

FCC TAS validation – Part 2:

Tests under dynamic transmit power scenarios

The following samples were submitted and identified on behalf of the client as:

EUT Description	Galaxy Tab S11 Basic
Brand Name	Samsung
Model No.	SM-X736B
Applicant	Element Materials Technology 7185 Oakland Mills Road, Columbia, MD 21046, United States
FCC ID	A3LSMX736B
Date of EUT Receipt	Jul. 02, 2025
Date of Test(s)	Jul. 02, 2025 ~ Jul. 21, 2025
Date of Issue	Jul. 22, 2025

Approved By /

John Teh

John Yeh

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2507000530EN	00	Initial creation of document	Jul. 18, 2025	Kimmy Chiou	
TESA2507000530EN	01	Modify comment	Jul. 21, 2025	Kimmy Chiou	*
TESA2507000530EN	02	Modify comment	Jul. 22, 2025	Kimmy Chiou	*

Note:

1. The mark " * " is the revised version of the report due to comments submitted by the certification.

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1 GENERAL INFORMATION

1.1 Test Facility

Laboratory	Test Site Address	Test Site Name	Test Engineer	PM	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Road, NeiHu District, Taipei City, 11493, Taiwan	SAR 2	-	-	TW0029	TW3702
		SAR 6	Chia-Hung Sun	Kiki Lin		
		SAR 8	-	-		
	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan	SAR 1	-	-	TW0028	
		SAR 4	-	-		
	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan	SAR 3	-	-	TW0027	
		SAR 7	-	-		

Note: Test site name is remarked on a bolded mark as an indication where measurements occurred in specific test site and address.

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2 OVERVIEW

FCC regulation allows time averaged RF power to demonstrate compliance to RF exposure safety limits. Because RF exposure is correlated to transmission power (TX power), e.g., lower RF exposure is correlated to lower TX power, the TX power can be controlled to meet FCC RF exposure limits defined specific absorption rate (SAR) limit for transmit frequencies < 6GHz and power density (PD) limit for transmit frequencies > 6GHz. For SAR limit, the proposed Time-Averaged Specific Absorption Rate (TA-SAR) Gen2 algorithm manages TX power to always ensure that the time-averaged RF exposure is compliant with the FCC SAR requirement. For PD limit, the proposed Time-Averaged Power Density (TA-PD) Gen2 algorithm controls TX power to ensure that the time-averaged RF exposure is compliant with the FCC PD requirement. In the FCC regulation and October 2018 TCB Workshop notes, the time averaging window of SAR is no more than 100 seconds for transmit frequencies less than 3GHz, and no more than 60 seconds for transmit frequencies between 3GHz and 6GHz, and the averaging window of PD is no more than 4 seconds for transmit frequencies between 24GHz and 42GHz, no more than 2 seconds for transmit frequencies between 42GHz and 95GHz.

This document describes the test plan, test procedures, measurement setup, and measurement results for the verification of the proposed TA-SAR/TA-PD Gen2 algorithm being able to make RF exposure meet FCC requirement. The operating parameters for the algorithm validation are described in Chapter 2. The overview of the test proposal is given in Chapter 3. The test procedures for the conducted power measurements and SAR measurements are described in Chapter 4. The test procedures for the radiated power measurements and PD measurements are described in Chapter 5. For the TA-SAR Gen2 algorithm validation, the measurement setup for the conducted power tests and the corresponding measurement results are included in Chapter 6. It is concluded in Chapter 7 that the proposed TA-SAR Gen2 algorithm can apply dynamic power control to ensure FCC compliance in real-time.

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3 MEDIATEK TAS FEATURE OPERATION DESCRIPTION

3.1 Operating Parameters for Algorithm Validation

Mediatek developed the TA-SAR/TA-PD Gen2 algorithm to control instantaneous TX power for transmit frequencies less and larger than 6GHz respectively, so that the total time-averaged RF exposures (i.e., SAR, PD, and SAR+PD exposure) are less than the FCC requirement.

TA-SAR Gen2 algorithm validation has been performed for 2G, 3G, LTE, and NR FR1 according to the test cases with the different combinations of the operating parameters listed in Table 3-1. Table 3-1 TA-SAR Gen2 operating parameters

Table 3-1 TA-SAR operating parameters

Operating parameters	Description
P_{sub6_limit}	- Maximum time-averaged TX power limit (corresponding to <i>SAR_design_limit</i>, which is less than or equal to FCC limit in consideration of the sub6 device uncertainty, simultaneous transmission, etc.) for different bands of 2G, 3G, LTE, and NR FR1. - For a band, <i>SAR_design_limit</i> can be defined differently for a single-band test case or a multi-band test case (e.g., ENDC) due to the conservative consideration, and therefore P_{sub6_limit} would be different correspondingly.
$P_{UE_backoff_offset}$	Parameter for calculating $P_{UE_backoff}$. $P_{UE_backoff} = \min(P_{UE_max}, P_{sub6_limit} - P_{UE_backoff_offset})$ P_{UE_max} is maximum TX power at which a UE can possibly transmit.
$P_{UE_max_cust_offset}$	Parameter for calculating $P_{UE_max_cust}$. $P_{UE_max_cust} = \min(P_{UE_max}, P_{sub6_limit} + P_{UE_max_cust_offset})$
$SPLSR_group$	Sub6 antenna group index - Antennas can be grouped based on the parameter SAR to Peak Location Separation Ratio (SPLSR) (KDB 447498). - The exposure of the antennas, which belong to the same group, should be counted together to meet total exposure ratio (TER) requirement.

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<i>Level_num_{sub6_pwr}</i>	The number of backoff levels constraining sub6 instantaneous TX power.
<i>Algo_avg_window_{sub6}</i>	The time-averaged window used by TA-SAR Gen2 algorithm. The setting of the value should follow Table 2-3, which was recommended in TCBC workshop of Oct. 2018.
<i>is_fbo_en</i>	- If <i>is_fbo_en</i> is set to '0', the TA-SAR/TA-PD Gen2 algorithm controls maximum time-averaged TX power does not exceed P_{sub6_limit} or P_{FR2_limit}. - If <i>is_fbo_en</i> is set to '1' for a given MCC, the TA-SAR/TA-PD Gen2 algorithm constrains the maximum instantaneous TX power always below P_{sub6_limit} or P_{FR2_limit} under static condition and in single active TX scenario.

Note:

For the design limit corresponding to power limit of sub6

$$1. \quad SAR_design_limit * 10^{(sub6 \text{ device uncertainty}/10)} < regulatory \text{ RF exposure limit for sub6}$$

Where sub6 device uncertainty =1 dB in this report

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Table 3-2 Algorithm time-averaging window recommended in TCBC WS of October 2018

Interim Guidance	Frequency (GHz)	Maximum Averaging Time (sec)
SAR	< 3	100
	3 – 6	60
MPE	6 - 10	30
	10 - 16	14
	16 – 24	8
	24 – 42	4
	42 – 95	2

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3.2 Overview of TA-SAR/TA-PD Gen2 Test Proposal

For the completeness of verifying that the proposed TA-SAR Gen2 algorithm can realize FCC compliance regarding RF exposure, several test scenarios are constructed as below:

- **Scenario 1:** test under different TA-SAR Gen2 parameters to verify that the TA SAR Gen2 algorithm meets compliance requirements with different combinations of operating parameters.
- **Scenario 2:** test under time-varying TX power to verify that the TA-SAR Gen2 algorithm ensures SAR compliance through dynamic TX power.
- **Scenario 3:** test under call drop and re-establishment conditions to ensure that the TA-SAR Gen2 algorithm can control continuity and maintain SAR compliance.
- **Scenario 4:** test under RAT/band handover to ensure that the TA-SAR Gen2 algorithm can control continuity and maintain SAR compliance.
- **Scenario 5:** test under different ECIs (Exposure Condition Index) to ensure that the TA-SAR Gen2 algorithm behaves as expected during ECI switching from one ECI to another. (e.g., head → body worn)
- **Scenario 6:** test under different transmission antennas to ensure that the TA-SAR Gen2 algorithm works correctly during antenna switching from one antenna to another.
- **Scenario 7:** test under different time windows to ensure that the TA-SAR Gen2 algorithm functions correctly during time window switching from one time window setting to another. (e.g., time window 100s → 60s)
- **Scenario 8:** test under SAR exposure switching between two active radio sets (radio set 1 only, radio set 1+radio set 2, and radio set 2 only) to ensure that the TA-SAR Gen2 algorithm can control continuity and maintain SAR compliance.

For the TA-SAR Gen2 algorithm validation, the description of the conducted-power test procedures is included in sections 4.2~4.9, and the description of the SAR test procedures is included in section 4.10. In each of the test scenarios, the test sequence, described in section 4.1, is applied.

