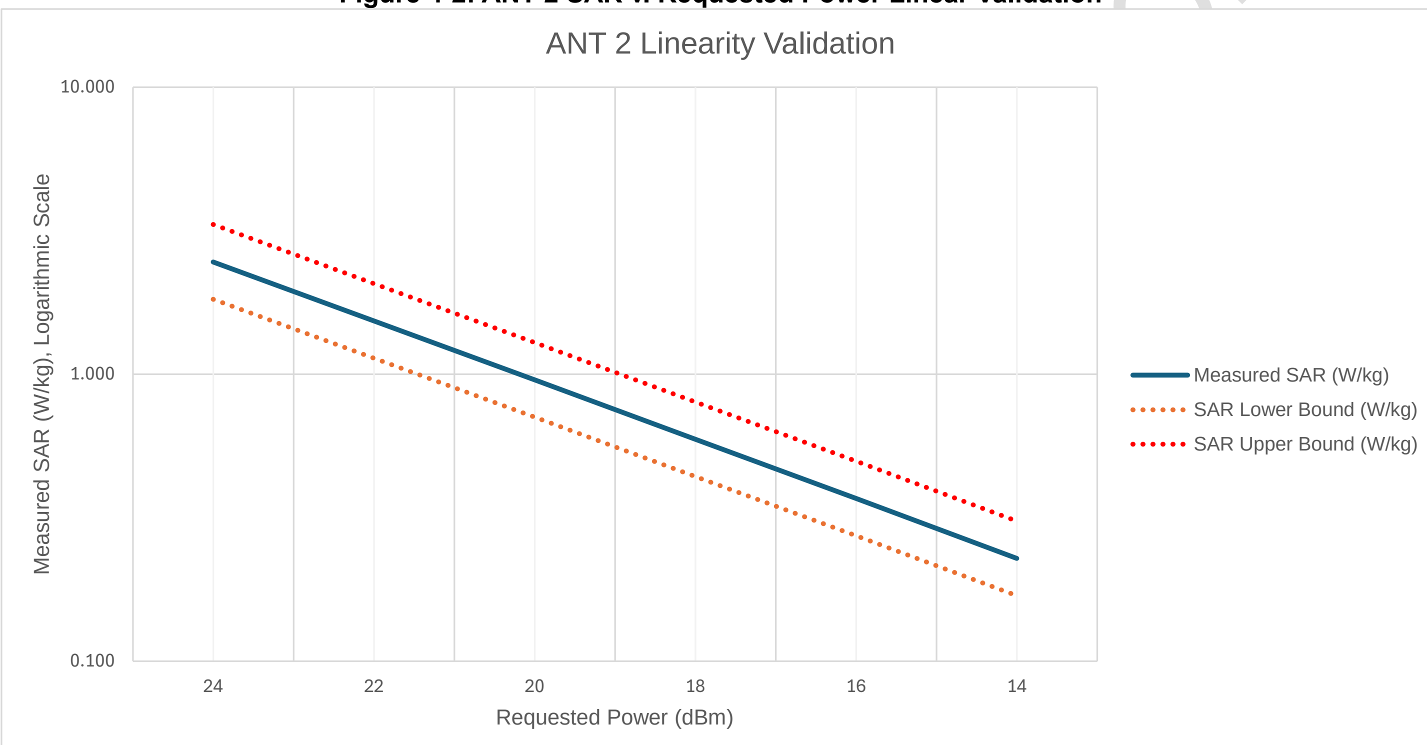
4.2. ANT 2

The table and figure below demonstrate that the linearity is sufficiently validated as the SAR versus requested power is within the expected uncertainties.

Table 4-2: ANT 2 SAR v. Requested Power

Transmitter	Technology	Uncert. (+)	Uncert. (-)	P_{Max}	P_{Limit}	Req. Power (dBm)	Req. Power (mW)	Meas. SAR (W/kg)	SAR Lower Bound	SAR Upper Bound
ANT 2	LTE Band 66 PC3	1.3	-1.3	25.7	19.4	24	251.2	2.464	1.827	3.324
						22	158.5	1.535	1.138	2.071
						20	100.0	0.956	0.709	1.290
						18	63.1	0.593	0.440	0.800
						16	39.8	0.369	0.274	0.498
						14	25.1	0.228	0.169	0.308

Figure 4-2: ANT 2 SAR v. Requested Power Linear Validation



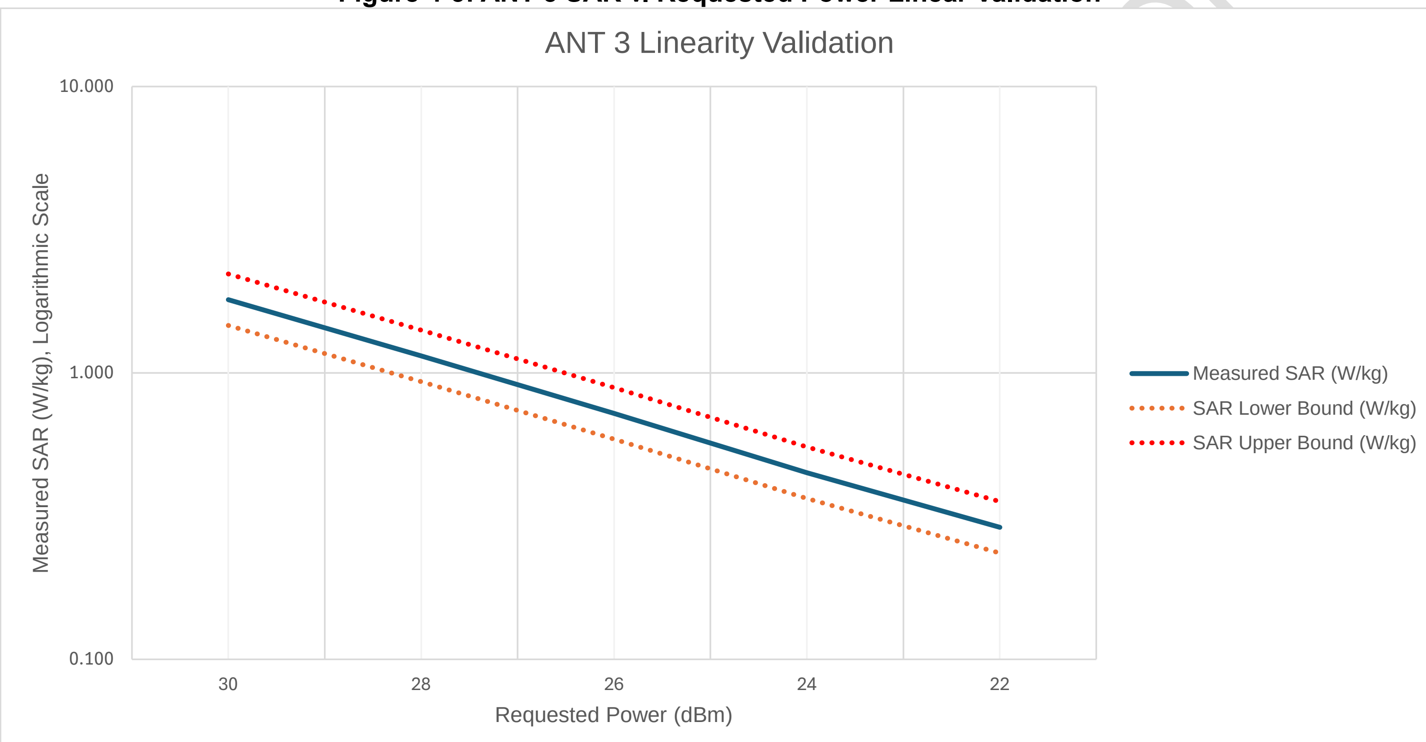
4.3. ANT 3

The table and figure below demonstrate that the linearity is sufficiently validated as the SAR versus requested power is within the expected uncertainties.

Table 4-3: ANT 3 SAR v. Requested Power

Transmitter	Technology	Uncert. (+)	Uncert. (-)	P_{Max}	P_{Limit}	Req. Power (dBm)	Req. Power (mW)	Meas. SAR (W/kg)	SAR Lower Bound	SAR Upper Bound
ANT 3	GSM 1900 GMSK 2 Slot(s)	0.9	-0.9	30.5	27.8	30	1000.0	1.803	1.466	2.218
						28	631.0	1.147	0.932	1.411
						26	398.1	0.722	0.587	0.888
						24	251.2	0.448	0.364	0.551
						22	158.5	0.289	0.235	0.356

Figure 4-3: ANT 3 SAR v. Requested Power Linear Validation



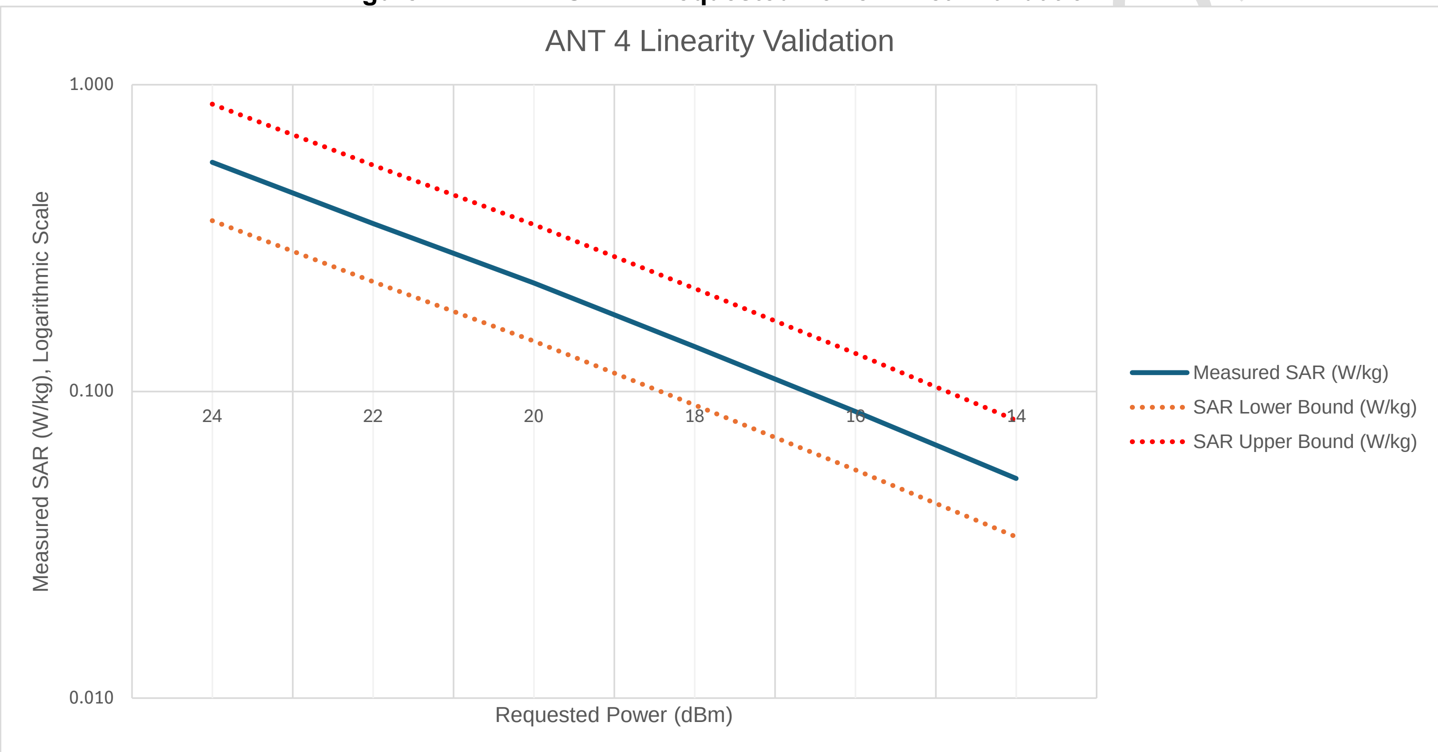
4.4. ANT 4

The table and figure below demonstrate that the linearity is sufficiently validated as the SAR versus requested power is within the expected uncertainties.

Table 4-4: ANT 4 SAR v. Requested Power

Transmitter	Technology	Uncert. (+)	Uncert. (-)	P_{Max}	P_{Limit}	Req. Power (dBm)	Req. Power (mW)	Meas. SAR (W/kg)	SAR Lower Bound	SAR Upper Bound
ANT 4	LTE Band 41 PC3	1.9	-1.9	25.7	24.7	24	251.2	0.559	0.361	0.866
						22	158.5	0.353	0.228	0.547
						20	100.0	0.226	0.146	0.350
						18	63.1	0.140	0.090	0.217
						16	39.8	0.086	0.056	0.133
						14	25.1	0.052	0.034	0.081

Figure 4-4: ANT 4 SAR v. Requested Power Linear Validation



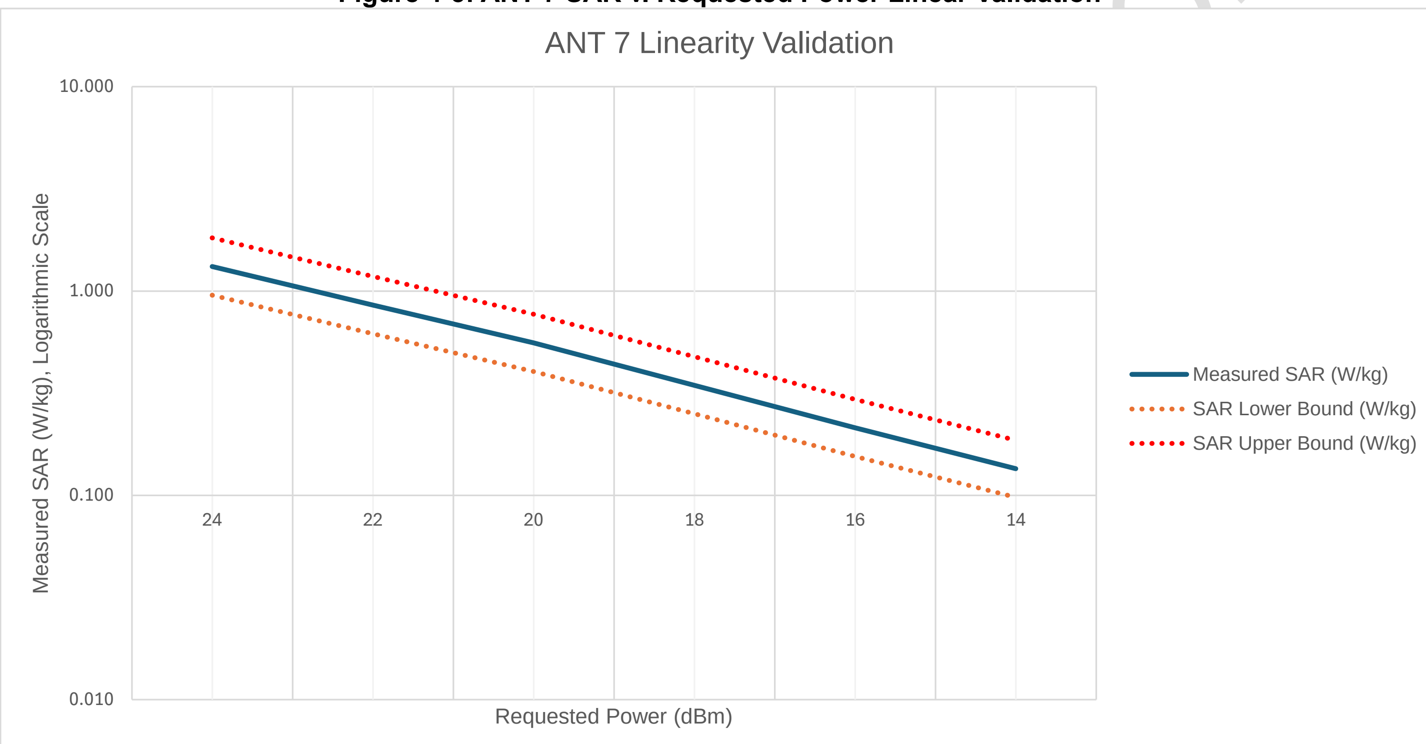
4.5. ANT 7

The table and figure below demonstrate that the linearity is sufficiently validated as the SAR versus requested power is within the expected uncertainties.