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4 TA-SAR GEN2 TEST SCENARIOS AND TEST PROCEDURES

To demonstrate that the TA-SAR Gen2 algorithm performs as expected under various operating scenarios, Table 4-1 lists the test scenarios and the corresponding test sequences. The test sequences 0, 1, and 2 are defined in section 4.1. The details of each test procedure via conducted power and SAR measurements are described in section 4.2~4.9 and section 4.10, respectively.

Table 4-1 Test scenario list for TA-SAR Gen2 algorithm validation

Test scenario		Test sequences #	Description
1	Range of TA-SAR Gen2 parameters	0	Test under different parameter sets
2	Time-varying TX power	1 and 2	Test under time-varying TX power
3	Call disconnection and re-establishment	0	Test with call drop and re-establishment
4	Band handover	0	Test band change
5	ECI (Exposure Condition Index) change	0	Test under ECI transition (e.g., head → body worn)
6	Antenna switching	0	Change antenna
7	Time window switching	0	Switch frequency bands with larger frequency separation (e.g., time window 100s→60s)
8	SAR exposure switching	0	Switch RATs when testing (e.g., LTE→NR)

Note: for each test scenario, only need to test within a SPLSR group, since the results should be highly similar for other SPLSR groups.

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4.1 Test Sequences for All Scenarios

Three test sequences having possibly time-varying TX power are predefined for TA-SAR Gen2 validation:

- **Test sequence 0:** EUT's TX power is requested to be maximum.
- **Test sequence 1:** EUT's TX power is requested to be at power less than P_{sub6_limit} 0.5dB for 300s, then at maximum power for 200s, and finally at $P_{sub6_limit} - 2.5$ dB for the remaining time.
- **Test sequence 2:** EUT's TX power to vary with time. This sequence is generated based on the measured P_{UE_max} , measured P_{sub6_limit} and calculated $P_{UE_backoff}$ (= measured P_{sub6_limit} in dBm - $P_{UE_backoff_offset}$ in dB) of the EUT.

The test sequences 0, 1, and 2 are illustrated in Figure 4-1, Figure 4-2, and Figure 4-3, respectively. Furthermore, the three test sequences are respectively tabulated in Table 4-2, Table 4-3, and Table 4-4.

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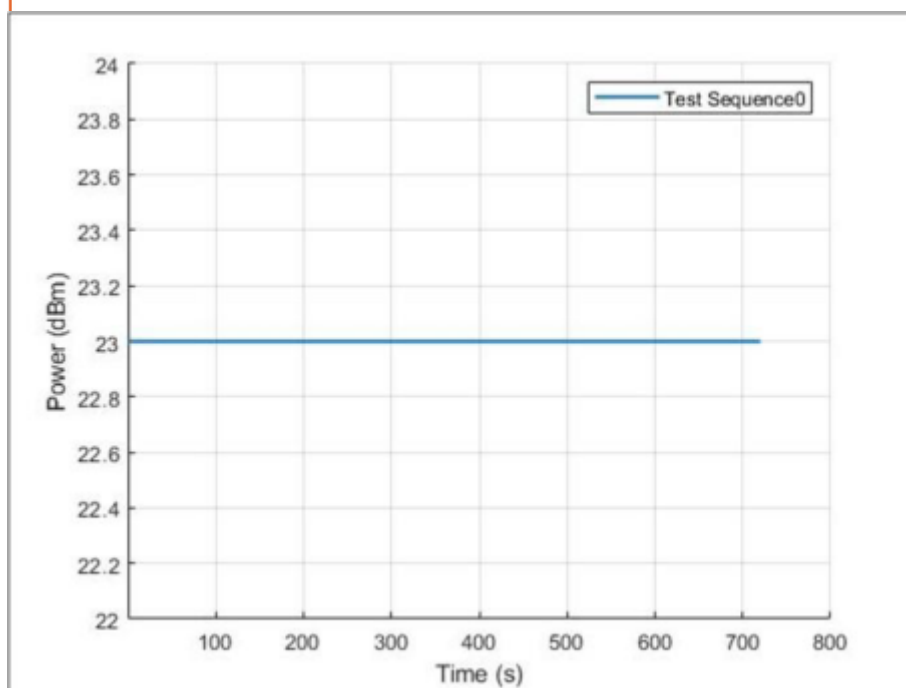


Figure 4-1 Test sequence 0

Table 4-1 Test sequence 0

Time	Duration	Power (dBm)	Note
720	720	23	P_{UE_max}

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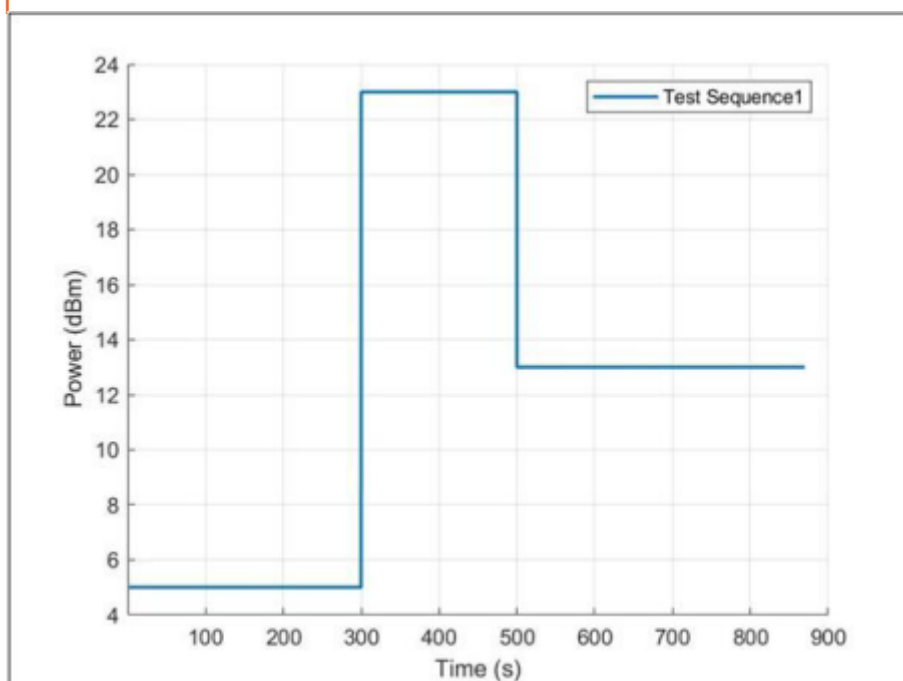


Figure 4-2 Test sequence 1

Table 4-2 Test sequence 1

Time	Duration	Power (dBm)	Note
300	300	5	$< P_{sub6_limit} - 0.5\text{dB}$
500	200	23	P_{UE_max}
870	370	13	$P_{sub6_limit} - 2.5\text{dB}$

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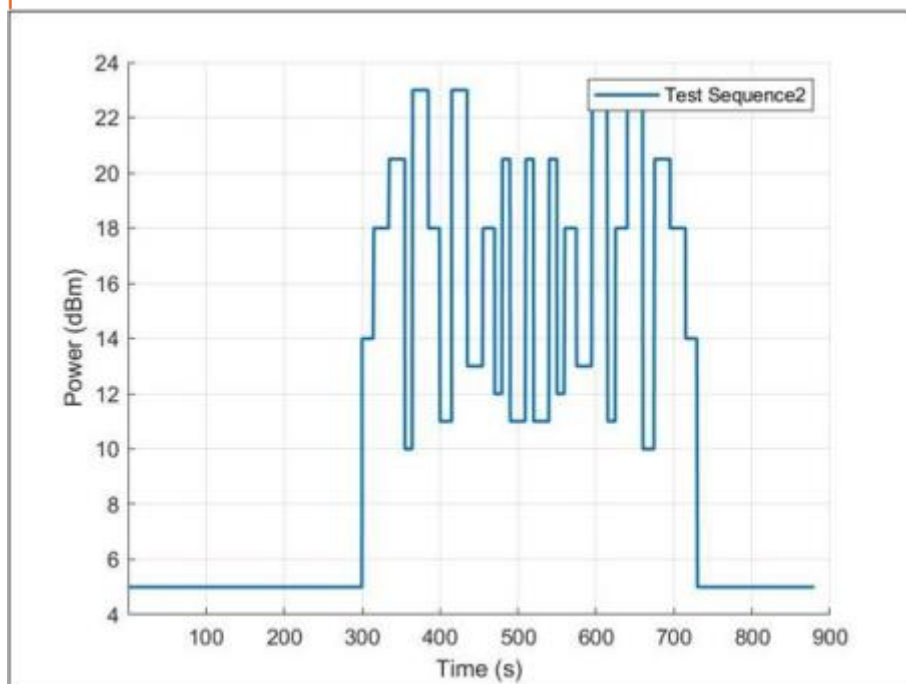


Figure 4-3 Test sequence 2

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Table 4-4 Test sequence 2

Time	Duration	Power (dBm)	Note
300	300	5	$< P_{sub6_limit} - 0.5dB$
315	15	14	$P_{sub6_limit} - 4dB$
335	20	18	P_{sub6_limit}
355	20	20.5	$(P_{sub6_limit} + P_{UE_max})/2$
365	10	10	$P_{sub6_limit} - 8dB$
385	20	23	P_{UE_max}
400	15	18	P_{sub6_limit}
415	15	11	$P_{sub6_limit} - 7dB$
435	20	23	P_{UE_max}
455	20	13	$P_{sub6_limit} - 5dB$
470	15	18	P_{sub6_limit}
480	10	12	$P_{sub6_limit} - 6dB$
490	10	20.5	$(P_{sub6_limit} + P_{UE_max})/2$
510	20	11	$P_{sub6_limit} - 7dB$
520	10	20.5	$(P_{sub6_limit} + P_{UE_max})/2$
540	20	11	$P_{sub6_limit} - 7dB$
550	10	20.5	$(P_{sub6_limit} + P_{UE_max})/2$
560	10	12	$P_{sub6_limit} - 6dB$
575	15	18	P_{sub6_limit}
595	20	13	$P_{sub6_limit} - 5dB$
615	20	23	P_{UE_max}
625	10	11	$P_{sub6_limit} - 7dB$
640	15	18	P_{sub6_limit}
660	20	23	P_{UE_max}
675	15	10	$P_{sub6_limit} - 8dB$
695	20	20.5	$(P_{sub6_limit} + P_{UE_max})/2$
715	20	18	P_{sub6_limit}
730	15	14	$P_{sub6_limit} - 4dB$
870	140	5	$< P_{sub6_limit} - 0.5dB$

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4.2 Test Configuration and Procedure for Scenario 1: Range of TA-SAR Gen2 Parameters via Conducted Power Measurements

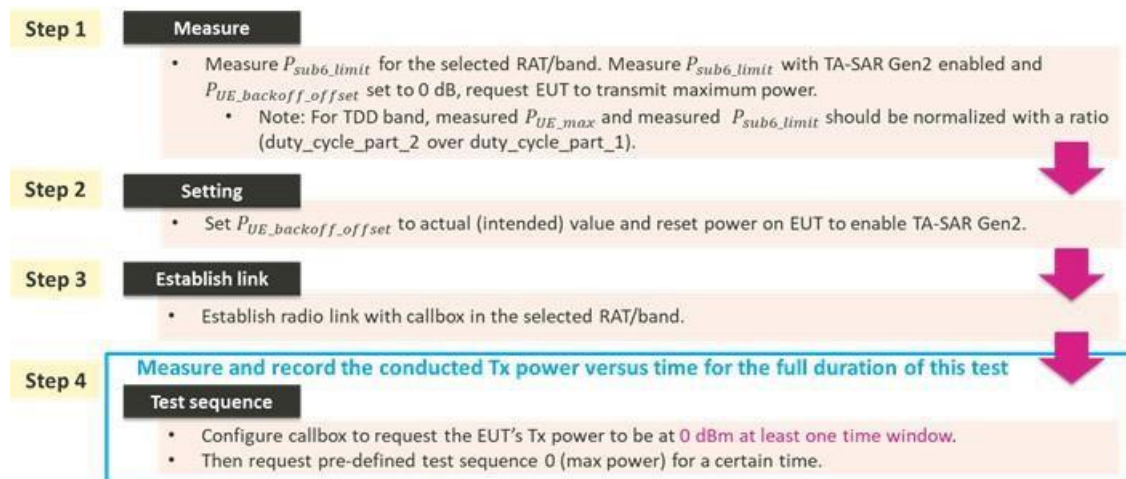
4.2.1 Configuration

This test is performed by changing the parameters ($P_{UE_backoff_offset}$, $P_{UE_max_cust_offset}$, $Level_num_{sub6_pwr}$, $Algo_avg_window_{sub6}$) for the selected RAT (Radio Access Technologies) and band. Since Mediatek's TA-SAR Gen2 algorithm operation is independent of RATs/bands/channels/modulation/bandwidth (RBs), any one RAT can be selected for this test and the selected band of the RAT has the least P_{sub6_limit} . In principle, two sets of the parameters are determined for this test (if applicable). If the parameters of the EUT are fixed (without a support of dynamic change), only the set of the default parameters needs to be tested.

4.2.2 Procedure

TX power is measured, recorded, and processed by the following steps:

- Step 1~4: measure and record TX power versus time for test scenario 1

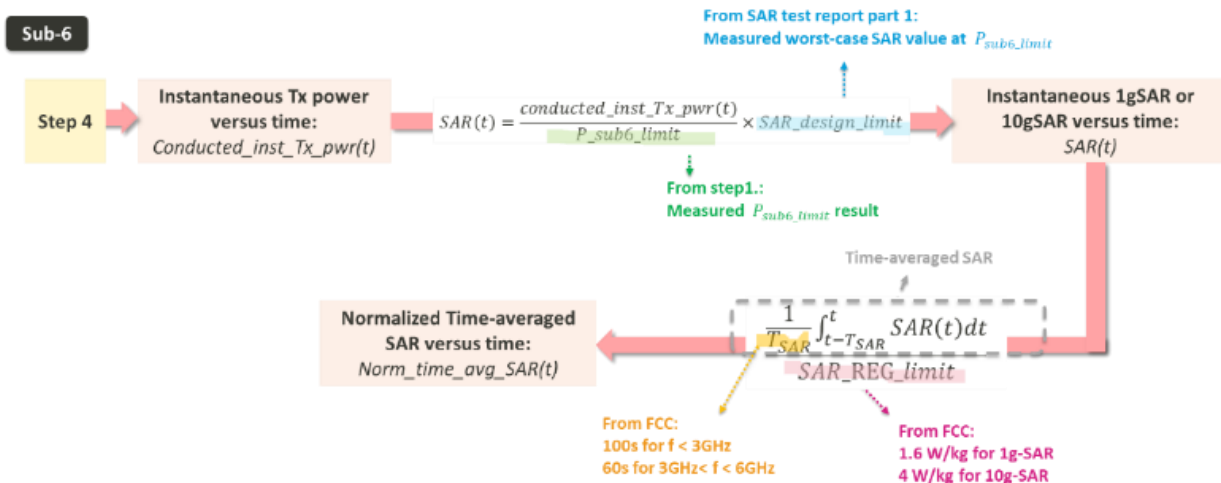


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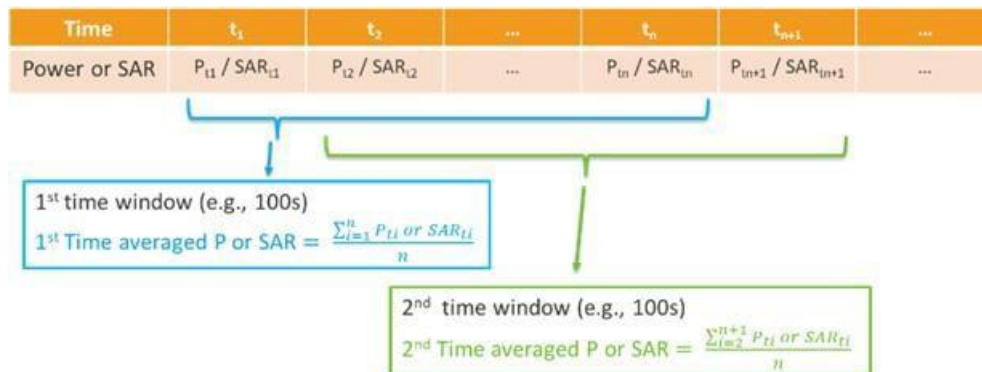
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- Step 5: convert the measured conducted TX power into SAR
Convert the measured conducted TX power from step 4 into 1gSAR or 10gSAR value, and perform the running time average on the conducted TX power and 1gSAR or 10g SAR to determine the time- averaged TX power or SAR by using the following equations.



Specifically, the running time average is illustrated with the below figure.



- Step 6: plot results
 - Make one TX power related plot containing
 - Instantaneous TX power
 - Calculated time-averaged power
 - Calculated time-averaged power limits
 - Make one SAR related plot containing
 - Calculated time-averaged 1gSAR or 10gSAR
 - FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)

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4.3 Test Configuration and Procedure for Scenario 2: Time- Varying TX Power via Conducted Power Measurements

4.3.1 Configuration

Since Mediatek's TA-SAR Gen2 algorithm operation is independent of bands and channels for a given RAT, selecting one channel per band/RAT is sufficient to validate this feature. Two bands per RAT are proposed for this test. The criteria for band selection for each RAT is based on the P_{sub6_limit}

values (corresponding to SAR_design_limit) and is described as below:

- Select two bands, among the ones whose P_{sub6_limit} values are below P_{UE_max} , which correspond to least and highest P_{sub6_limit} values respectively.
 1. Only one band needs to be tested if all the bands have same P_{sub6_limit} .
 2. Only one band needs to be tested if only the band has P_{sub6_limit} below P_{UE_max} .
 3. If the same least P_{sub6_limit} applies to multiple bands, select the band with the highest measured 1gSAR at P_{sub6_limit} .
 4. If P_{sub6_limit} values of all bands are all over P_{UE_max} (i.e., the TA-SAR Gen2 algorithm is not enabled), there is no need to test this RAT.