Table 4-5: ANT 7 SAR v. Requested Power

Transmitter	Technology	Uncert. (+)	Uncert. (-)	P_{Max}	P_{Limit}	Req. Power (dBm)	Req. Power (mW)	Meas. SAR (W/kg)	SAR Lower Bound	SAR Upper Bound
ANT 7	FR1 n77 PC3	1.4	-1.4	25.7	19.0	24	251.2	1.318	0.955	1.820
						22	158.5	0.853	0.618	1.177
						20	100.0	0.558	0.404	0.770
						18	63.1	0.346	0.251	0.477
						16	39.8	0.214	0.155	0.295
						14	25.1	0.135	0.098	0.186

Figure 4-5: ANT 7 SAR v. Requested Power Linear Validation



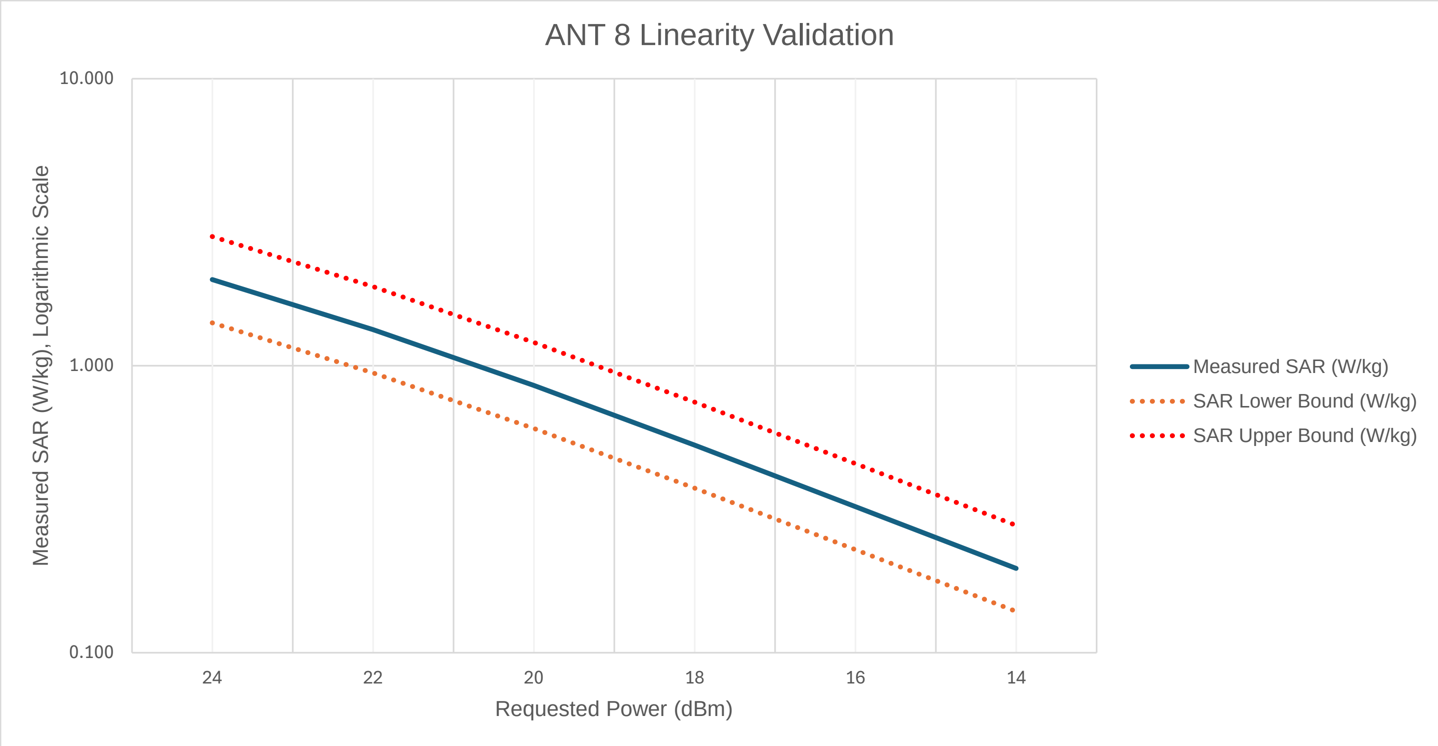
4.6. ANT 8

The table and figure below demonstrate that the linearity is sufficiently validated as the SAR versus requested power is within the expected uncertainties.

Table 4-6: ANT 8 SAR v. Requested Power

Transmitter	Technology	Uncert. (+)	Uncert. (-)	P_{Max}	P_{Limit}	Req. Power (dBm)	Req. Power (mW)	Meas. SAR (W/kg)	SAR Lower Bound	SAR Upper Bound
ANT 8	FR1 n77 PC3	1.5	-1.5	25.7	20.1	24	251.2	1.995	1.412	2.818
						22	158.5	1.335	0.945	1.886
						20	100.0	0.853	0.604	1.206
						18	63.1	0.529	0.375	0.748
						16	39.8	0.323	0.229	0.456
						14	25.1	0.197	0.139	0.278

Figure 4-6: ANT 8 SAR v. Requested Power Linear Validation



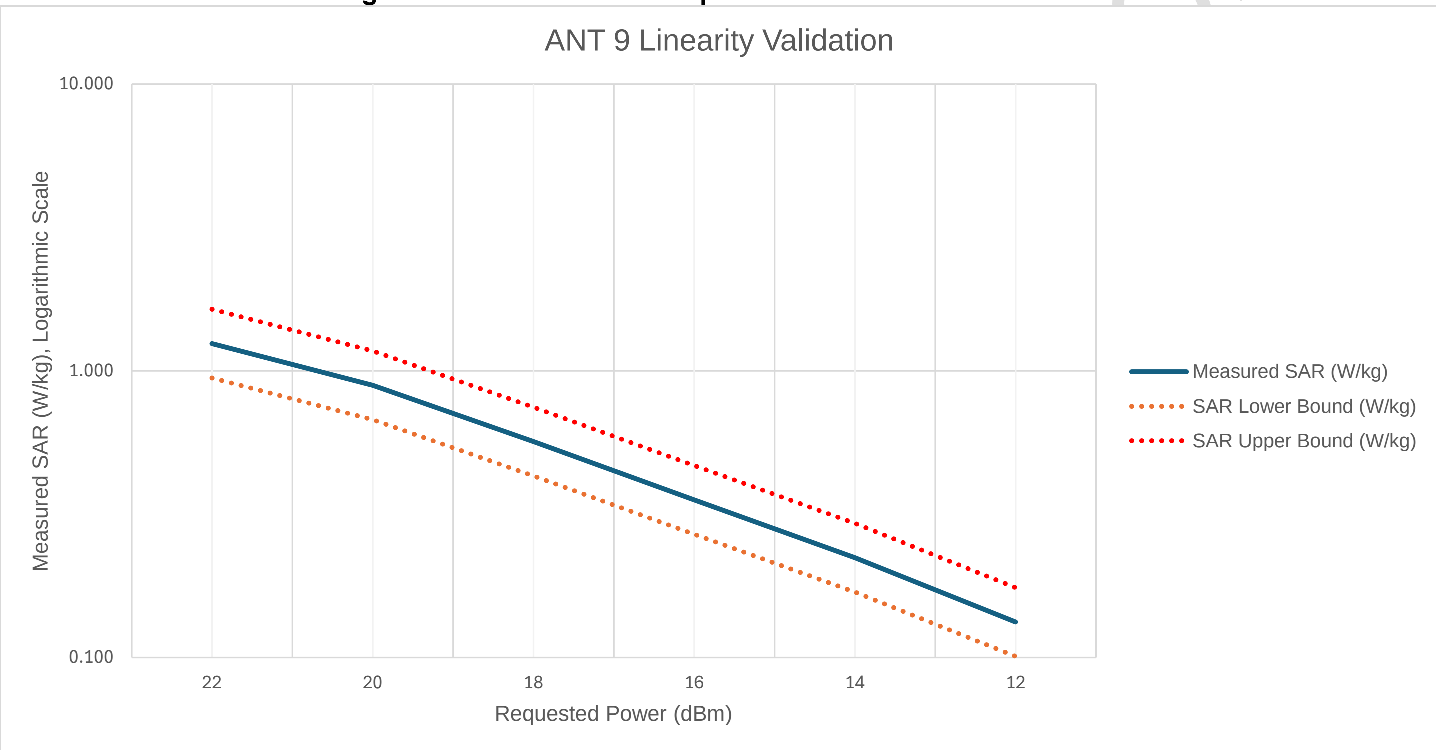
4.7. ANT 9

The table and figure below demonstrate that the linearity is sufficiently validated as the SAR versus requested power is within the expected uncertainties.

Table 4-7: ANT 9 SAR v. Requested Power

Transmitter	Technology	Uncert. (+)	Uncert. (-)	P_{Max}	P_{Limit}	Req. Power (dBm)	Req. Power (mW)	Meas. SAR (W/kg)	SAR Lower Bound	SAR Upper Bound
ANT 9	LTE Band 48 PC3	1.2	-1.2	23.7	21.5	22	158.5	1.244	0.944	1.640
						20	100.0	0.890	0.675	1.173
						18	63.1	0.567	0.430	0.747
						16	39.8	0.355	0.269	0.468
						14	25.1	0.223	0.169	0.294
						12	15.8	0.133	0.101	0.175

Figure 4-7: ANT 9 SAR v. Requested Power Linear Validation



5. TAS Validation

5.1. Conducted

5.1.1. Test Sequences

The TAS algorithm shall be validated when the base station requests different power levels to manage the link budget.

Requested power measurements shall be performed for at least one band per technology. The P_{Limit} value associated with the chosen band should be several dB lower than the corresponding value of P_{Max}, i.e. 2 to 4 dB lower. Whenever possible, the same band should not be repeated for different technologies. Frequency-division duplexing (FDD) and time-division duplexing (TDD) configurations shall be treated as separate technologies.

5.1.1.1. Start-up Test Sequences

5.1.1.1.1. Test Sequence A (1a)

Upon start-up, request a power level of $P_{Max,\ nom}$ for a period of at least 400 seconds, followed by $0.5 \cdot P_{Limit,\ nom}$ for a period of at least 400 seconds. The following figure demonstrates Test Sequence A (1a) with P[n] per region's timing window:

5.1.1.1.2. Test Sequence B (1b)

Upon start-up, request a power level of 1 mW (0 dBm) for a period of at least 400 seconds, followed by $P_{Max,\ nom}$ for a period of at least 400 seconds. The following figure demonstrates Test Sequence B (1b) with P[n] per region's timing window.

5.1.2. Pseudo-random Test Sequence

A pseudo-random sequence of power requests shall be applied to validate the dynamic behavior of the TAS algorithm. Each test shall be performed with a unique sequence of 150 independent power requests. These power levels are calculated as follows (Equation 1):

Equation 1: Power Level Equation

$$P_{req} = P_{Max,nom}\left(\frac{P_{Limit,nom}}{P_{Max,nom}}\right)^{x}$$

where P_{req} is the requested power in watts and x is a random value drawn from the Weibull distribution with shape and scale parameters of 2.0 and 0.8 respectively. These values were chosen to ensure that P_{req} exceeds $P_{Limit,nom}$ on average, while maintaining a reasonable likelihood that some P_{req} values will sometimes fall well below $P_{Limit,nom}$.

The corresponding request durations are given by (Equation 2):

Equation 2: P_{req} Durations

$$T_{req} = 2(1 + 2y)$$

where T_{req} is the duration of the power request in seconds and y is a uniformly distributed random value between 0 and 1.

5.1.3. Antenna and Duplex Switch

Requested power measurements shall be performed to validate the TAS algorithm in antenna- and duplex-switching scenarios. Maximum power shall be requested from the EUT throughout the test. The switch between antennas and duplexes shall occur once the TAS algorithm has reached steady state for the first antenna and duplex, and the test shall conclude once the algorithm has reached steady state for the second antenna and duplex.

When different P_{Limit} and P_{Max} values are associated with each transmitting antenna and duplex, consideration shall be given to the combinations of antennas/duplexes and operating state(s) for which the P_{Limit} values are several dB below the corresponding P_{Max} values, i.e., 2 to 4 dB lower. Of these combinations, the performance of the TAS algorithm shall be validated when the EUT switches from the antenna and duplex with the highest P_{Limit} value to that with the lowest.

5.1.4. Change in Device State

Requested power measurements shall be performed to validate the TAS algorithm when the EUT changes between operating states with different P_{Limit} values, e.g., when sensors or other mechanisms are used to change operating states. Maximum power shall be requested from the DUT throughout the test. The change in operating state shall occur once the TAS algorithm has reached steady state for the first operating state, and the test shall conclude once the algorithm has reached steady state for the second operating state.

The TAS algorithm shall be validated for the following changes in operating state:

- Among the operating states for which the P_{Limit} values are several dB below the corresponding P_{Max} values, i.e., 2 to 4 dB lower, changing from one operating state to another with a lower P_{Limit} value.

5.1.5. Change in Technology and Band

Requested power measurements shall be performed to validate the TAS algorithm when the DUT switches between frequency bands and technologies with different P_{Limit} values. Maximum power shall be requested from the DUT throughout the test. The change in frequency band and technology shall occur once the TAS algorithm has reached steady state for the first band/technology, and the test shall conclude once the algorithm has reached steady state for the second band/technology.

The TAS algorithm shall be validated for the following changes in frequency band and technology:

- Among the frequency band and technology, configurations for which the P_{Limit} values are several dB below the corresponding P_{Max} values, i.e., 2 to 4 dB lower, changing from one frequency band and technology to another with a lower P_{Limit} value.

5.1.6. Call Drop

Requested power measurements shall be performed to validate the TAS algorithm during dropped connections to ensure the algorithm is able to account for previous connection states. Only one test is required with one of the configurations for which P_{Limit} is 2 to 4 dB below P_{Max}. Maximum power shall be requested from the DUT throughout the test. The dropped connection shall occur once the TAS algorithm has reached steady state, and the test shall conclude once steady state has been regained after the dropped connection.

5.1.7. Test Case Validation

Validation plots are included for the applicable test cases for this DUT. These plots serve to validate the operation of this cellular TAS algorithm by ensuring that the measured power averaged over the applicable regulatory limit (P[n]) is always maintained below the defined P_{Limit}.

Requested power measurements (P_{Meas}) are used to validate all TAS test cases. In test cases where P_{Limit} remains constant, the equation, *Equation 3*, below is used to calculate the rolling time-averaged power for the n^{th} time step (P[n]).

Equation 3: Rolling Time-averaged Power (Constant P_{Limit})

$$P[n] = \frac{1}{M}\sum_{m=0}^{M-1} P_{Meas}[n-m]$$

Where *M* is the total number of reporting periods per time-averaging window and *m* is the index of the time-averaging window. The TAS algorithm is validated when P[n] is maintained less than or equal to P_{Limit}.

In test cases where P_{Limit} is not constant, the equation, *Equation 4*, below is used to calculate the normalized rolling time-averaged power (p[n]).

Equation 4: Rolling Time-averaged Power (P_{Limit} not Constant)

$$p[n] = \frac{1}{M}\sum_{m=0}^{M-1} \frac{P_{Meas}[n-m]}{P_{Limit}[n-m]}$$

Where *M* is the total number of reporting periods per time-averaging window and *m* is the index of the time-averaging window. The TAS algorithm is validated when p[n] is maintained less than or equal to 1.

The test cases are summarized in the table below.

Table 5-1: Applicable Test Cases for FCC TAS Validation

Test Case	Test Group	Tech	Band	Antenna	Modulation	Exposure	Details	P_{Max}	P_{Limit}	$P_{Limit,meas}$	$SAR_{Limit,meas}$	SAR_{Limit}
1a	Time-varying Tx Power: Sequence A	LTE FDD	66	ANT 1	QPSK	Body	Edge Bottom | Ch.132572 | RB 1-49	25.7	19.6	17.8	0.693	1.056
1b	Time-varying Tx Power: Sequence B	GSM	1900	ANT 1	GMSK	Body	Back | Ch.661 | GPRS 2 Slots	31.0	25.7	24.7	0.419	0.527
		W-CDMA	4	ANT 1	QPSK	Body	Edge Bottom | Ch.1413 | Rel. 99	25.7	19.6	18.1	0.729	1.030
		LTE FDD	66	ANT 1	QPSK	Body	Edge Bottom | Ch.132572 | RB 1-49	25.7	19.6	17.8	0.693	1.056
		LTE TDD	41	ANT 2	QPSK	Head	Left Cheek | Ch.40620 | RB 1-49	25.7	20.3	19.0	0.873	1.178
		NR FR1 FDD	n66	ANT 1	π/2 BPSK	Body	Edge Bottom | Ch.349000 | RB 1-1	25.7	19.6	17.6	0.675	1.070
		NR FR1 TDD	n41	ANT 2	π/2 BPSK	Head	Left Cheek | Ch.518598 | RB 135-69	25.7	18.3	17.2	0.768	0.989
1c	Time-varying Tx Power: Pseudo-Random Sequence	LTE FDD	66	ANT 1	QPSK	Body	Edge Bottom | Ch.132572 | RB 1-49	25.7	19.6	17.8	0.693	1.056
2	Antenna/Duplex Switch	LTE FDD	66	ANT 1	QPSK	Body	Edge Bottom | Ch.132572 | RB 1-49	25.7	19.6	17.8	0.693	1.056
		LTE TDD	41	ANT 2	QPSK	Body	Back | Ch.40620 | RB 1-0	25.7	21.2	19.6	0.515	0.744
3	Change in Device State	LTE FDD	66	ANT 2	QPSK	Body	Edge Top | Ch.132072 | RB 1-49	25.7	19.4	17.9	0.843	1.191
				ANT 2	QPSK	Head	Right Cheek | Ch.132072 | RB 1-49	25.7	20.0	19.0	0.918	1.156
4	Change in Technology/Band	LTE FDD	66	ANT 1	QPSK	Body	Edge Bottom | Ch.132572 | RB 1-49	25.7	19.6	17.8	0.693	1.056
		W-CDMA	2	ANT 1	QPSK	Body	Edge Bottom | Ch.9262 | Rel. 99	25.7	19.7	18.1	0.737	1.065
5	Call Drop	LTE FDD	66	ANT 1	QPSK	Body	Edge Bottom | Ch.132572 | RB 1-49	25.7	19.6	17.8	0.693	1.056
MSS	Time-varying Tx Power	MSS	N/A	ANT 4	BPSK	Body	Front | Ch.Mid | 1-PRB SC-FDMA	28.7	23.4	22.3	1.730	2.229
		LTE FDD	66	ANT 1	QPSK	Body	Edge Bottom | Ch.132572 | RB 1-49	25.7	19.6	17.8	0.693	1.056
EN-DC		LTE	66A	ANT 1	QPSK	Body	Edge Top | Ch.132072 | RB 1-49	25.7	19.4	17.9	0.843	1.191
		NR FR1	n25A	ANT 2	π/2 BPSK	Body	Edge Bottom | Ch.376500 | RB 1-1	25.7	19.7	18.2	0.761	1.075
ULCA		LTE	5A	ANT 1	QPSK	Body	Edge Right | Ch.20525 | RB 1-25	25.7	25.7	25.1	0.616	0.707
			66A	ANT 2	QPSK	Body	Edge Top | Ch.132072 | RB 1-49	25.7	19.4	17.9	0.843	1.191

The following figures outline the test setup for the applicable test cases:

Figure 5-1: Time-varying, Call Drop, and OBD/OPS Switch

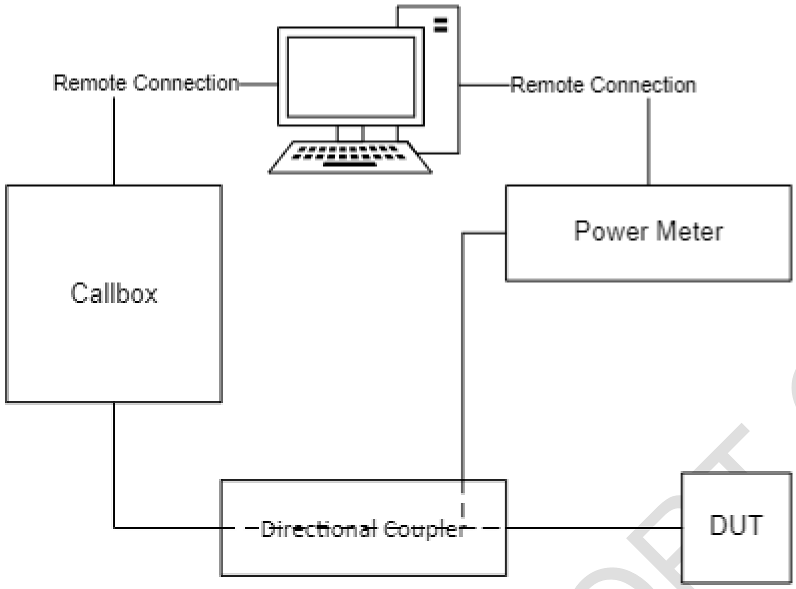


Figure 5-2: Antenna and Technology/Band Switching

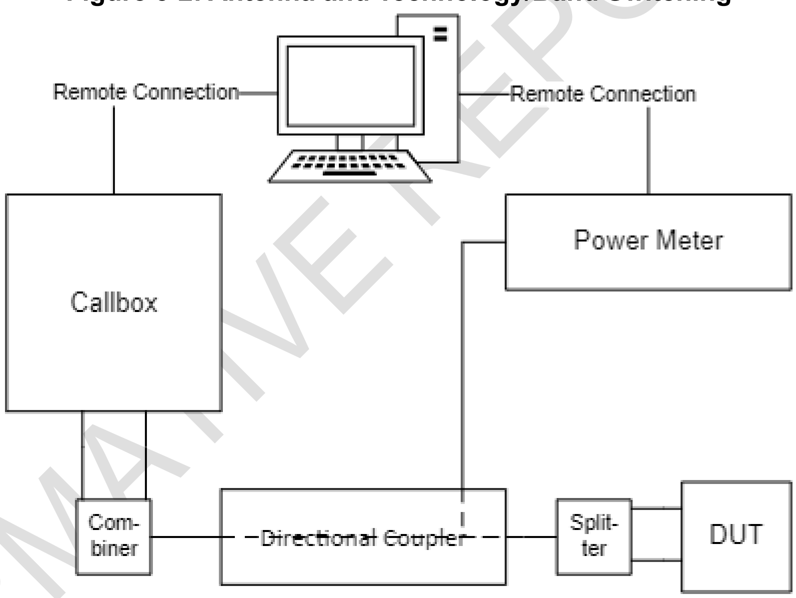
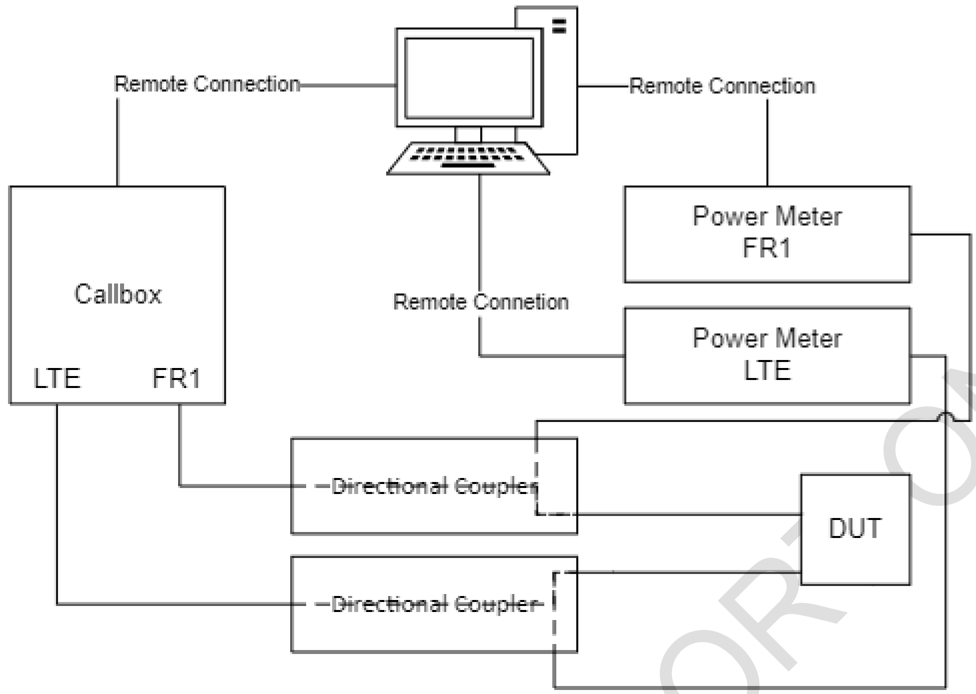


Figure 5-3: EN-DC and ULCA



5.1.8. Test Case 1a

5.1.8.1. LTE FDD

Figure 5-4: LTE FDD Start-up Sequence 1a

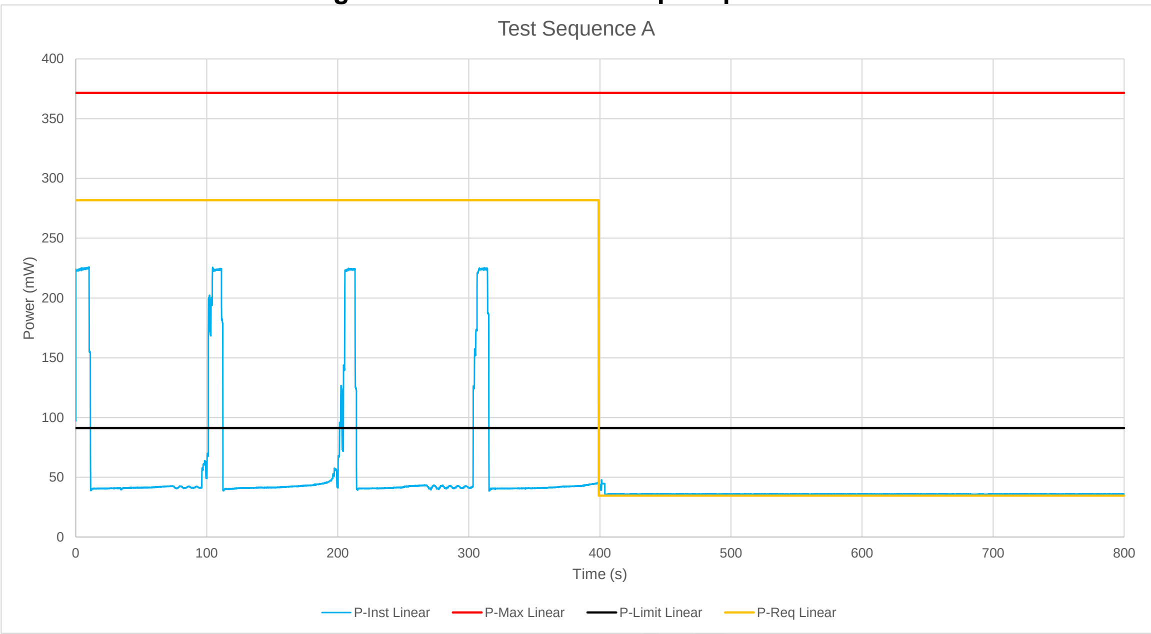
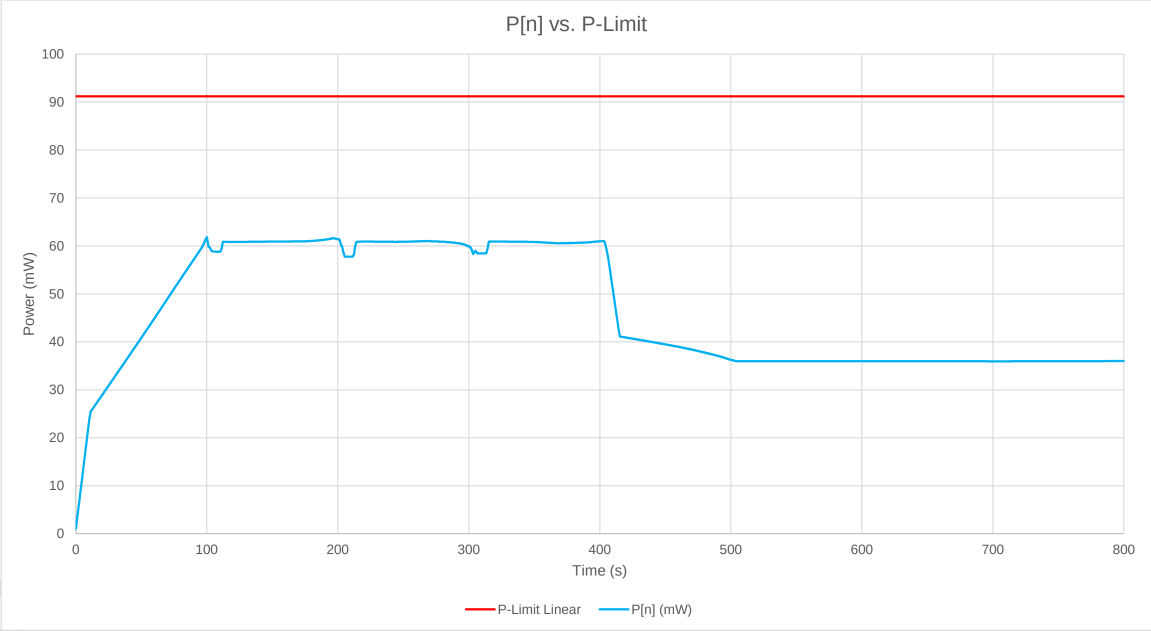


Figure 5-5: LTE FDD P[n] vs. P_{Limit} 1a Validation



	Validation
$P[n] \leq P_{Limit}$	61.8 ≤ 91.2

P[n] was calculated using the 100 second time-averaging duration.

5.1.9. Test Case 1b

5.1.9.1. GSM

Figure 5-6: GSM Start-up Sequence 1b

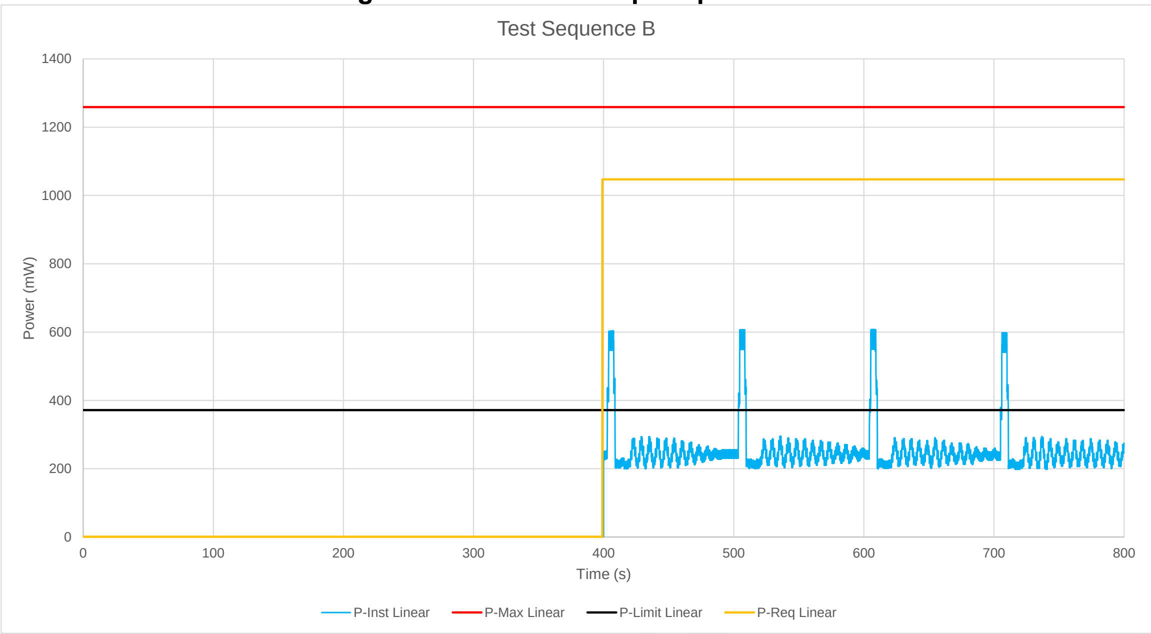
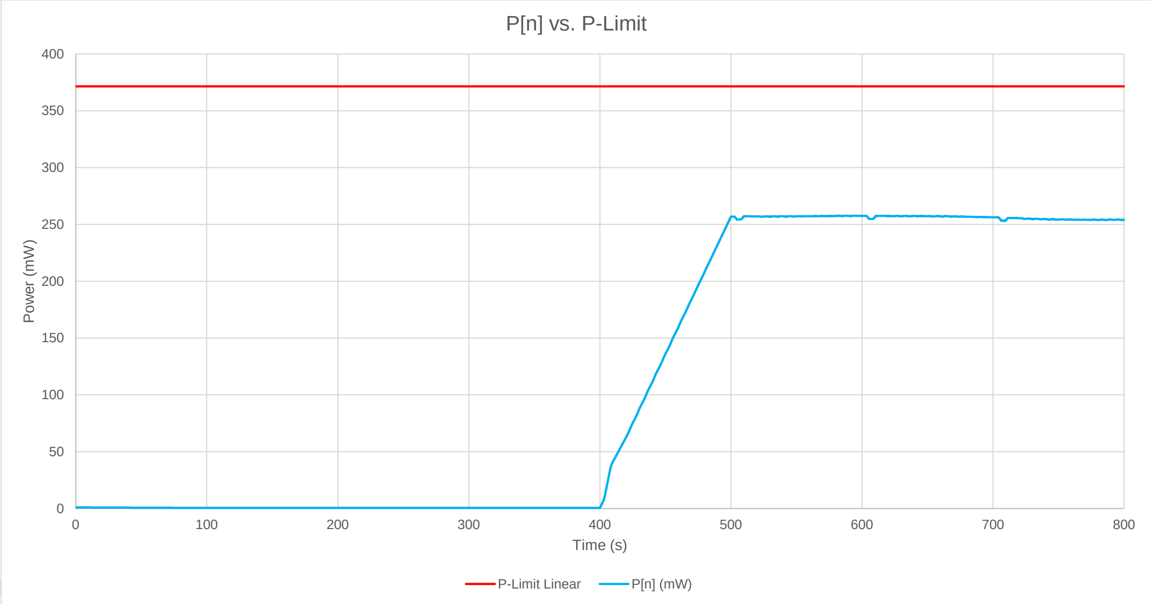


Figure 5-7: GSM P[n] vs. P_{Limit} 1b Validation



	Validation
$P[n] \leq P_{Limit}$	$257.7 \leq 371.5$

P[n] was calculated using the 100 second time-averaging duration.

5.1.9.2. W-CDMA

Figure 5-8: W-CDMA Start-up Sequence 1b

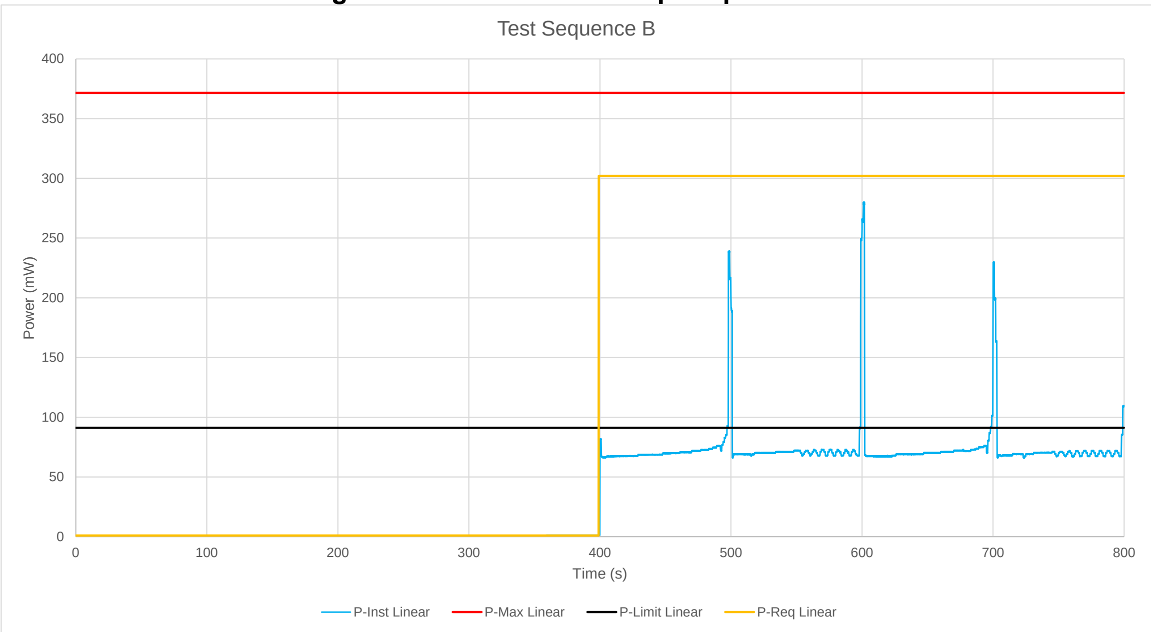
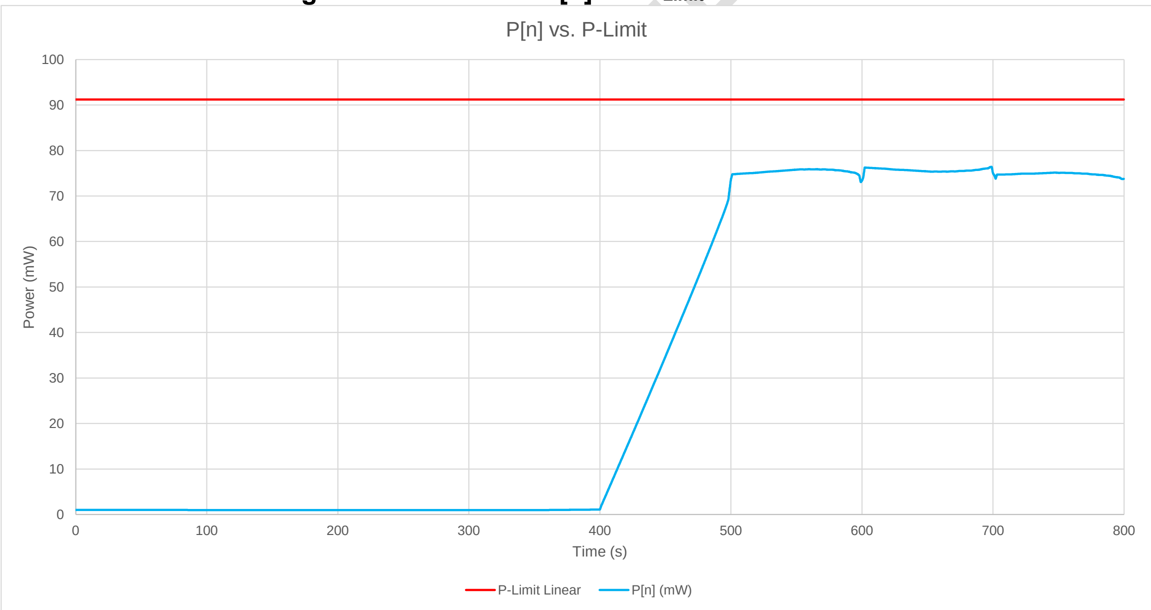


Figure 5-9: W-CDMA P[n] vs. P_{Limit} 1b Validation



	Validation
P[n] ≤ P_{Limit}	76.4 ≤ 91.2

P[n] was calculated using the 100 second time-averaging duration.