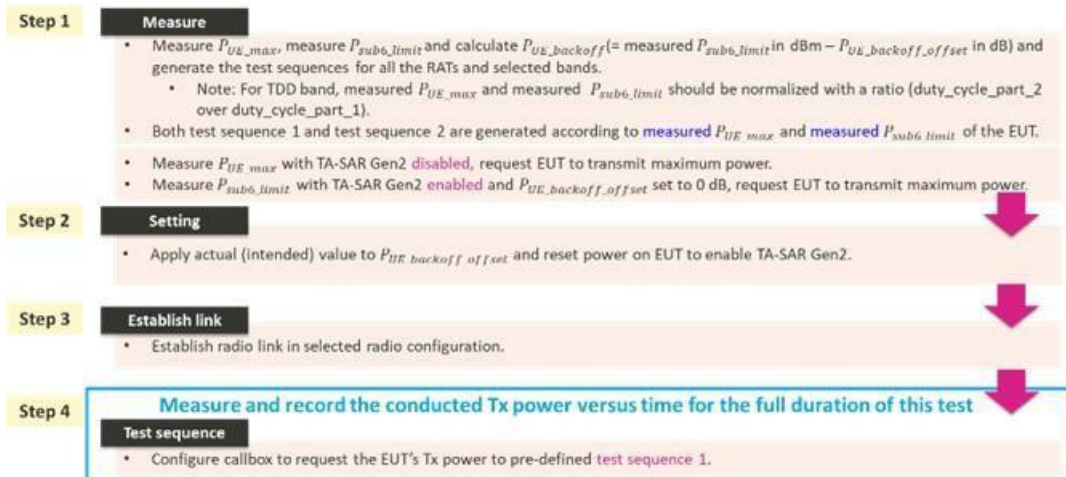
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4.3.2 Procedure

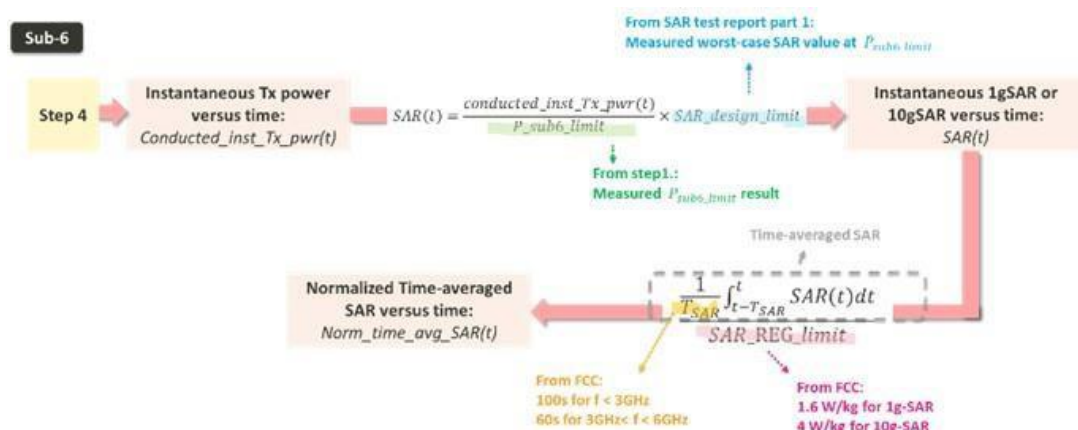
TX power is measured, recorded, and processed by the following steps:

- Step 1~4: measure and record the TX power versus time for test scenario 2



- Step 5: convert the measured conducted TX power into SAR

Convert the measured conducted TX power from step 4 into 1gSAR or 10gSAR value, and perform the running time average on the conducted TX power and 1gSAR or 10g SAR to determine the time- averaged TX power or SAR by using the following equations (also see section 4.2.2 for the illustration of the running time average operation).



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● Step 6: plot results

A. Make one TX power related plot containing

1. Instantaneous TX power
2. Calculated time-averaged power
3. Calculated time-averaged power limits

B. Make one SAR related plot containing

1. Calculated time-averaged 1gSAR or 10gSAR
2. FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)

● Step 7: repeat steps 2~6 for test sequence 2

Replace test sequence 1 in step 4 with test sequence 2, and repeat steps 2 ~ 6.

● Step 8: repeat steps 2~7 for different bands

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4.4 Test Configuration and Procedure for Scenario 3: Call Disconnection and Re-establishment via Conducted Power Measurements

4.4.1 Configuration

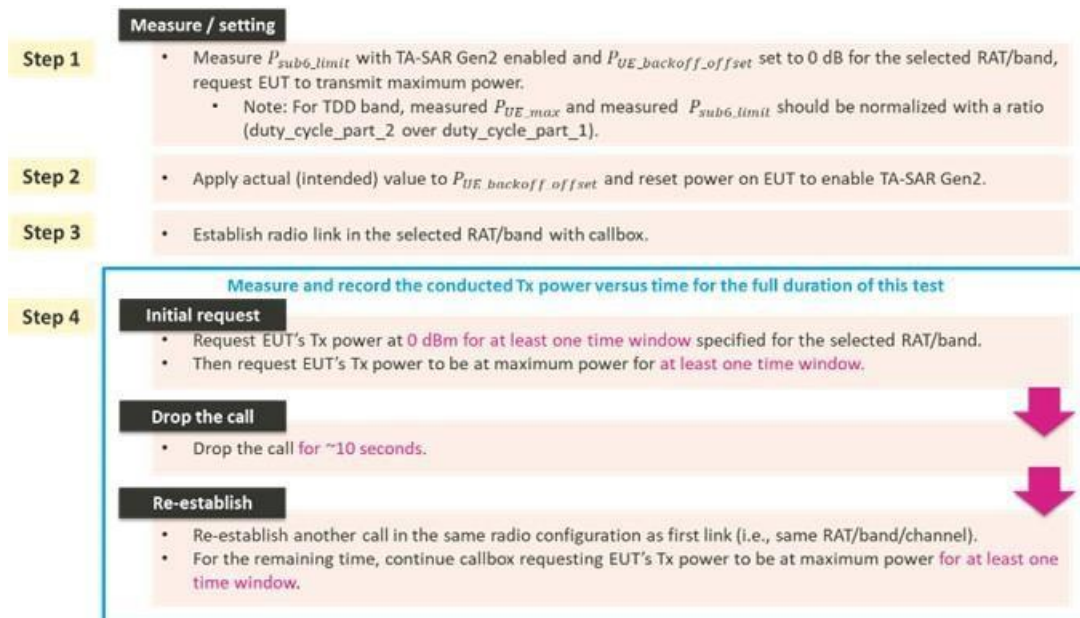
For the call disconnection measurement, the criteria of selecting the test configuration is:

- Select the RAT/band with least P_{sub6_limit} among all supported RATs/bands.
- Select the RAT/band having the highest measured 1gSAR at P_{sub6_limit} if multiple RATs/bands having same least P_{sub6_limit} .

4.4.2 Procedure

TX power is measured, recorded, and processed by the following steps:

- Step 1~4: measure and record the TX power versus time for test scenario 3



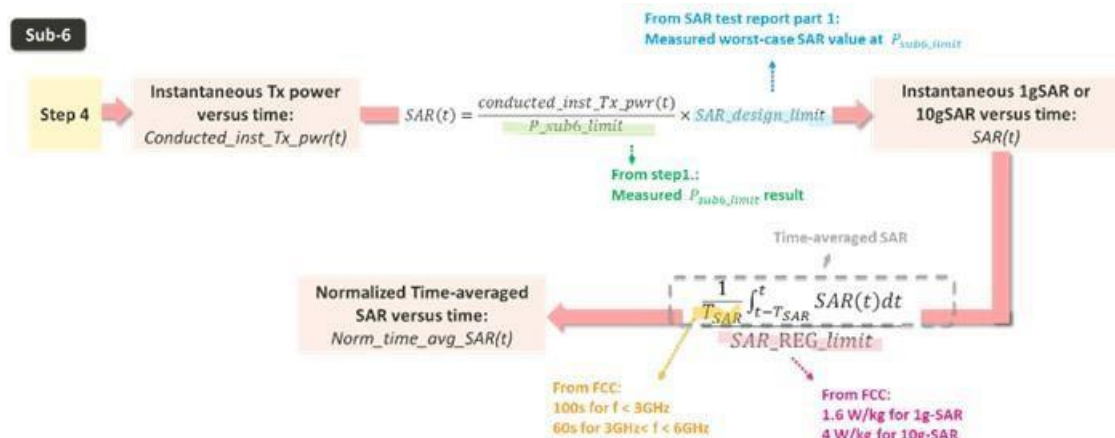
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● Step 5: convert the measured conducted TX power into SAR

Convert the measured conducted TX power from step 4 into 1gSAR or 10gSAR value, and perform the running time average on the conducted TX power and 1gSAR or 10g SAR to determine the time- averaged TX power or SAR by using the following equations (also see section 4.2.2 for the illustration of the running time average operation).



● Step 6: plot results

A. Make one TX power related plot containing

1. Instantaneous TX power
2. Calculated time-averaged power
3. Calculated time-averaged power limits

B. Make one SAR related plot containing

1. Calculated time-averaged 1gSAR or 10gSAR
2. FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)

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4.5 Test Configuration and Procedure for Scenario 4: Band Handover via Conducted Power Measurements

4.5.1 Configuration

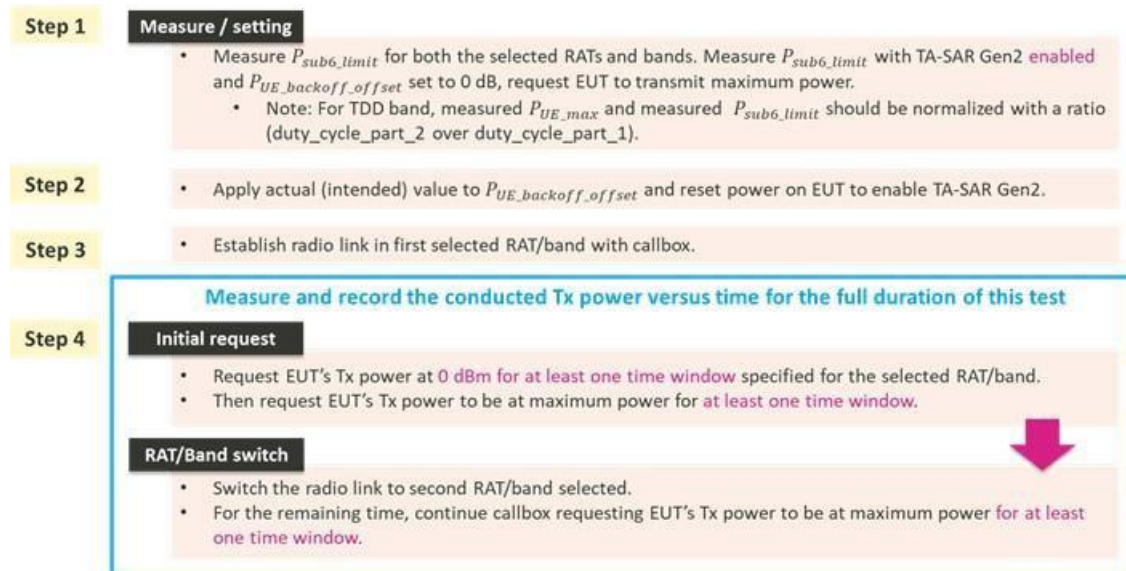
For a given TX antenna, select a RAT/band with the lowest P_{sub6_limit} and the other RAT/band with the highest P_{sub6_limit} . Both of them have P_{sub6_limit} values less than P_{UE_max} if possible.

- Select the RAT/band having the highest measured 1gSAR at P_{sub6_limit} if multiple RATs/bands have the same lowest P_{sub6_limit} .
- Select the RAT/band having the lowest measured 1gSAR at P_{sub6_limit} if multiple RATs/bands have the same highest P_{sub6_limit} .

4.5.2 Procedure

TX power is measured, recorded, and processed by the following steps:

- Step 1~4: measure and record TX power versus time for test scenario 4



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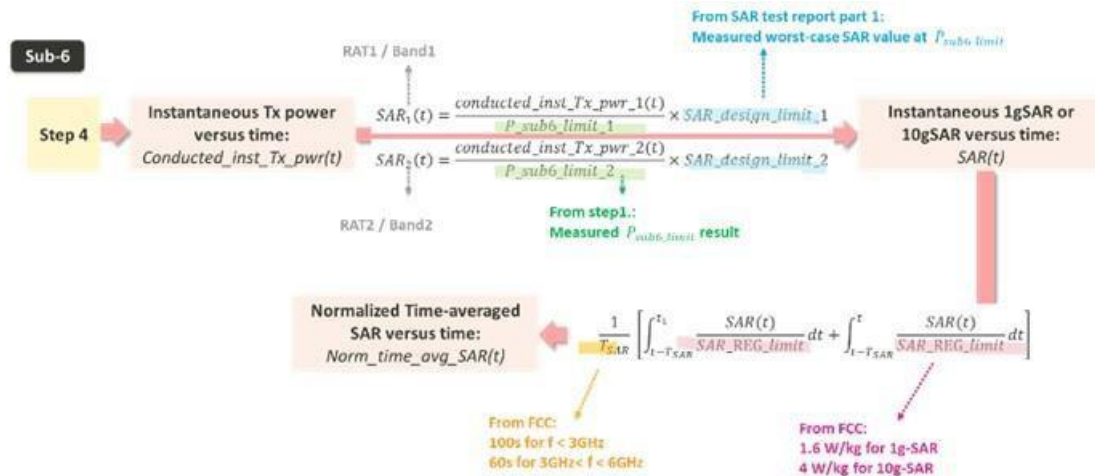
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● Step 5: convert the measured conducted TX power into SAR

Convert the measured conducted TX power from step 4 into 1gSAR or 10gSAR value, and perform the running time average on the conducted TX power and 1gSAR or 10g SAR to determine the time- averaged TX power or SAR by using the following equations (also see section 4.2.2 for the illustration of the running time average operation).



● Step 6: plot results

A. Make one TX power related plot containing

1. Instantaneous TX power
2. Calculated time-averaged power
3. Calculated time-averaged power limits

B. Make one SAR related plot containing

- Calculated time-averaged 1gSAR or 10gSAR
- FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)
- Normalized time-averaged 1gSAR/1.6 or 10gSAR/4.0

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4.6 Test Configuration and Procedure for Scenario 5: Exposure Condition Index (ECI) Change via Conducted Power Measurements

4.6.1 Configuration

Select any one RAT/band, which has at least two ECIs whose P_{sub6_limit} values are different and are below P_{UE_max} .

4.6.2 Procedure

The test procedure is identical to section 4.5.2 except the following 2 changes:

1. Replace band switch with ECI switch.
2. In Step 4, the second ECI switching is arranged after the first one lasts for at least one time window, i.e., switch the second ECI back to the first ECI, and then continue with the callbox requesting EUT's TX power to be at the maximum level for at least one time window.

It is noted that the following operations are done as well for this scenario:

- The TX power is correctly controlled by TA-SAR Gen2 algorithm during ECI switches from one to another.
- The validation criteria are that the time-averaged 1gSAR or 10gSAR shall not exceed FCC limit of 1.6 W/kg for 1gSAR or 4.0 W/kg for 10gSAR at all times.

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4.7 Test Configuration and Procedure for Scenario 6: Antenna Switching via Conducted Power Measurements

4.7.1 Configuration

Among RATs/bands supporting TX antenna switches, select the RAT/band with the highest P_{sub6_limit} difference between a pair of supported TX antennas.

- Select the RAT/band having the highest measured 1gSAR at P_{sub6_limit} if multiple RATs/bands having the same P_{sub6_limit} difference between the supported TX antennas.
- Antenna selection order
 - Select the configuration with two antennas having P_{sub6_limit} values less than P_{UE_max} .
 - If the previous configuration does not exist, select the configuration with one antenna having P_{sub6_limit} value less than P_{UE_max} .
 - If the above two cannot be found, select one configuration with the two antennas having the least difference between their P_{sub6_limit} and P_{UE_max} (i.e., P_{sub6_limit} can be greater than P_{UE_max}).

4.7.2 Procedure

The test procedure is identical to section 4.5.2 except the following 2 changes:

1. Replace band switch with antenna switch.
2. In Step 4, the second antenna switching is arranged after the first one lasts for at least one time window, i.e., switch the second antenna back to the first antenna, and then continue with the callbox requesting EUT's TX power to be at the maximum level for at least one time window.

It is noted that the following operations are done as well for this scenario:

- The TX power is correctly controlled by TA-SAR Gen2 algorithm during antenna switches from one antenna to another.
- The validation criteria are that the time-averaged 1gSAR or 10gSAR versus time shall not exceed FCC limit of 1.6 W/kg for 1gSAR or 4.0 W/kg for 10gSAR at all times.