5.1.9.3. LTE FDD

Figure 5-10: LTE FDD Start-up Sequence 1b

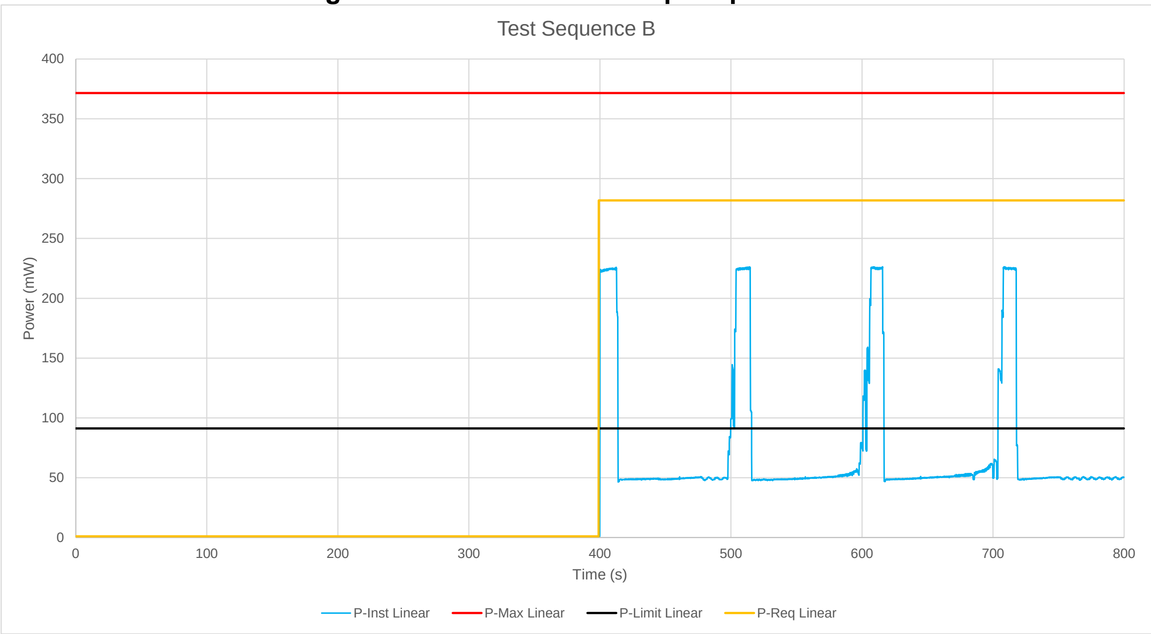
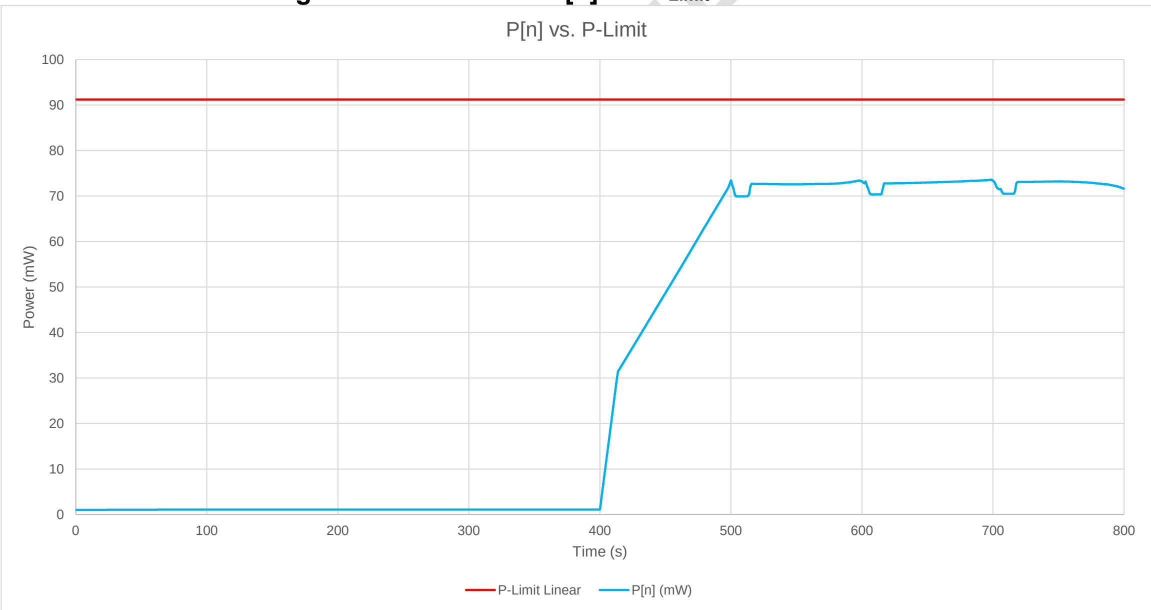


Figure 5-11: LTE FDD P[n] vs. P_{Limit} 1b Validation



	Validation
P[n] ≤ P_{Limit}	73.6 ≤ 91.2

P[n] was calculated using the 100 second time-averaging duration.

5.1.9.4. LTE TDD

Figure 5-12: LTE TDD Start-up Sequence 1b

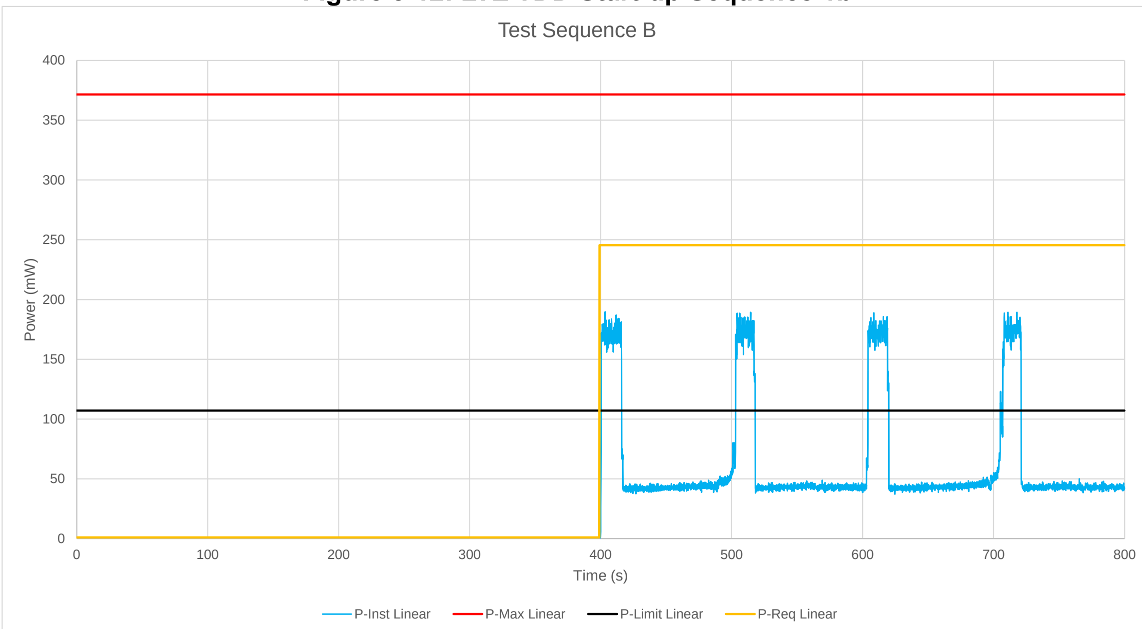
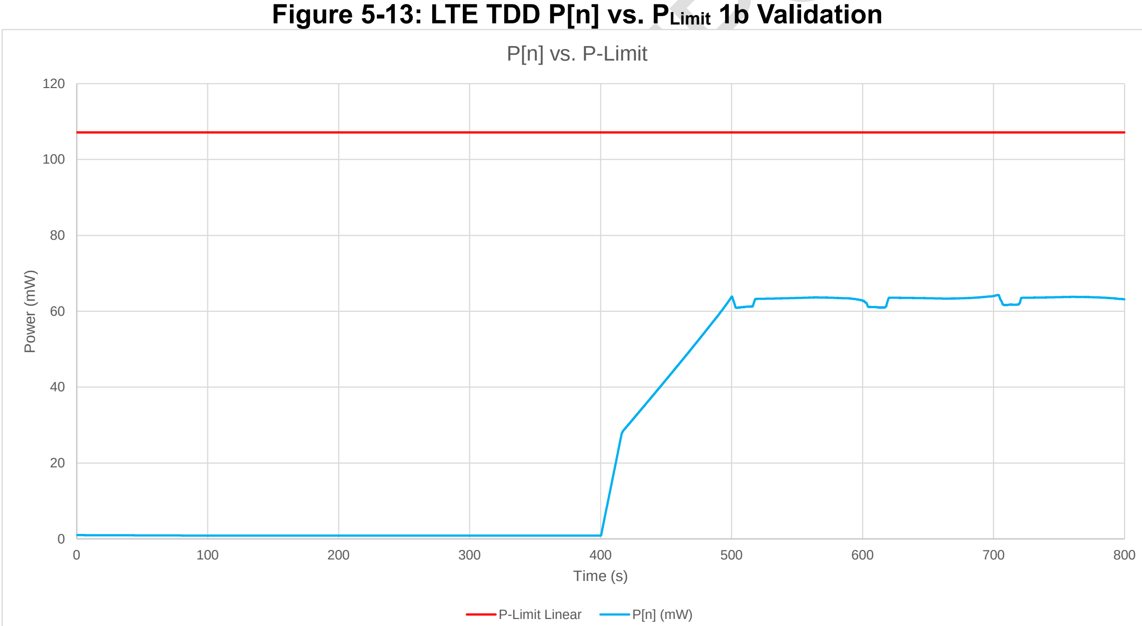


Figure 5-13: LTE TDD P[n] vs. P_{Limit} 1b Validation



	Validation
P[n] ≤ P_{Limit}	64.3 ≤ 107.2

P[n] was calculated using the 100 second time-averaging duration.

5.1.9.5. FR1 FDD

Figure 5-14: FR1 FDD Start-up Sequence 1b

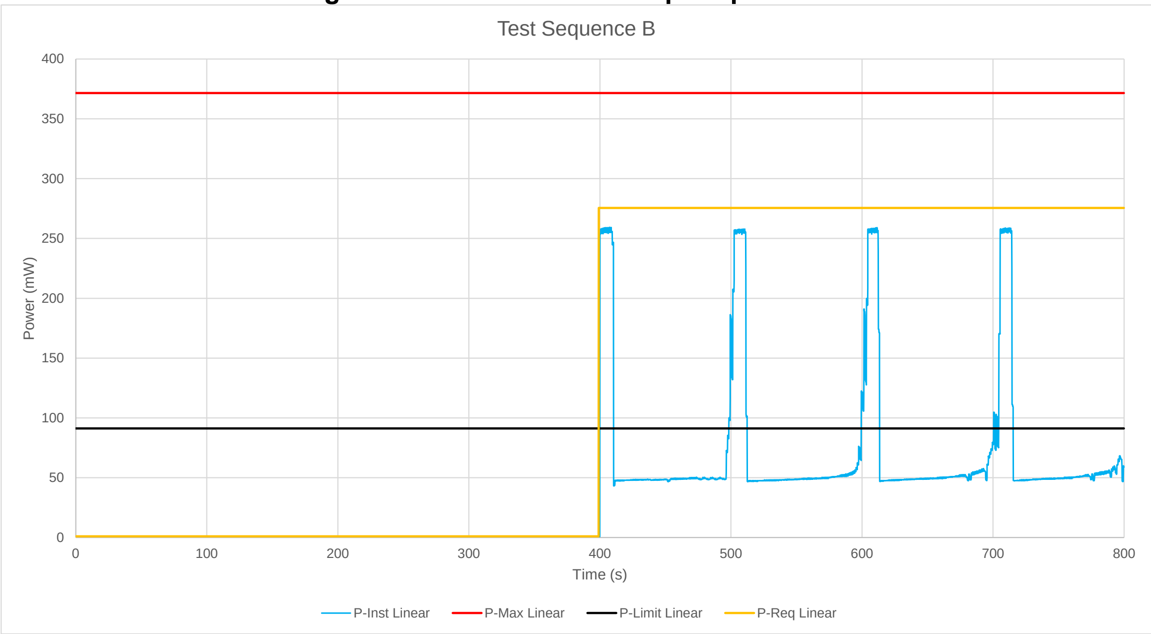
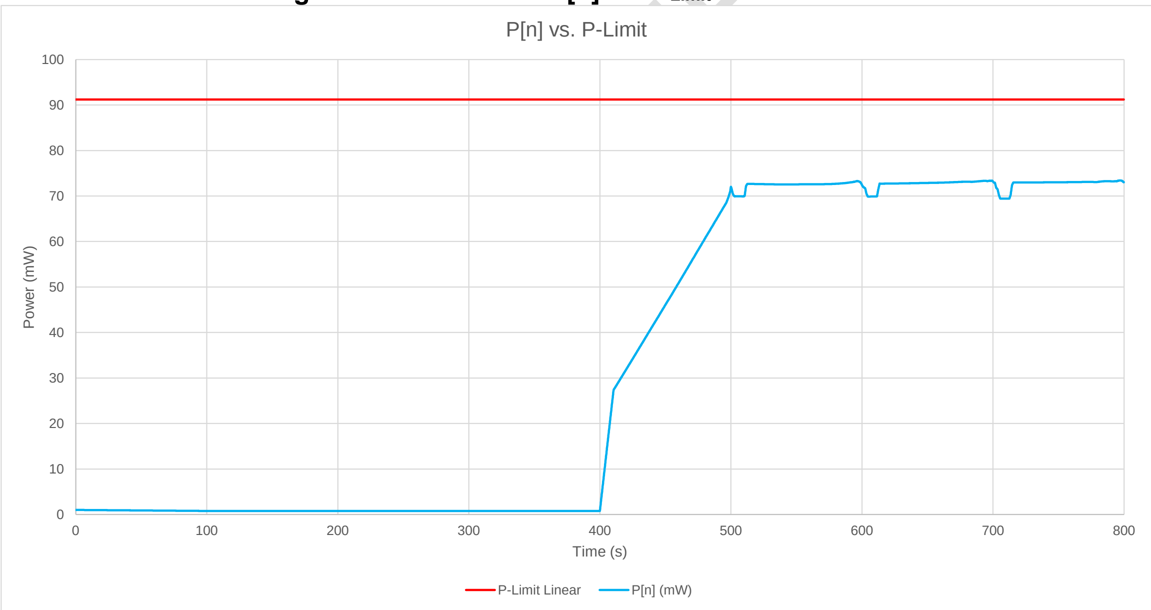


Figure 5-15: FR1 FDD P[n] vs. P_{Limit} 1b Validation



	Validation
P[n] ≤ P_{Limit}	73.4 ≤ 91.2

P[n] was calculated using the 100 second time-averaging duration.