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4.8 Test Configuration and Procedure for Scenario 7: Time Window Switching via Conducted Power Measurements

4.8.1 Configuration

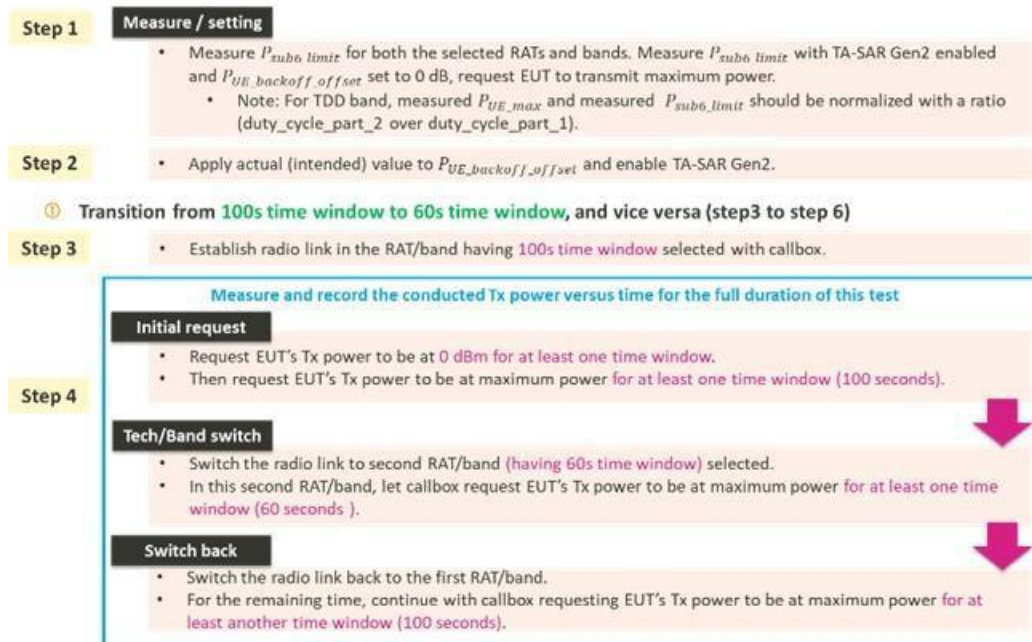
Select one RAT/band with 60-second time averaging window, and the other RAT/band with 100- second time averaging window. Both of them have P_{sub6_limit} values less than P_{UE_max} if possible.

- At least one of the selected RAT/band has its P_{sub6_limit} less than P_{UE_max} .

4.8.2 Procedure

TX power is measured, recorded, and processed by the following steps:

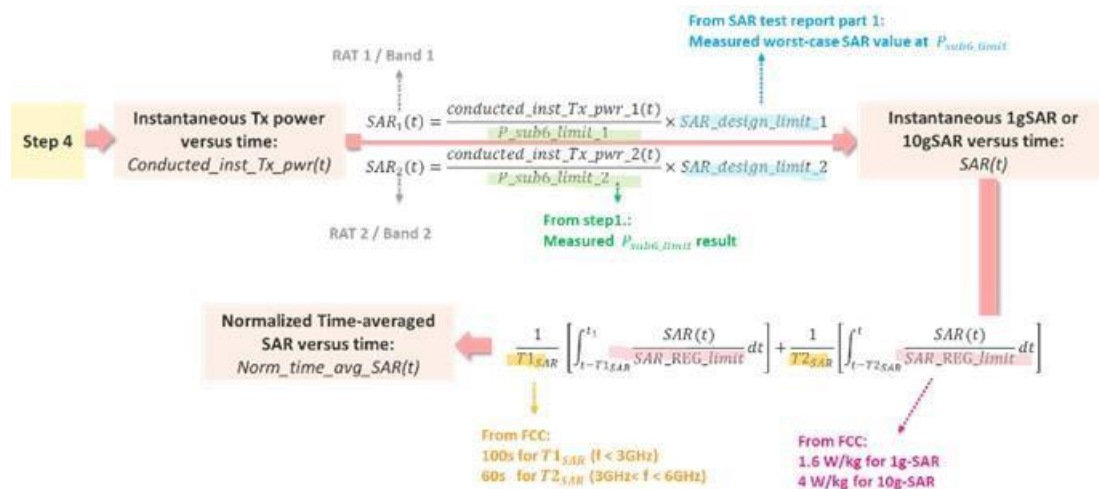
- Step 1~4: measure and record TX power versus time for test scenario 7



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- Step 5: convert the measured conducted TX power into SAR
Convert the measured conducted TX power from step 4 into 1gSAR or 10gSAR value, and perform the running time average on the conducted TX power and 1gSAR or 10g SAR to determine the time- averaged TX power or SAR by using the following equations (also see section 4.2.2 for the illustration of the running time average operation).



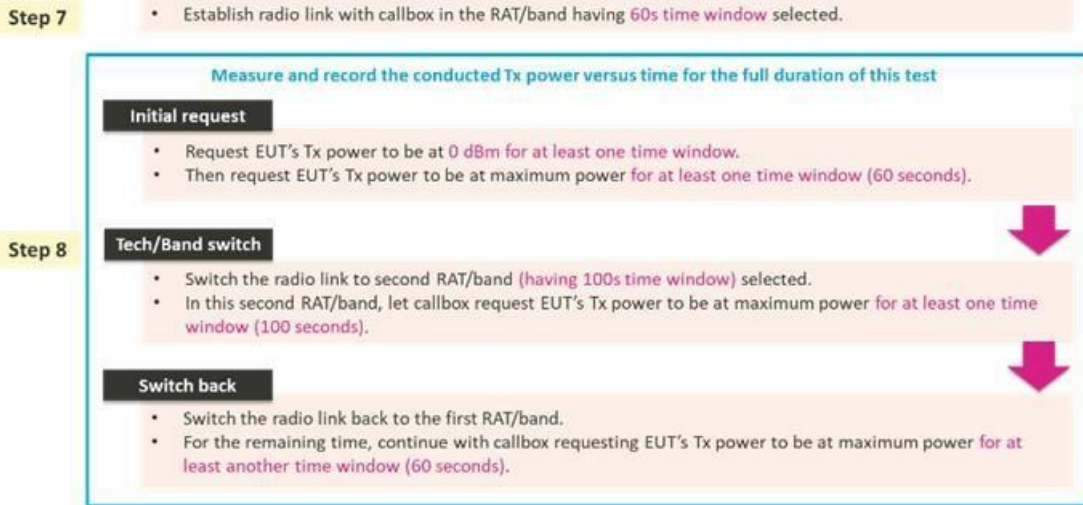
- Step 6: plot results
 - A. Make one TX power related plot containing
 1. Instantaneous TX power
 2. Calculated time-averaged power
 3. Calculated time-averaged power limits
 - B. Make one SAR related plot containing
 1. Calculated time-averaged 1gSAR or 10gSAR
 2. FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)
 3. Normalized time-averaged 1gSAR/1.6 or 10gSAR/4.0

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- Step 7~8: measure and record the TX power versus time in another time window change

② Transition from 60s time window to 100s time window, and vice versa (step7 to step 9)



- Step 9: convert the measurement and plot results
Convert the measured conducted TX power from step 8 into 1gSAR or 10gSAR value using the equation in step 5.

Repeat step 6 to generate the plots.

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4.9 Test Configuration and Procedure for Scenario 8: SAR Exposure Switching via Conducted Power Measurements

4.9.1 Configuration

If supported, SAR exposure switch with two active radio sets having the same and different time averaging windows should be covered in this test. Since the algorithm is independent of SPLSR groups, it is sufficient to select a SPLSR group to validate the algorithm. Note that a radio set contains one or more than one radio, and each radio would use one or two antennas. The TA-SAR Gen2 algorithm operation is independent of the source of SAR exposure (e.g., LTE vs. NR FR1) and ensures total time-averaged RF exposure compliance for SAR exposure among the scenarios of radio set 1 only, radio set 1 + radio set 2, and radio set 2 only.

- For a radio set, select one or two sub6 RATs/bands that the EUT supports for simultaneous transmission (e.g., LTE+NR FR1).
- The selection order among all supported simultaneous transmission configurations is
 - For each radio set, select one configuration of each radio (either with one antenna or two antennas) with P_{sub6_limit} values less than the corresponding P_{UE_max} . If a radio has two antennas, their P_{sub6_limit} values are different if possible.
 - If the previous configuration does not exist, at least one radio set, between the active two radio sets, has one radio which has one antenna with P_{sub6_limit} less than P_{UE_max} .
 - If above two cannot be found, select the configurations in radio sets 1 and 2 that have P_{sub6_limit} with the least difference between P_{sub6_limit} and P_{UE_max} (i.e., P_{sub6_limit} can be greater than P_{UE_max}).
- One test with two active radio sets in the same SPLSR groups is sufficient to cover this scenario.
- One SAR switching is sufficient because the TA-SAR Gen2 algorithm operation is the same.

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4.9.2 Procedure

- Step 1~3: measure and record TX power versus time for test scenario 8

Step 1.A: Measure conducted TX power corresponding to each radio in radio set 1

(P_{sub6_limit})

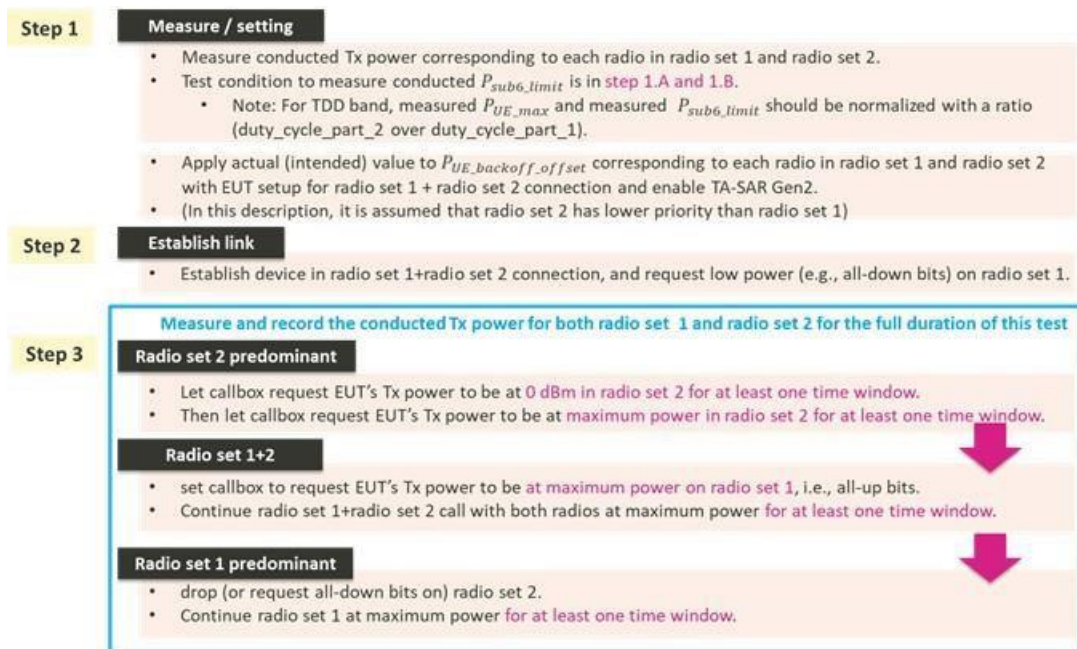
- Establish device in call with the callbox for radio set 1 RAT/band.
- Measure conducted TX power corresponding to each radio in radio set (P_{sub6_limit}) with TA-SAR Gen2 enabled and $P_{UE_backoff_offset}$ set to 0 dB, request EUT to transmit maximum power.
- If one radio is dependent on the other radio(s) (for example, non-standalone mode of Sub6 NR requiring LTE as anchor), then establish the connections of both radios with the callbox. Request the target radio to transmit maximum power and the other radio(s) at low power (e.g., all-down bits), and measure conducted TX power corresponding to P_{sub6_limit} .

Step 1.B: measure conducted TX power corresponding to each radio in radio set 2

(P_{sub6_limit})

- Repeat above step to measure conducted TX power corresponding to each radio in radio set 2 (P_{sub6_limit}).

NOTE: if a radio set contains more than one radio, or use more than one antenna, measure each active antenna's P_{sub6_limit} .

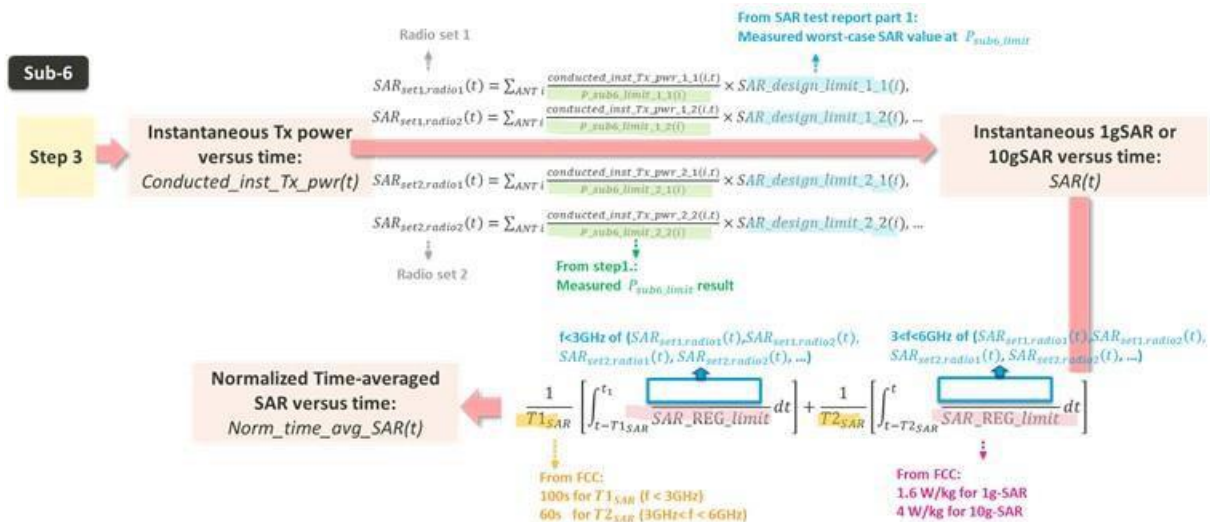


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- Step 4: convert the measured conducted TX power into SAR
Convert the measured conducted TX power from step 3 into 1gSAR or 10gSAR value, and perform the running time average on the conducted TX power and 1gSAR or 10g SAR to determine the time- averaged TX power or SAR by using the following equations (also see section 4.2.2 for the illustration of the running time average operation).



NOTE: A SAR set (SAR_{set}) contains one or more than one radio, and each SAR set would use one or two antennas. Please note that time-averaged SAR calculation needs to consider the frequency sort of the instantaneous SAR.

- Step 5: plot results
 - A. Make one TX power related plot containing
 1. Instantaneous TX power
 2. Calculated time-averaged power
 3. Calculated time-averaged power limits
 - B. Make one SAR related plot containing
 1. Calculated time-averaged 1gSAR or 10gSAR
 2. FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)
 3. Normalized time-averaged 1gSAR/1.6 or 10gSAR/4.0

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4.10 Test Configuration and Procedure for Scenario 2: Time- Varying TX Power via SAR Measurements

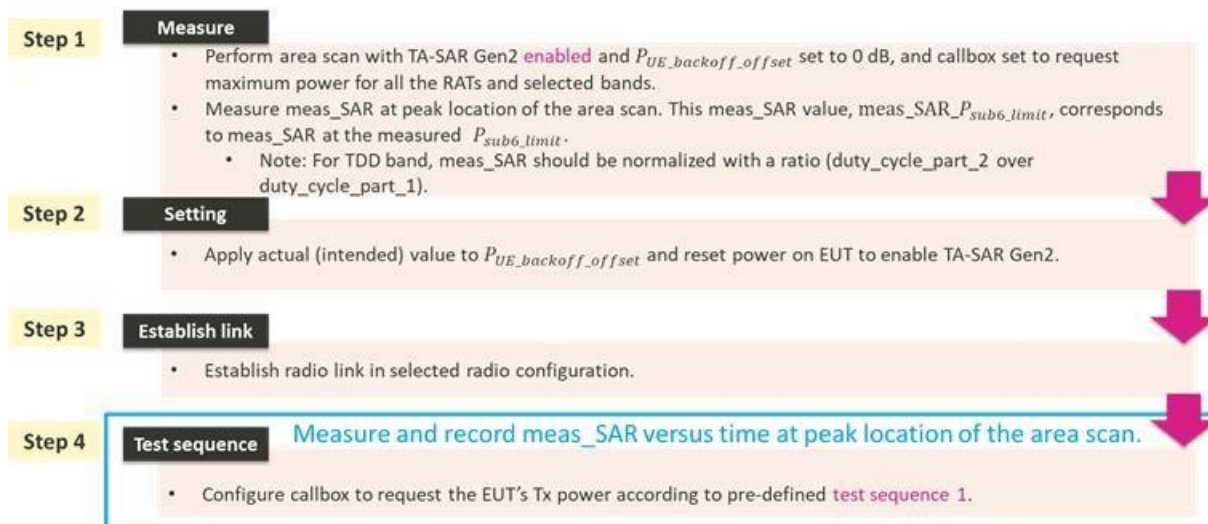
4.10.1 Configuration

Sections 4.2 to 4.9 focus on the Mediatek's TA-SAR Gen2 algorithm compliance validation via conducted TX power measurements. This section further provides a SAR measurement procedure for the time-varying TX power scenario described in section 4.3. Hence, this section follows the test configuration of section 4.3, and uses test sequences 1 and 2 defined in section 4.1.