5.1.9.6. FR1 TDD

Figure 5-16: FR1 TDD Start-up Sequence 1b

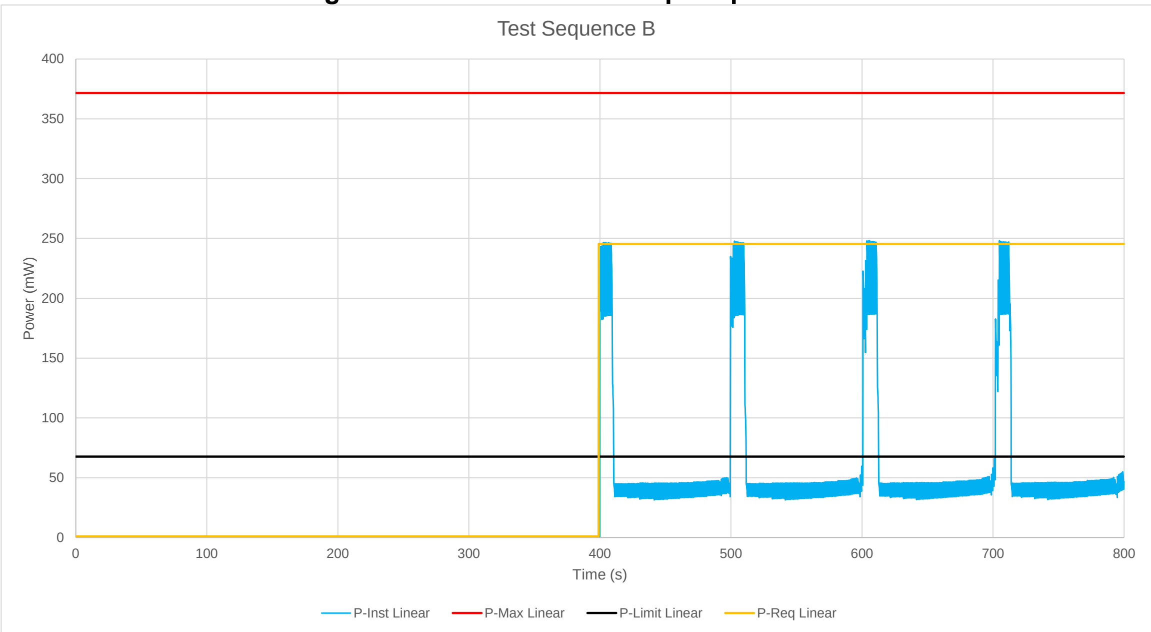
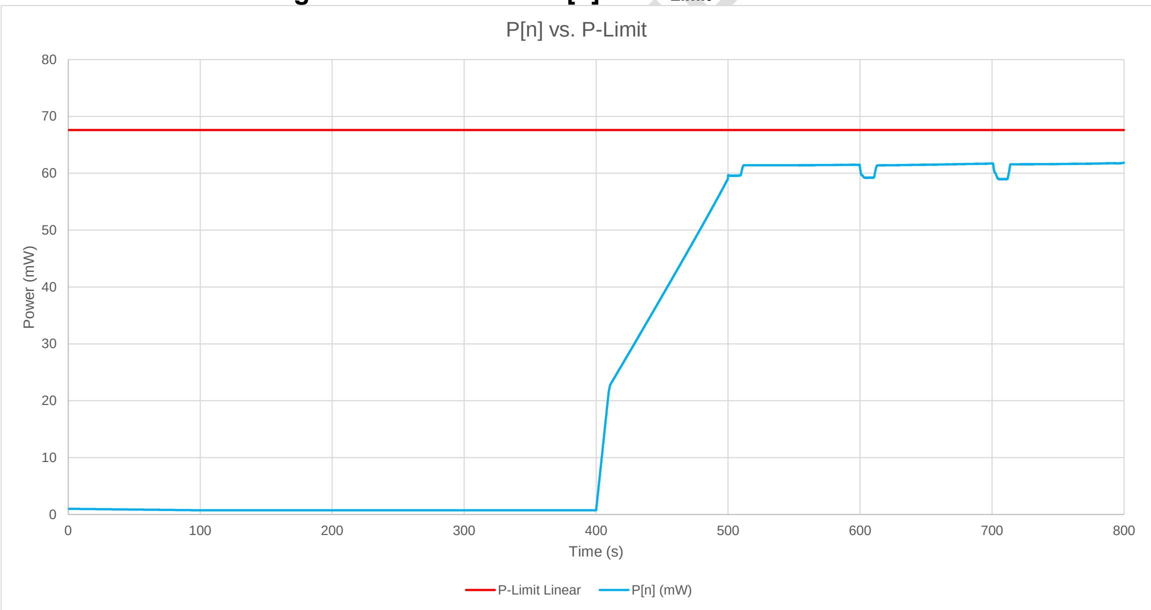


Figure 5-17: FR1 TDD P[n] vs. P_{Limit} 1b Validation



	Validation
P[n] ≤ P_{Limit}	61.8 ≤ 67.6

P[n] was calculated using the 100 second time-averaging duration.

5.1.10. Test Case 1c

5.1.10.1. LTE FDD

Figure 5-18: LTE FDD Pseudo-random Sequence 1c

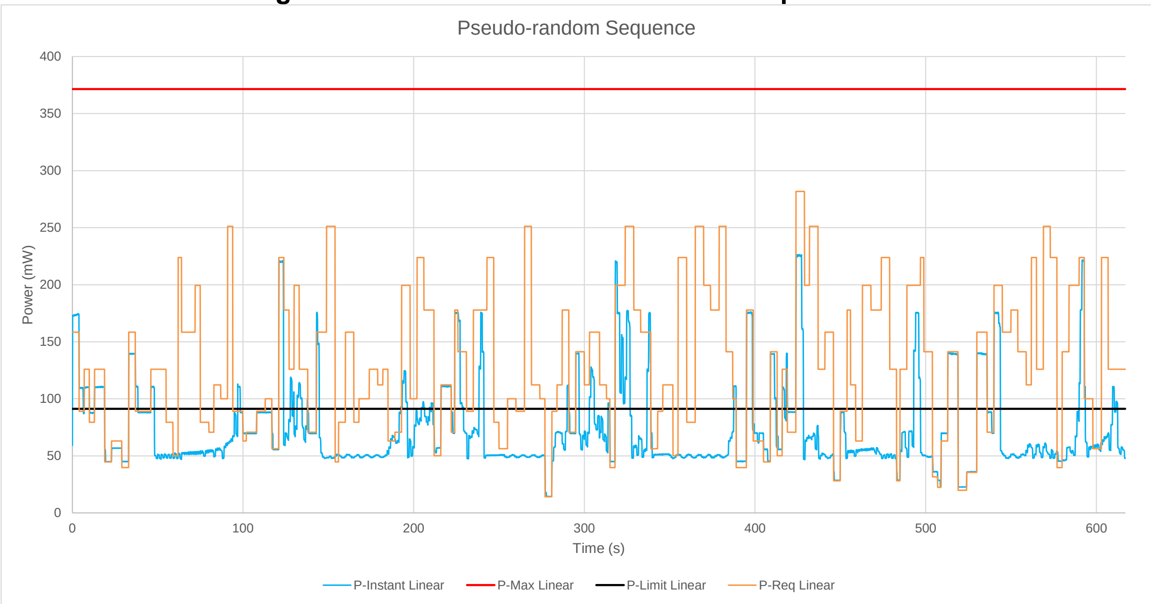
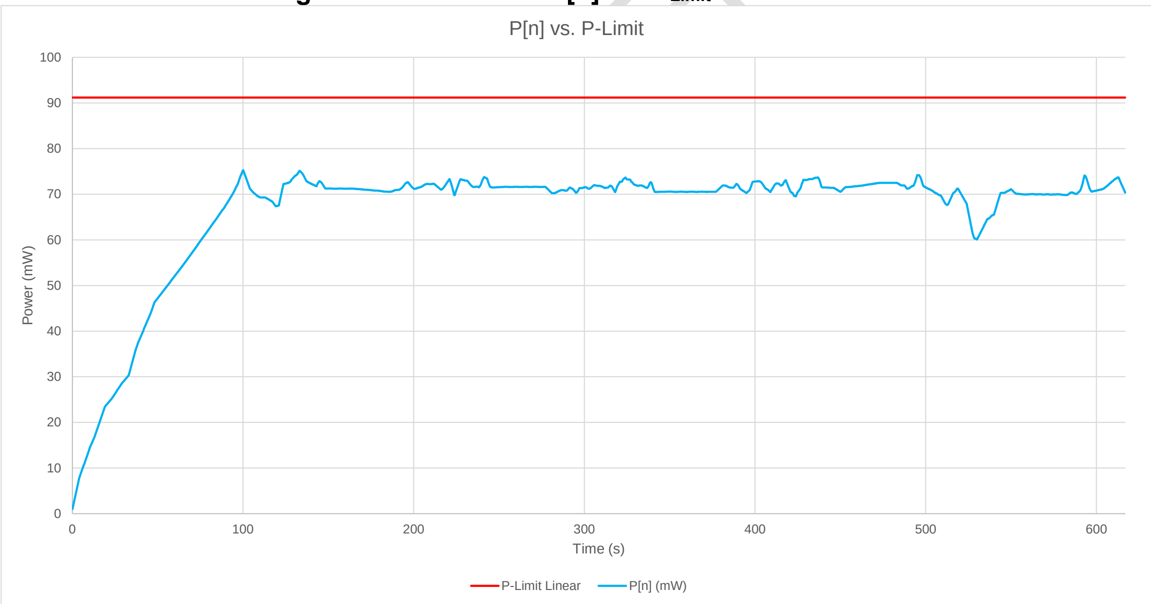


Figure 5-19: LTE FDD P[n] vs. P_{Limit} 1c Validation



	Validation
P[n] ≤ P_{Limit}	75.3 ≤ 91.2

P[n] was calculated using the 100 second time-averaging duration.

Table 5-2: LTE FDD P_{req} vs. T_{req}

Index	P_{req} (mW)	T_{req} (s)	Index	P_{req} (mW)	T_{req} (s)	Index	P_{req} (mW)	T_{req} (s)
0	158.5	4	50	223.9	4	100	141.3	4
1	89.1	3	51	177.8	6	101	50.1	3
2	125.9	3	52	50.1	4	102	125.9	3
3	79.4	3	53	112.2	6	103	70.8	5
4	125.9	6	54	70.8	2	104	281.8	5
5	44.7	4	55	177.8	2	105	199.5	3
6	63.1	6	56	141.3	5	106	251.2	5
7	39.8	4	57	89.1	4	107	125.9	4
8	158.5	4	58	177.8	5	108	158.5	5
9	89.1	4	59	177.8	3	109	28.2	4
10	89.1	5	60	223.9	4	110	89.1	4
11	125.9	4	61	79.4	3	111	177.8	2
12	125.9	5	62	56.2	5	112	112.2	3
13	79.4	4	63	100.0	5	113	63.1	4
14	50.1	3	64	89.1	2	114	199.5	5
15	223.9	2	65	89.1	3	115	177.8	6
16	158.5	5	66	251.2	4	116	223.9	5
17	158.5	3	67	112.2	5	117	125.9	4
18	199.5	3	68	100.0	3	118	28.2	2
19	79.4	5	69	14.1	4	119	125.9	4
20	70.8	3	70	89.1	3	120	199.5	4
21	112.2	4	71	112.2	3	121	199.5	4
22	100.0	4	72	177.8	4	122	223.9	2
23	251.2	3	73	70.8	4	123	141.3	5
24	89.1	6	74	141.3	5	124	31.6	3
25	63.1	2	75	112.2	3	125	22.4	2
26	70.8	6	76	158.5	6	126	63.1	4
27	89.1	5	77	112.2	4	127	141.3	6
28	100.0	4	78	100.0	2	128	20.0	5
29	56.2	4	79	39.8	3	129	35.5	6
30	223.9	3	80	199.5	6	130	158.5	6
31	177.8	3	81	251.2	5	131	70.8	4
32	125.9	3	82	177.8	4	132	199.5	5
33	199.5	3	83	158.5	6	133	158.5	5
34	125.9	5	84	56.2	4	134	177.8	4
35	70.8	5	85	89.1	3	135	141.3	5
36	158.5	6	86	112.2	6	136	112.2	3
37	251.2	5	87	50.1	3	137	223.9	3
38	44.7	2	88	223.9	5	138	125.9	4
39	79.4	4	89	79.4	5	139	251.2	4
40	158.5	5	90	251.2	5	140	223.9	4
41	79.4	3	91	199.5	4	141	39.8	3
42	100.0	6	92	177.8	5	142	141.3	4
43	125.9	5	93	251.2	4	143	199.5	6
44	112.2	3	94	141.3	4	144	223.9	3
45	125.9	3	95	100.0	2	145	100.0	5
46	63.1	4	96	39.8	6	146	56.2	5
47	70.8	4	97	177.8	4	147	223.9	4
48	199.5	5	98	63.1	6	148	125.9	6
49	100.0	4	99	44.7	4	149	125.9	4

5.1.11. Test Case 2: Antenna and Duplex Switching

Figure 5-20: Antenna and Duplex Switch Plot

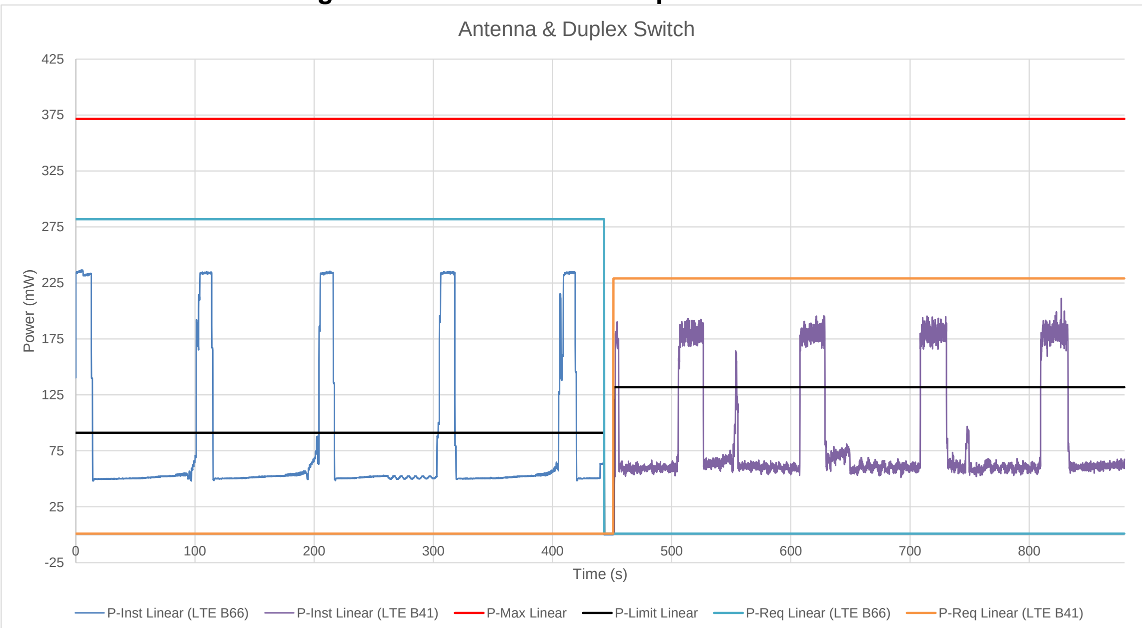
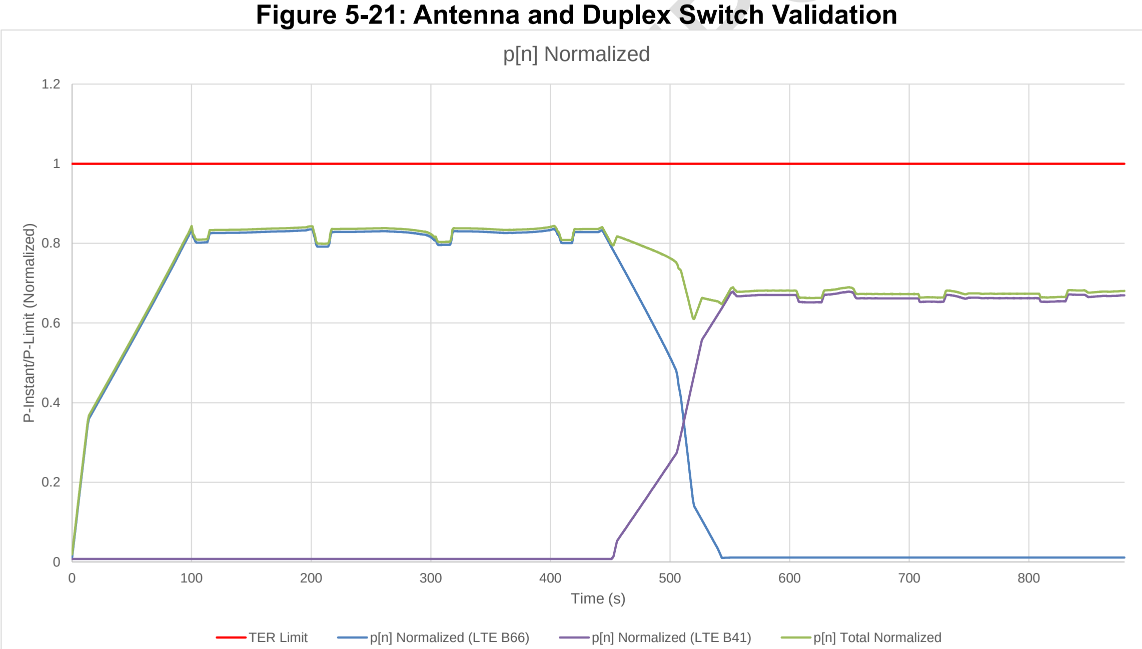


Figure 5-21: Antenna and Duplex Switch Validation



	Validation
p[n] Total Normalized ≤ 1	0.844 ≤ 1

p[n] was calculated using the sum of LTE's 100 second time-averaging duration.

5.1.12. Test Case 3: Change in Device State

Figure 5-22: Change in Device State Plot

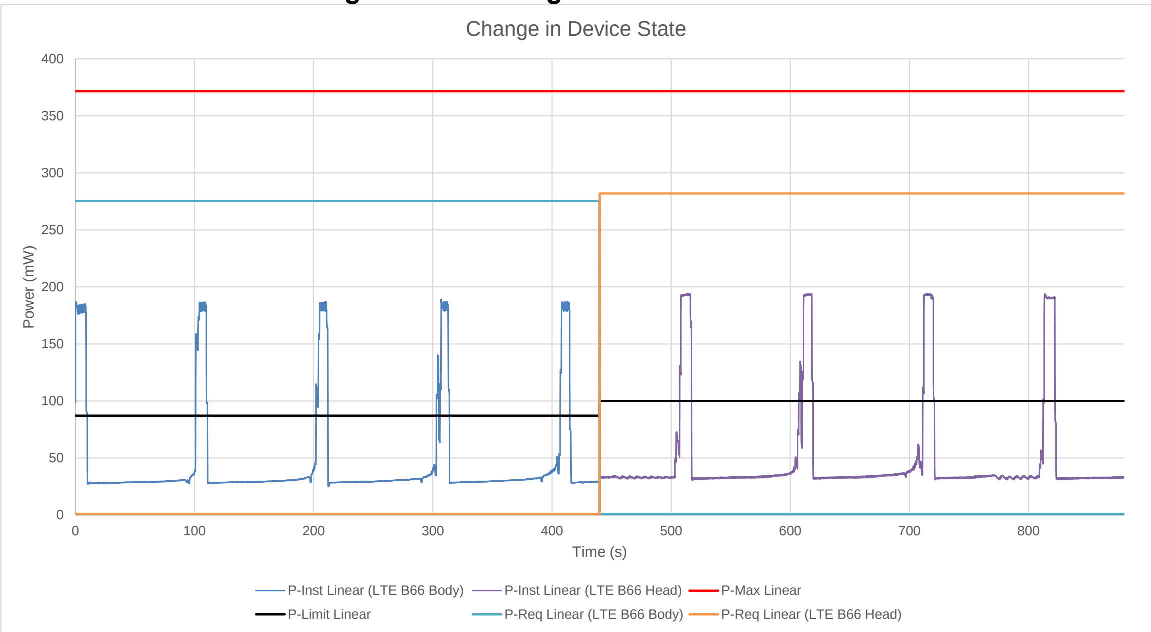
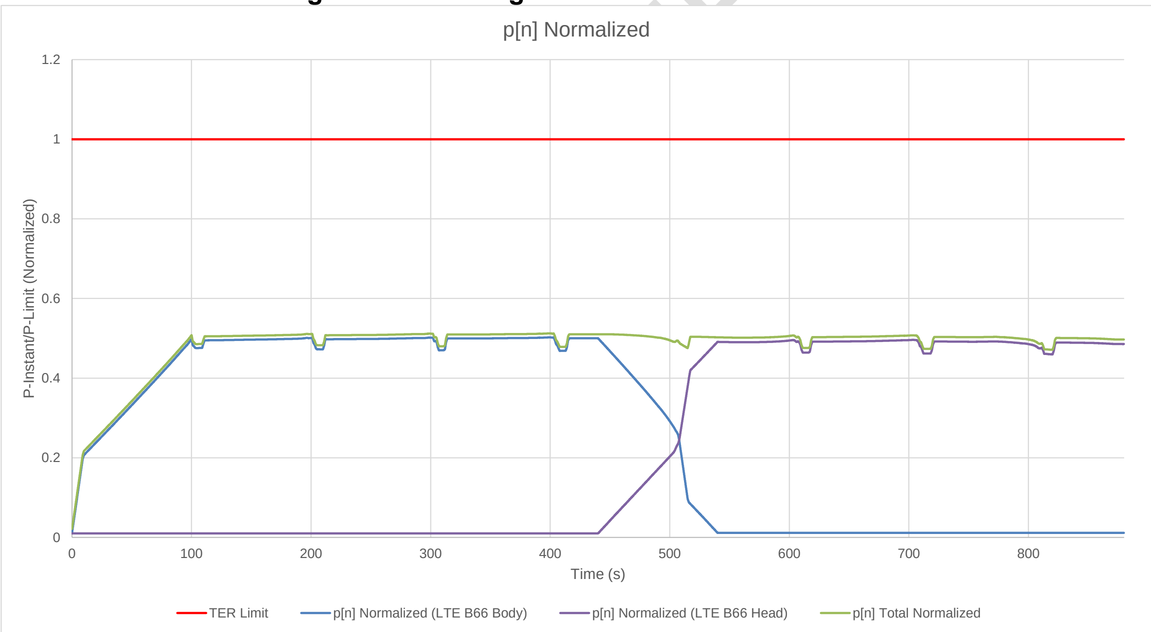


Figure 5-23: Change in Device State Validation



	Validation
p[n] Total Normalized ≤ 1	0.512 ≤ 1

p[n] was calculated using the sum of LTE's 100 second time-averaging duration.

5.1.13. Test Case 4: Change in Technology and Band

Figure 5-24: Change in Technology and Band Plot

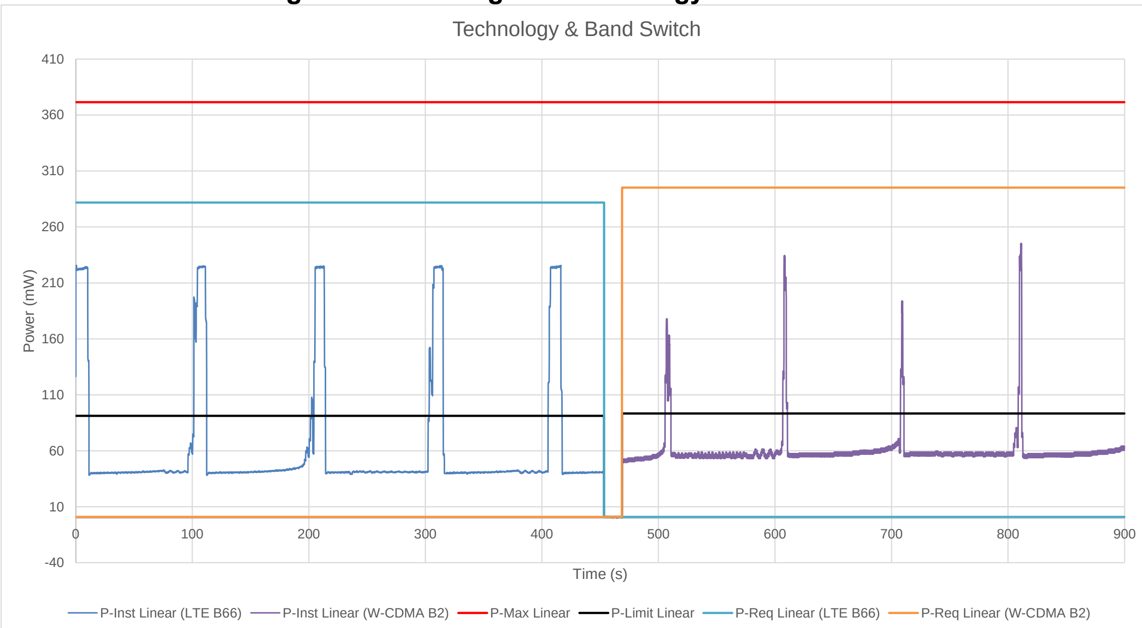
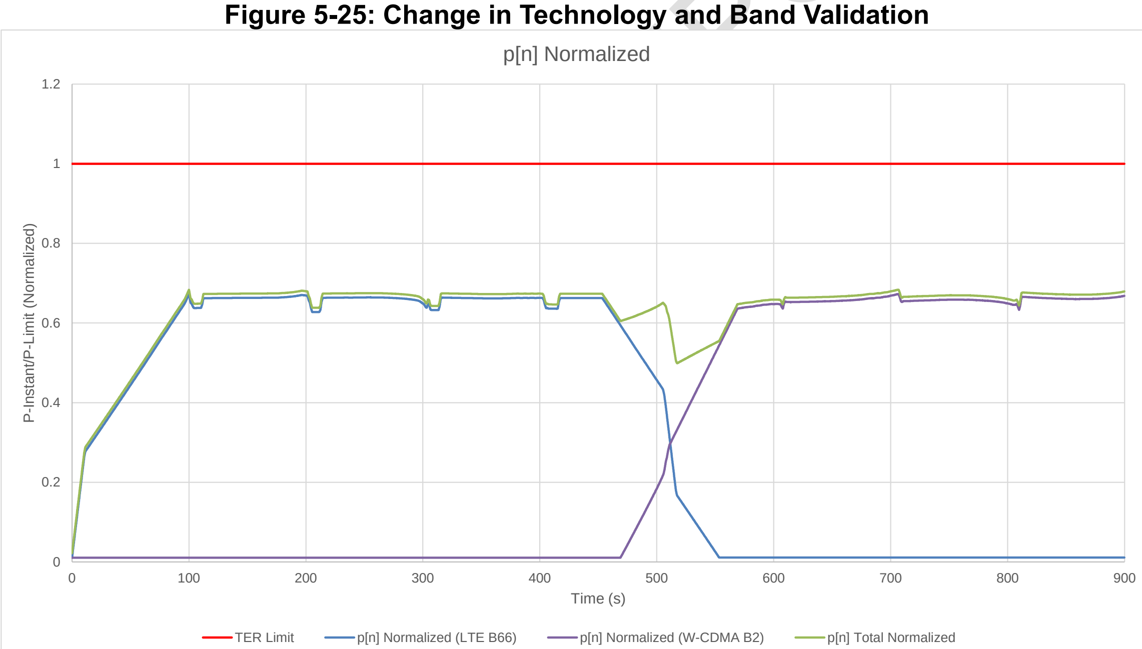


Figure 5-25: Change in Technology and Band Validation



	Validation
p[n] Total Normalized ≤ 1	0.684 ≤ 1

p[n] was calculated using the sum of LTE's and W-CDMA's 100 second time-averaging duration.

5.1.14. Test Case 5: Call Drop

Figure 5-26: Call Drop Plot

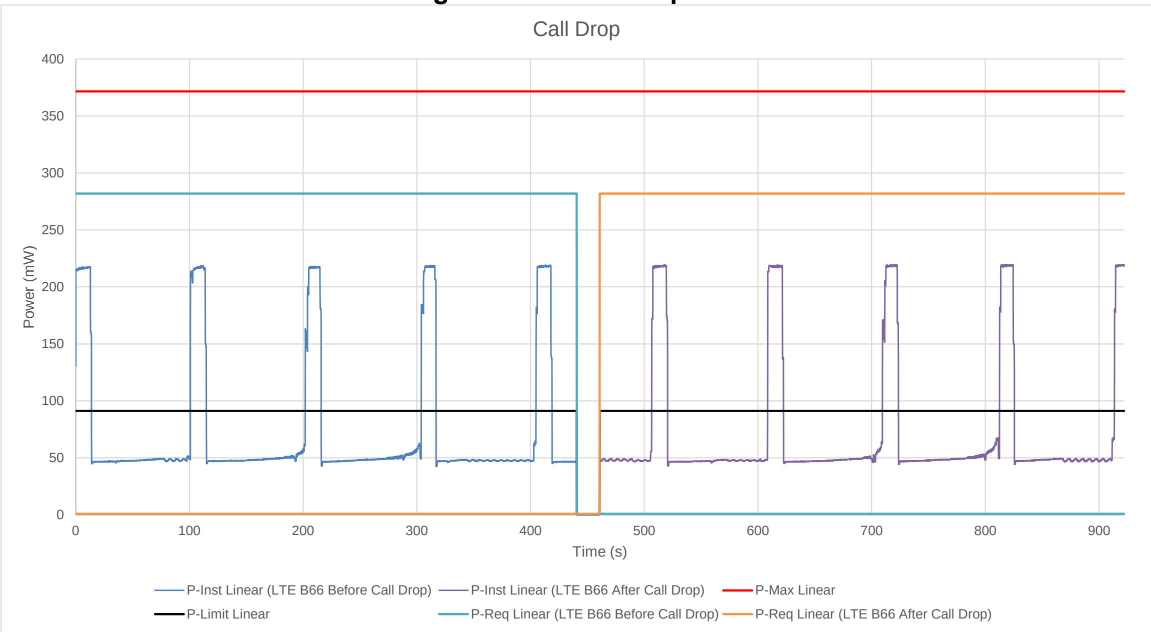
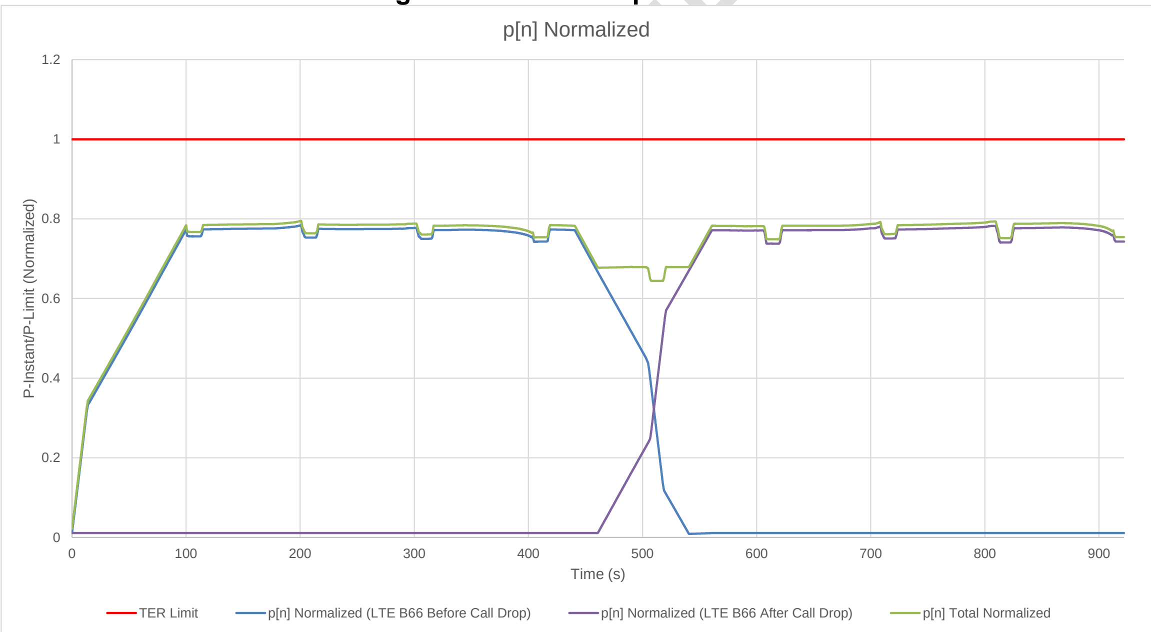


Figure 5-27: Call Drop Validation



	Validation
p[n] Total Normalized ≤ 1	0.795 ≤ 1

p[n] was calculated using the sum of LTE's 100 second time-averaging duration.

5.1.15. MSS[1]

5.1.15.1. Time-varying Transmit Power

Figure 5-28: MSS Time-varying Transmit Power

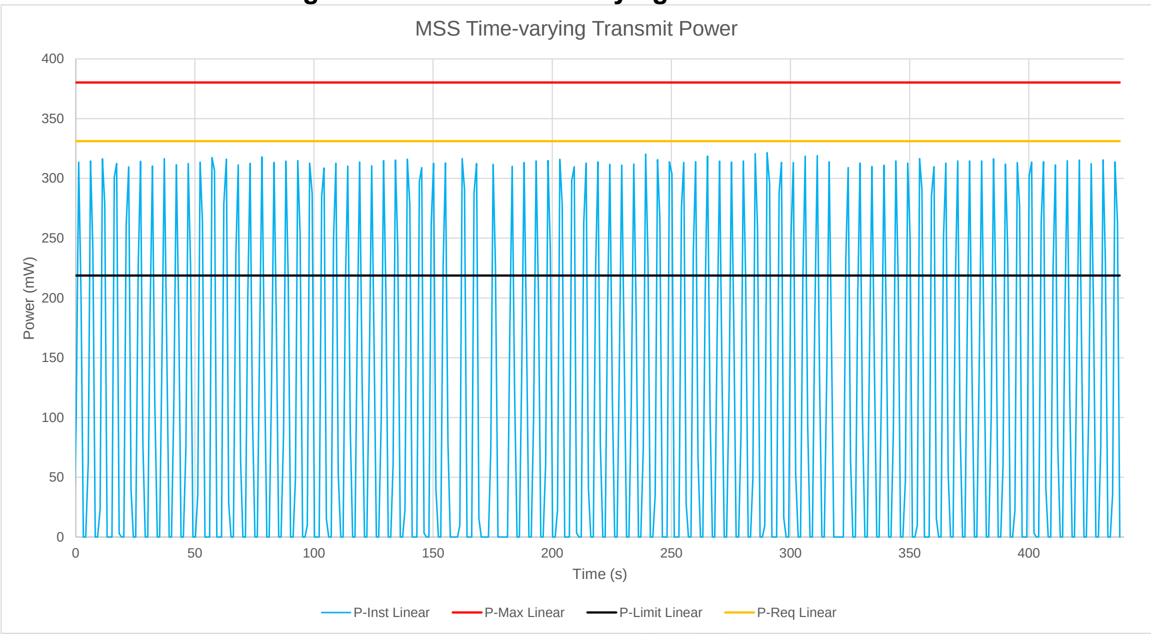
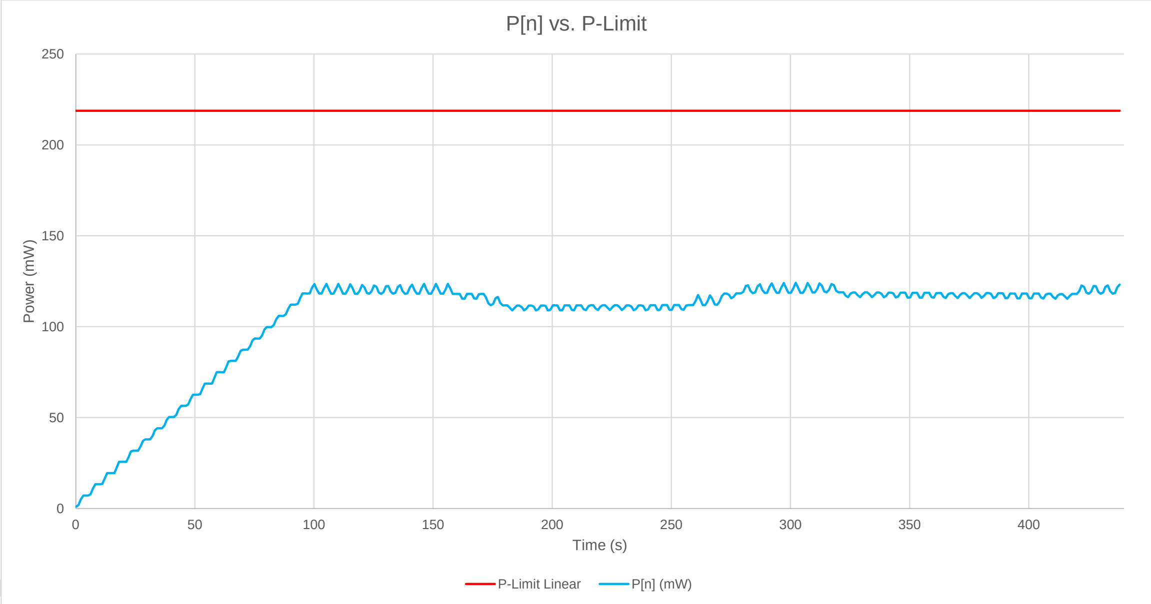


Figure 5-29: MSS Time-varying Transmit Power Validation



For the validation case in the figure above, the transmit power level of $P_{Max,\ nom}$ is requested.

	Validation
$P[n] \le P_{Limit}$	124.1 ≤ 218.8

P[n] was calculated using the 99.84 second time-averaging duration.

[1] Data in this section was collected and provided by the OEM; the test lab did not conduct any of these measurements within this section.

5.1.15.2. Transition Assessment

Figure 5-30: MSS – Cellular – MSS Transition

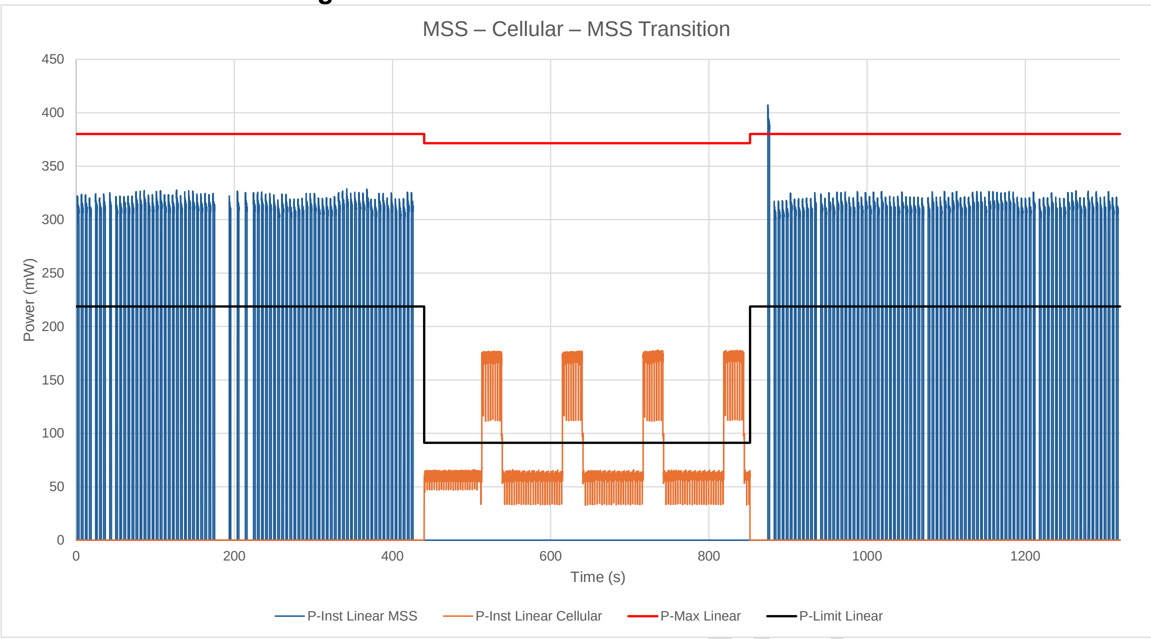
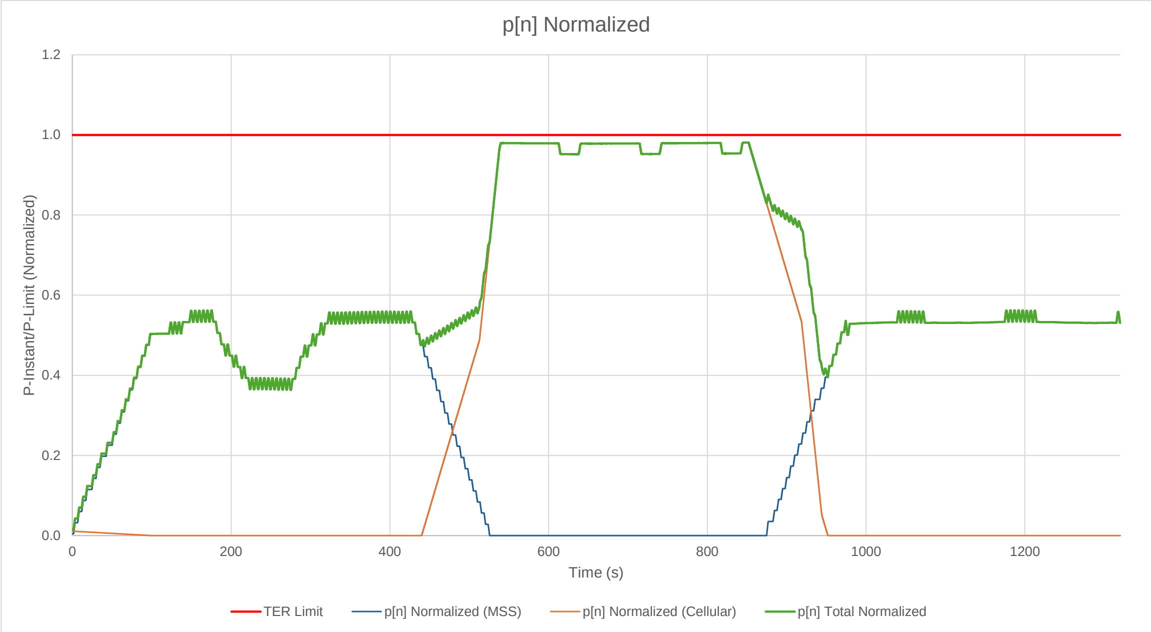


Figure 5-31: MSS – Cellular – MSS Transition Normalized Validation



The figures above illustrate the transition from MSS to Cellular to MSS. The MSS instantaneous power is plotted in blue (Figure 5-30). The Cellular instantaneous power is shown in orange (Figure 5-30). The rolling time-averaged power (p[n]) is shown in green in Figure 5-31.

	Validation
p[n] Total Normalized ≤ 1	0.981 ≤ 1

p[n] was calculated using the sum of MSS's 99.84 second time-averaging duration and Cellular's 100 second time-averaging duration.

5.1.16. EN-DC

Figure 5-32: EN-DC

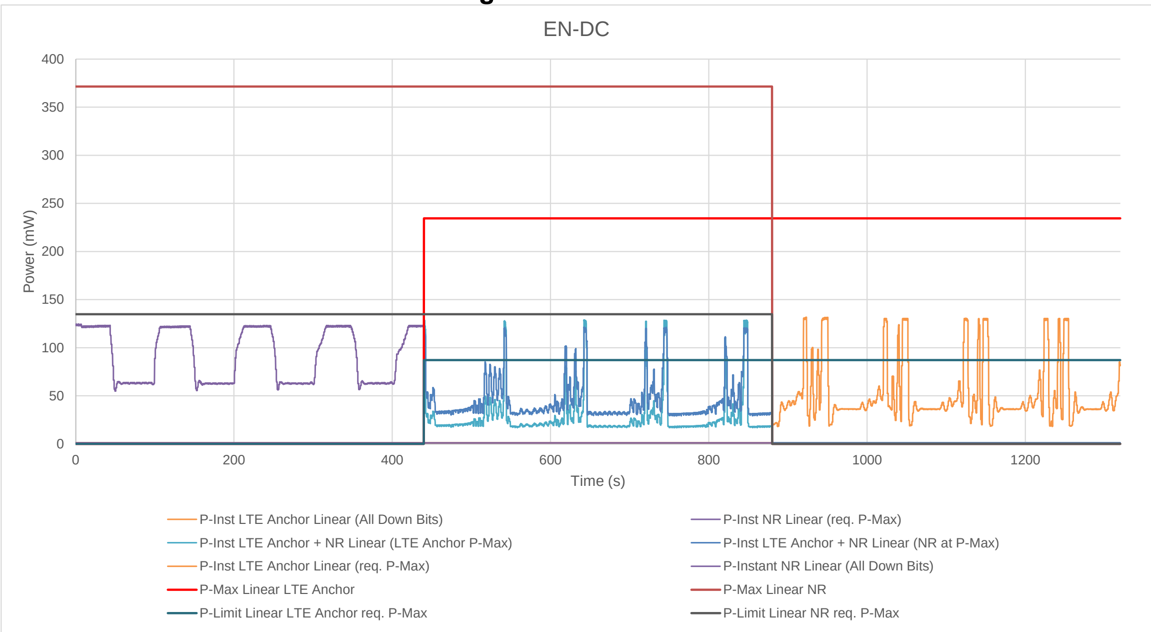
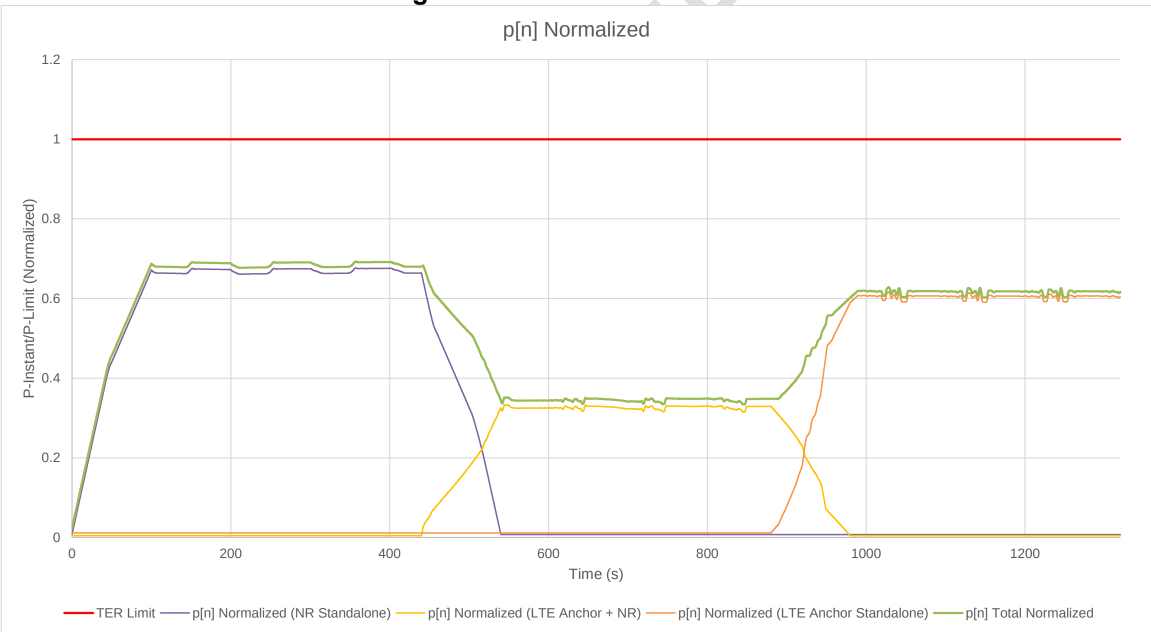


Figure 5-33: EN-DC Validation



The figure above illustrates the transition from legacy Cellular Standalone at all down bits/lowest power configuration + NR requesting P_{Max} to legacy Cellular requesting P_{Max} + NR requesting P_{Max} to legacy Cellular requesting P_{Max} + NR at all down bits/lowest power configuration. The legacy Cellular instantaneous power is plotted in orange (Figure 5-32). The legacy Cellular + NR instantaneous power is shown in light and dark blue respectively (Figure 5-32). The NR instantaneous power is plotted in purple (Figure 5-32). The total normalized rolling time-averaged power (p[n]) is plotted in green (Figure 5-33).

	Validation
p[n] Total Normalized ≤ 1	0.692 ≤ 1

p[n] was calculated using the sum of LTE's and FR1's 100 second time-averaging duration.

5.1.17. ULCA

Figure 5-34: ULCA

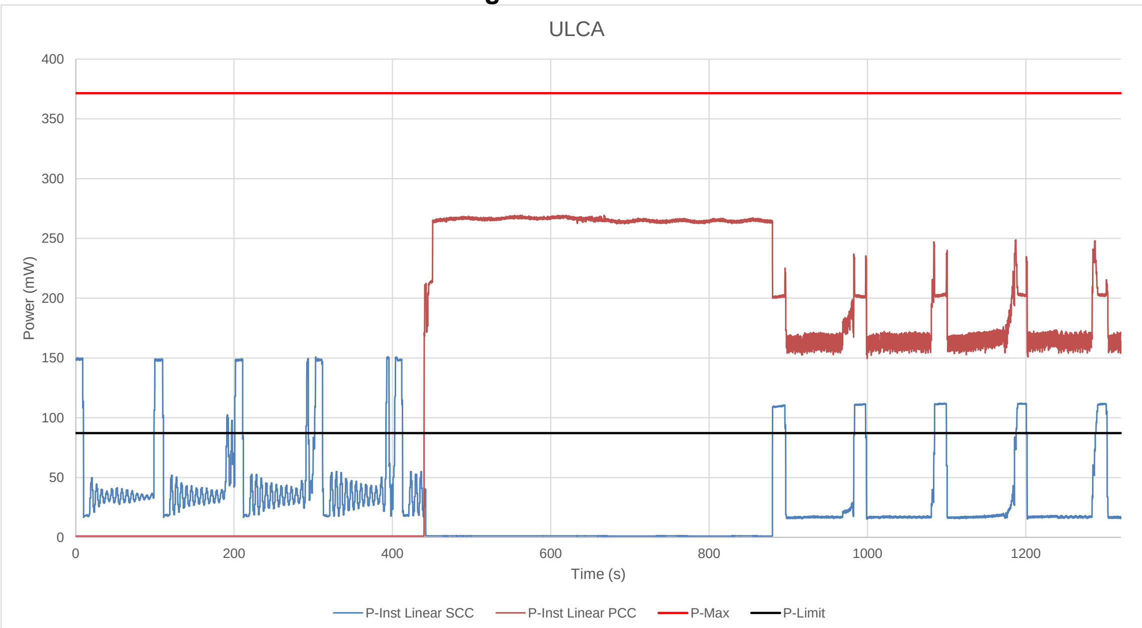
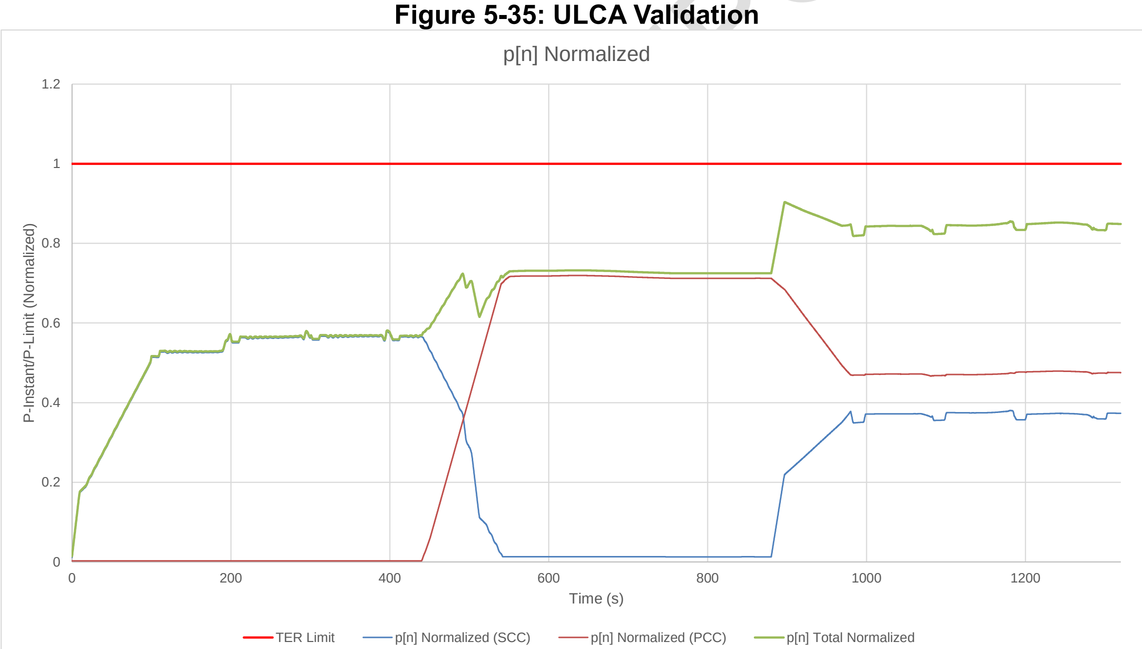


Figure 5-35: ULCA Validation



The figure above illustrates three phases: Phase 1: SCC at P_{Max}, PCC at 0 dBm; Phase 2: PCC at P_{Max}, SCC at 0 dBm; and Phase 3: PCC at P_{Max} and SCC at P_{Max} (Simultaneous budgeting).

The total normalized rolling time-averaged power (p[n]) is plotted in green (Figure 5-35).

	Validation
p[n] Total Normalized ≤ 1	0.904 ≤ 1

p[n] was calculated using the sum of LTE SCC's and LTE PCC's 100 second time-averaging duration.

6. Dynamic Budget Validation[2]

This DUT supports dynamic budget sharing for Cellular and MSS technologies. Other supported technologies operate using a static budget allocation. The SAR budget for cellular and MSS technologies is allocated dynamically over time considering usage statistics and consumed SAR from all active radios. The device total exposure ratio (TER) is always maintained less than 1.

To validate the dynamic budgeting algorithm, the following configurations will be assessed:

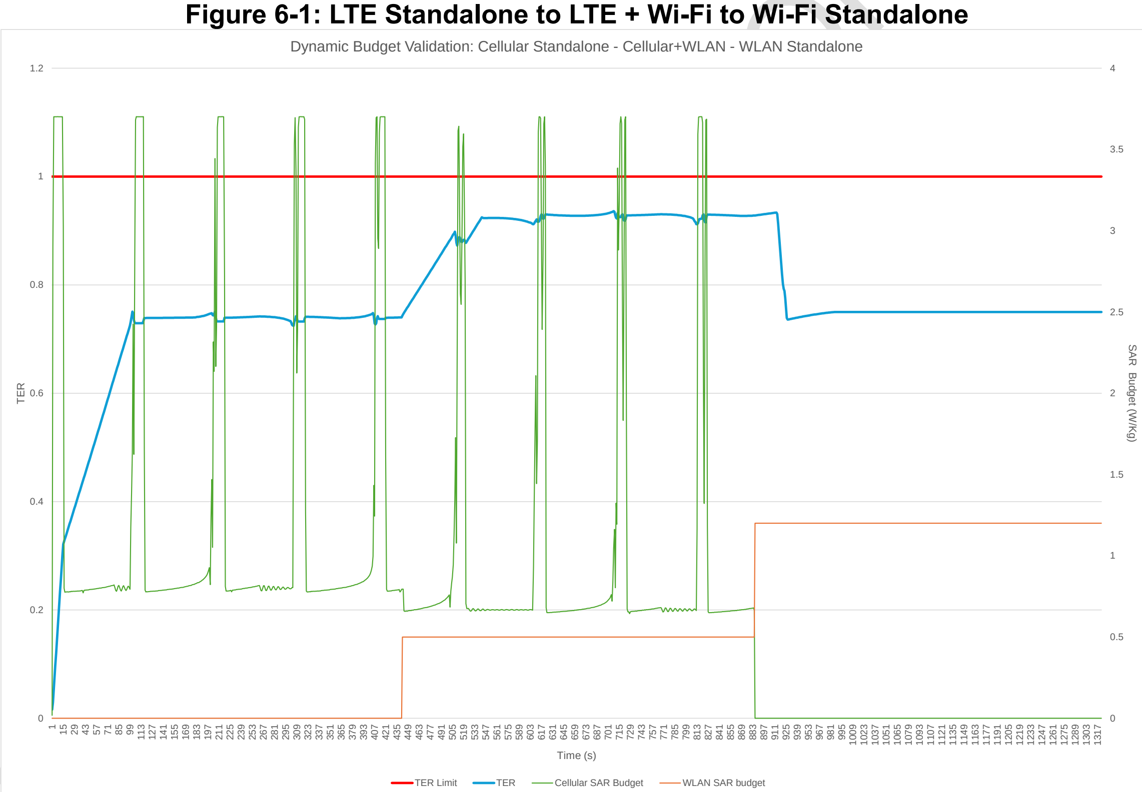
1. Cellular standalone to Cellular + WLAN to WLAN standalone
   a. P_{Max} is requested for this test scenario in all operating conditions. The test time for each connection will be sufficient to allow a steady state to be achieved.
   b. This test case validates the transition between a mode that supports dynamic budgeting to a mode that uses fixed budgeting.

6.1. Cellular Standalone to Cellular + WLAN to WLAN Standalone

This sections illustrates the transition from a dynamic budget mode (Cellular) to a static budget mode (WLAN).

6.1.1. LTE

Figure 6-1: LTE Standalone to LTE + Wi-Fi to Wi-Fi Standalone



	Validation
TER ≤ 1	1.000 ≤ 1.000

7. Conclusion

The data collected herein is sufficient in displaying the validation of this Cellular TAS algorithm. As demonstrated, the power limiting enforcement is effective and the total normalized time-averaged requested power/RF exposure does not exceed 1 nor does P[n] and TAS[n] exceed P_{Limit} and psSAR[reported], respectively.

[2] Data in this section was provided and post-processed by the OEM.

Appendices

Appendix A: Test Setup Photos

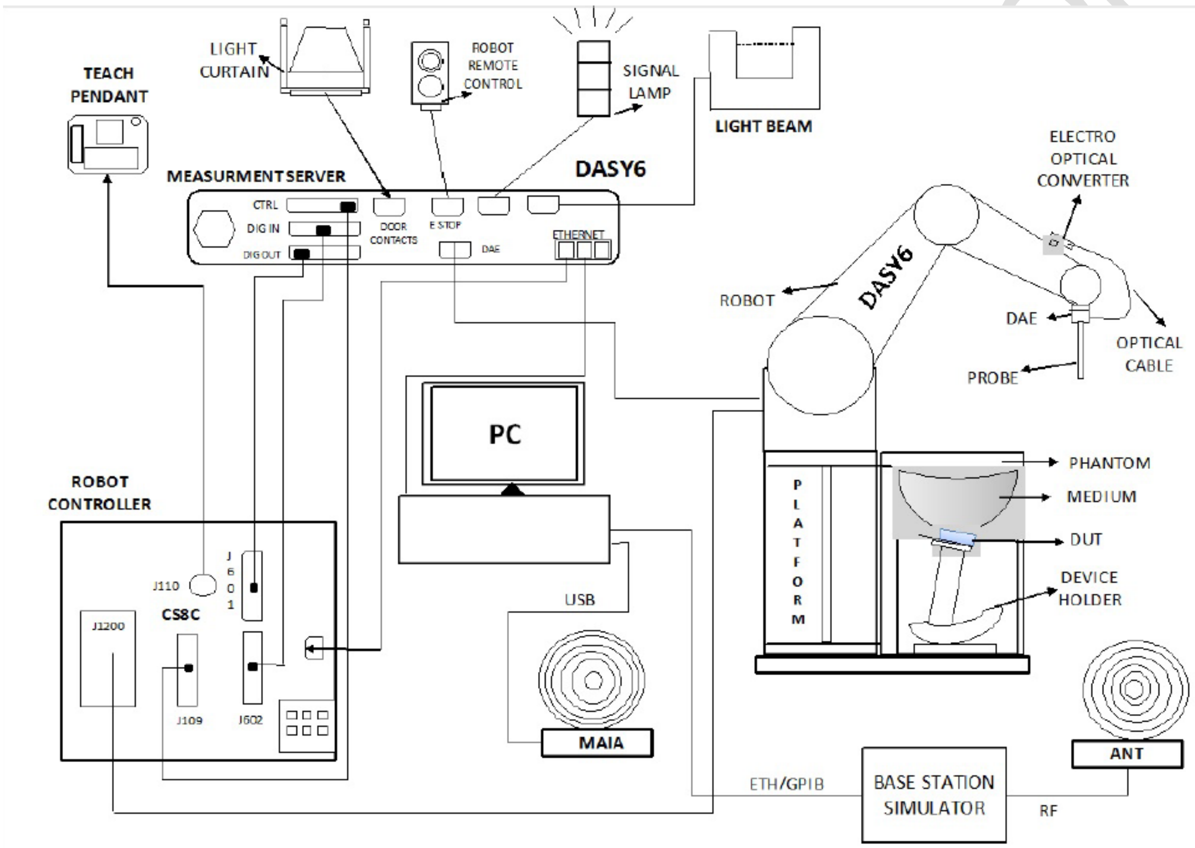
Appendix B: Probe Calibration Certificates

Appendix C: Dipole Certification Certificates

Appendix D: SAR Measurement System & Test Equipment

D.1. SAR Measurement System

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win11 and the DASY6/8 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder, and other accessories according to the targeted measurement.

D.2. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations and is traceable to recognized national standards.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Vector Network Analyzer	ROHDE & SCHWARZ	ZNLE6	101274-mn	2/28/2025
Dielectric Probe Kit	SPEAG	DAK-3.5	1103	2/12/2025
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	1/16/2025
Thermometer	Fisher Scientific	Traceable	240054866	1/31/2025

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Signal Generator	ROHDE & SHWARZ	SMB 100A	180168-gX	2/28/2025
Power Meter	Agilent	N1912A	MY50001018	2/28/2025
Power Sensor	ROHDE & SHWARZ	NRP18A	100995-hs	2/28/2025
Power Sensor	Agilent	N1921A	MY53260001	1/31/2025
Bi-Directional Coupler	Werlatone	C8060-102	4062	N/A

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 12)	SPEAG	EX3DV4	3989	1/9/2025
E-Field Probe (SAR Lab 17)	SPEAG	EX3DV4	3686	1/12/2025
Data Acquisition Electronics (SAR Lab 12)	SPEAG	DAE4	1797	5/2/2025
Data Acquisition Electronics (SAR Lab 17)	SPEAG	DAE4	1357	1/9/2025
Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
System Validation Dipole	SPEAG	D1750V2	1050	4/19/2025
System Validation Dipole	SPEAG	D1750V2	1053	10/13/2025
System Validation Dipole	SPEAG	D1900V2	5d140	4/14/2025
System Validation Dipole	SPEAG	D2600V2	1036	4/11/2025
System Validation Dipole	SPEAG	D3500V2	1060	2/7/2025
System Validation Dipole	SPEAG	D3900V2	1102	10/17/2025
Thermometer	Fisher Scientific	Traceable	170024398	6/30/2025
Thermometer	Fisher Scientific	Traceable	181062319	10/31/2025

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Sensor	R&S	NRP8S	109115	2/28/2025
Power Sensor	R&S	NRP50S	101250	2/28/2025
Wideband Radio Communication Tester	R&S	CMW500	171872	2/28/2025
Wideband Radio Communication Tester	R&S	CMW500	124594	2/28/2025
Wideband Radio Communication Tester	R&S	CMW500	170416	2/28/2025
Wideband Radio Communication Tester	R&S	CMW500	137875	2/28/2025
5G Radio Communication Tester	Keysight	E7515B UXM 5G	MY60102066	2/28/2025
Spectrum Analyzer	Keysight	EXA	MY55460216	8/27/2026
Vector Network Analyzer	R&S	ZNLE6	101274	2/28/2025
OSM Calibration Kit	R&S	ZN-Z135	101031	5/31/2025
Bi-Directional Coupler	Werlatone	C8060-102	4062	N/A
Bi-Directional Coupler	Werlatone	C8060-102	4736	N/A
Power Sensor*	R&S	NRP18Sn	102264	7/15/2026
Power Sensor*	R&S	NRP18Sn	102263	7/15/2026

Note(s):

*: Equipment used by OEM to measure and record data

Appendix E: Liquid and System Checks

E.1. Liquid Checks

Liquid Check										
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta	Measured	Target	Delta
SAR 12	12/6/2024	Head	1750	1750	40.78	40.08	1.73%	1.28	1.37	-6.28%
				1695	40.88	40.17	1.77%	1.25	1.34	-6.27%
				1780	40.73	40.04	1.73%	1.30	1.39	-6.13%
SAR 12	12/6/2024	Head	2600	2600	39.42	39.01	1.05%	1.85	1.96	-5.56%
				2495	39.58	39.14	1.12%	1.77	1.85	-4.25%
				2690	39.25	38.90	0.91%	1.92	2.06	-6.58%
SAR 12	12/9/2024	Head	1900	1900	40.94	40.00	2.35%	1.39	1.40	-1.07%
				1850	41.03	40.00	2.58%	1.35	1.40	-3.64%
				1920	40.89	40.00	2.23%	1.40	1.40	-0.07%
SAR 12	12/10/2024	Head	1750	1750	38.66	40.08	-3.55%	1.48	1.37	8.04%
				1695	38.86	40.17	-3.26%	1.45	1.34	8.30%
				1780	38.64	40.04	-3.49%	1.48	1.39	6.86%
SAR 12	12/10/2024	Head	2600	2600	36.38	39.01	-6.74%	2.06	1.96	4.83%
				2495	36.66	39.14	-6.34%	1.97	1.85	6.73%
				2690	36.12	38.90	-7.14%	2.12	2.06	3.09%
SAR 12	12/16/2024	Head	1750	1750	40.42	40.08	0.84%	1.27	1.37	-7.23%
				1695	40.48	40.17	0.77%	1.24	1.34	-7.10%
				1755	40.41	40.08	0.83%	1.27	1.37	-7.27%

Liquid Check										
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta	Measured	Target	Delta
SAR 17	12/9/2024	Head	2600	2600	38.79	39.01	-0.57%	1.95	1.96	-0.82%
				2495	38.94	39.14	-0.52%	1.86	1.85	0.40%
				2690	38.62	38.90	-0.71%	2.03	2.06	-1.67%
SAR 17	12/9/2024	Head	1750	1750	40.06	40.08	-0.06%	1.34	1.37	-2.04%
				1695	40.18	40.17	0.03%	1.31	1.34	-1.79%
				1780	39.98	40.04	-0.15%	1.36	1.39	-1.87%
SAR 17	12/10/2024	Head	3500	3500	39.80	37.93	4.93%	2.78	2.91	-4.55%
				3400	39.99	38.04	5.12%	2.69	2.81	-4.25%
				3700	39.47	37.70	4.69%	2.98	3.12	-4.53%
SAR 17	12/10/2024	Head	3900	3900	39.13	37.47	4.42%	3.18	3.32	-4.24%
				3800	39.30	37.59	4.56%	3.08	3.22	-4.37%
				4000	38.97	37.36	4.31%	3.28	3.42	-4.07%

E.2. System Checks

System Check											
Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Measured results for 1-g SAR				Measured results for 10-g SAR			
				Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%
12/6/2024	D1750V2 SN: 1053	10/13/2025	20.0	3.450	34.500	36.600	-5.74%	1.880	18.800	19.300	-2.59%
12/6/2024	D2600V2 SN: 1036	4/11/2025	20.0	5.030	50.300	55.400	-9.21%	2.310	23.100	24.900	-7.23%
12/9/2024	D1900V2 SN: 5d140	4/14/2025	20.0	4.110	41.100	39.400	4.31%	2.180	21.800	20.600	5.83%
12/10/2024	D1750V2 SN: 1053	10/13/2025	20.0	3.650	36.500	36.600	-0.27%	1.990	19.900	19.300	3.11%
12/10/2024	D2600V2 SN: 1036	4/11/2025	20.0	5.510	55.100	55.400	-0.54%	2.530	25.300	24.900	1.61%
12/16/2024	D1750V2 SN: 1050	4/19/2025	20.0	3.630	36.300	36.100	0.55%	1.950	19.500	18.900	3.17%

System Check												
Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Measured results for 1-g SAR				Measured results for 10-g SAR				
				Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%
12/9/2024	D2600V2 SN: 1036	4/11/2025	20.0	5.760	57.600	55.400	3.97%	2.620	26.200	24.900	5.22%
12/9/2024	D1750V2 SN: 1053	10/13/2025	20.0	3.530	35.300	36.600	-3.55%	1.900	19.000	19.300	-1.55%
12/10/2024	D3500V2 SN: 1060	2/7/2025	20.0	6.290	62.900	65.700	-4.26%	2.440	24.400	24.900	-2.01%
12/10/2024	D3900V2 SN: 1102	10/17/2025	20.0	6.690	66.900	69.300	-3.46%	2.390	23.900	24.100	-0.83%

Appendix F: Measurement Uncertainty

F.1. SAR

300 MHz to 3 GHz

Uncertainty component	Uncertainty Value (±%)	Prob. Dist.	Div.	*ci* (1 g)	*ci* (10 g)	Std. Unc. 1 g (± %)	Std. Unc. 10 g (± %)
Measurement System							
Probe Calibration	12.00	Normal	2	1	1	6.00	6.00
Probe Calibration Drift	1.70	Rectangular	1.732	1	1	1.0	1.0
Probe Linearity	4.70	Rectangular	1.732	1	1	2.7	2.7
Boradband Signal	3.00	Rectangular	1.732	1	1	1.7	1.7
Probe Isotropy	7.60	Rectangular	1.732	1	1	4.4	4.4
Other Probe+Electronic	0.70	Normal	1	1	1	0.7	0.7
RF Ambient	1.80	Normal	1	1	1	1.8	1.8
Probe Positioning	0.60	Normal	1	0.14	0.14	0.1	0.1
Data Processing	1.20	Normal	1	1	1	1.2	1.2
Phantom and Device Errors							
Conductivity (meas.)[DAK]	2.50	Normal	1	0.78	0.71	2.0	1.8
Conductivity (temp.)[BB]	3.30	Rectangular	1.732	0.78	0.71	1.5	1.4
Phantom Permittivity	14.00	Rectangular	1.732	0	0	0.0	0.0
Distance DUT - TSL	2.00	Normal	1	2	2	4.0	4.0
Device Positioning	1.00	Normal	1	1	1	1.0	1.0
Device Holder	3.60	Normal	1	1	1	3.6	3.6
DUT Modulation[m]	2.40	Rectangular	1.732	1	1	1.4	1.4
Time-average SAR	1.70	Rectangular	1.732	1	1	1.0	1.0
DUT Drift	2.50	Normal	1	1	1	2.5	2.5
Val Antenna Unc.[val]	0.00	Normal	1	1	1	0.0	0.0
Unc. Input Power[val]	0.00	Normal	1	1	1	0.0	0.0
Correction to the SAR results							
Uncertainty in SAR Correction for Deviations in Permittivity and Conductivity	1.90	Normal	1	1	0.84	1.9	1.6
SAR scaling[p]	0.00	Rectangular	1.732	1	1	0.0	0.0
Liquid Conductivity - measurement	**8.30**	Normal	1	0.78	0.71	6.5	5.9
Combined Standard Uncertainty Uc(y) =		RSS				12.7	12.4
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =						25.5	24.7

3 GHz to 6 GHz

Uncertainty component	Uncertainty Value (±%)	Prob. Dist.	Div.	*ci* (1 g)	*ci* (10 g)	Std. Unc. 1 g (± %)	Std. Unc. 10 g (± %)
Measurement System							
Probe Calibration	13.10	Normal	2	1	1	6.55	6.55
Probe Calibration Drift	1.70	Rectangular	1.732	1	1	1.0	1.0
Probe Linearity	4.70	Rectangular	1.732	1	1	2.7	2.7
Boradband Signal	2.60	Rectangular	1.732	1	1	1.5	1.5
Probe Isotropy	7.60	Rectangular	1.732	1	1	4.4	4.4
Other Probe+Electronic	1.20	Normal	1	1	1	1.2	1.2
RF Ambient	1.80	Normal	1	1	1	1.8	1.8
Probe Positioning	0.50	Normal	1	0.29	0.29	0.15	0.15
Data Processing	2.30	Normal	1	1	1	2.3	2.3
Phantom and Device Errors							
Conductivity (meas.)^{DAK}	2.50	Normal	1	0.78	0.71	2.0	1.8
Conductivity (temp.)^{BB}	3.40	Rectangular	1.732	0.78	0.71	1.5	1.4
Phantom Permittivity	14.00	Rectangular	1.732	0.25	0.25	2.0	2.0
Distance DUT - TSL	2.00	Normal	1	2	2	4.0	4.0
Device Positioning	1.00	Normal	1	1	1	1.0	1.0
Device Holder	3.60	Normal	1	1	1	3.6	3.6
DUT Modulation^{m}	2.40	Rectangular	1.732	1	1	1.4	1.4
Time-average SAR	1.70	Rectangular	1.732	1	1	1.0	1.0
DUT Drift	2.50	Normal	1	1	1	2.5	2.5
Val Antenna Unc.^{val}	0.00	Normal	1	1	1	0.0	0.0
Unc. Input Power^{val}	0.00	Normal	1	1	1	0.0	0.0
Correction to the SAR results							
Uncertainty in SAR Correction for Deviations in Permittivity and Conductivity	1.90	Normal	1	1	0.84	1.9	1.6
SAR scaling^{p}	0.00	Rectangular	1.732	1	1	0.0	0.0
Liquid Conductivity - measurement	**-4.55**	Normal	1	0.78	0.71	-3.5	-3.2
Combined Standard Uncertainty Uc(y) =		RSS				12.2	12.0
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =						24.4	24.0

F.2. Conducted

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{Lab}
RF Power Measurement Direct Method Using Power Meter	1.300 dB Peak 0.450 dB Avg

Uncertainty figures are valid to a confidence level of 95%.

END OF REPORT