4.10.2 Procedure

SAR is measured and recorded by the following steps:

- Step 1~4: measure and record SAR versus time

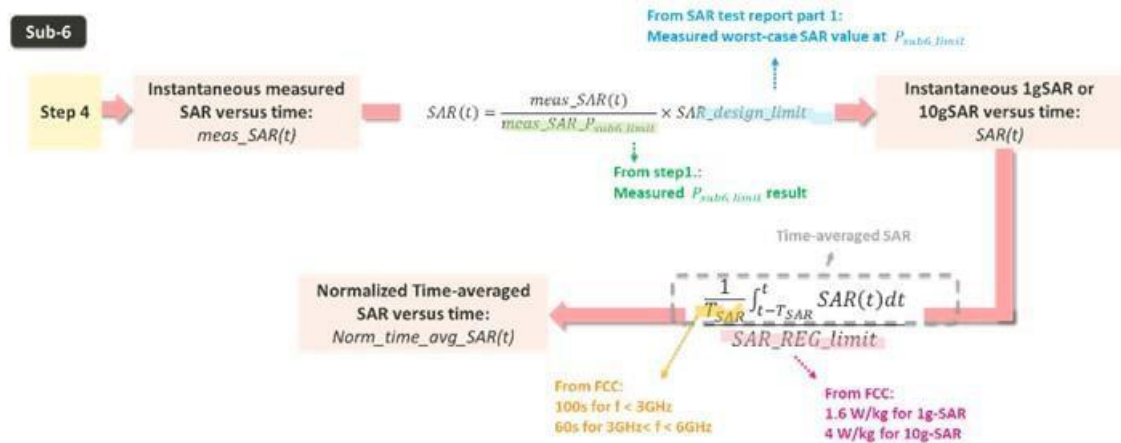


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- Step 5: convert the measured SAR into time-averaged SAR
Convert the instantaneous measured SAR from step 4 into 1gSAR or 10gSAR value, and perform the running time average on the instantaneous 1gSAR or 10g SAR to determine time-averaged SAR with the following equations, where, $meas_SAR_P_{sub6_limit}$ is the value determined in step 1, and $meas_SAR(t)$ is the instantaneous measured SAR measured in step 4.



- Step 6: plot result
 - Calculated time-averaged 1gSAR or 10gSAR
 - FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)
- Step 7: repeat steps 2 ~ 6 for pre-defined test sequence 2

Replace test sequence 1 in step 4 with test sequence 2, and repeat steps 2 ~ 6 for test sequence 2.

- Step 8: repeat steps 2 ~ 7 for all the selected bands

The time-averaged SAR versus time shall not exceed FCC limit at all times.

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5 TA-SAR GEN2 VALIDATION VIA CONDUCTED POWER MEASUREMENTS

5.1 Measurement Setup

5.1.1 Test Bench Introduction

The call boxes KeySight UXM (supporting sub6 NR and LTE) and Rohde & Schwarz CMW500 (supporting LTE, WCDMA, C2K and 2G) are used to validate the proposed TA-SAR Gen2 algorithm mechanism. Figure 5-1 shows the block diagram of the measurement bench, which supports the following test scenarios.

- Test scenario 1: range of TA-SAR parameters
- Test scenario 2: time-varying TX power
- Test scenario 3: call disconnection and re-establishment
- Test scenario 5: ECI change

For these measurements, RF port of the call box is connected to the EUT's antenna port, and the call box establishes a connection link through the test script console tool and the power meter measures the conducted output power of the EUT.

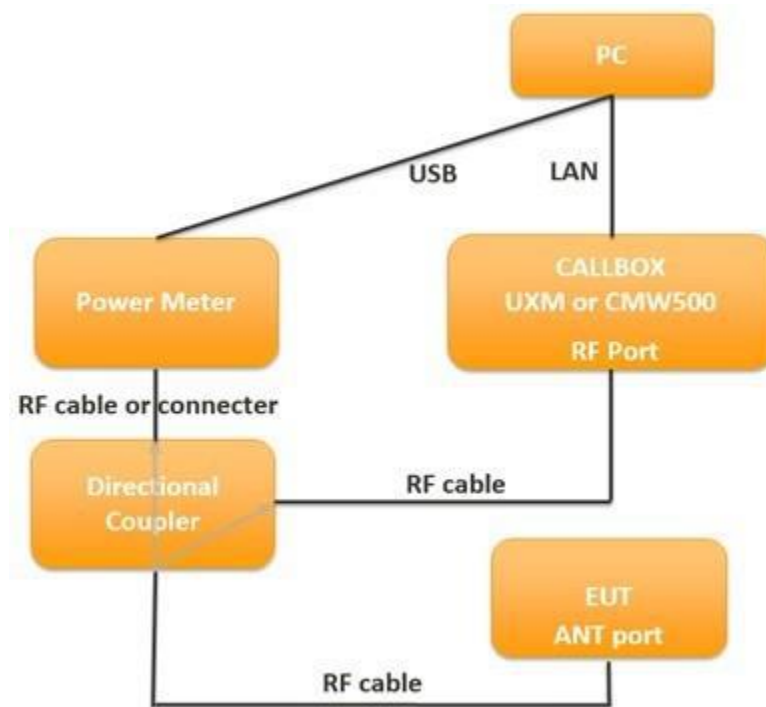


Figure 5-1 TA-SAR Gen2 conductive power test setup block diagram for scenarios 1/2/3/5

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Figure 5-2 shows the block diagram of the measurement bench, which support test scenario 4 (band handover) and scenario 7 (time window switching). For these measurements, the RF port of the call box is connected with a 1-to-2 power divider, which allows the call box to transmit/receive signals from the two different system configurations set in these two test scenarios. Figure 5-3 shows the setup, which is highly similar to Figure 5-2, to support test scenario 6 (antenna switching); as seen in the figure, two EUT's antenna ports are individually connected with a RF cable.

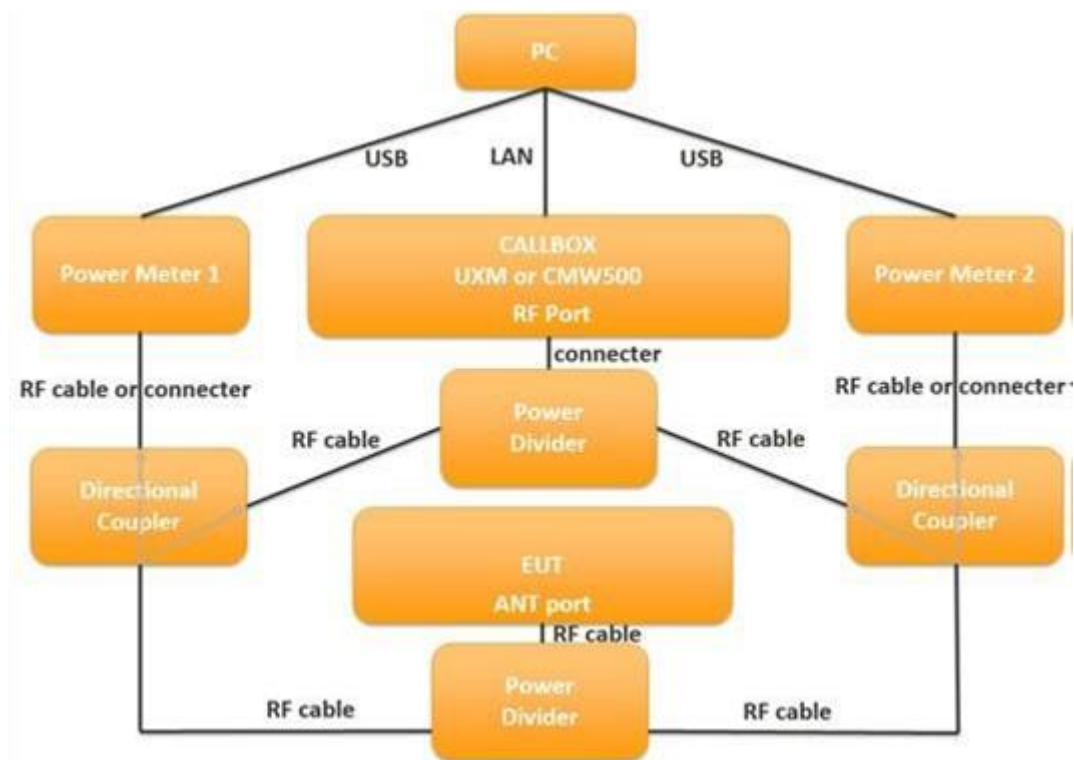


Figure 5-2 TA-SAR GEN2 conductive power test setup block diagram for scenarios 4 and 7

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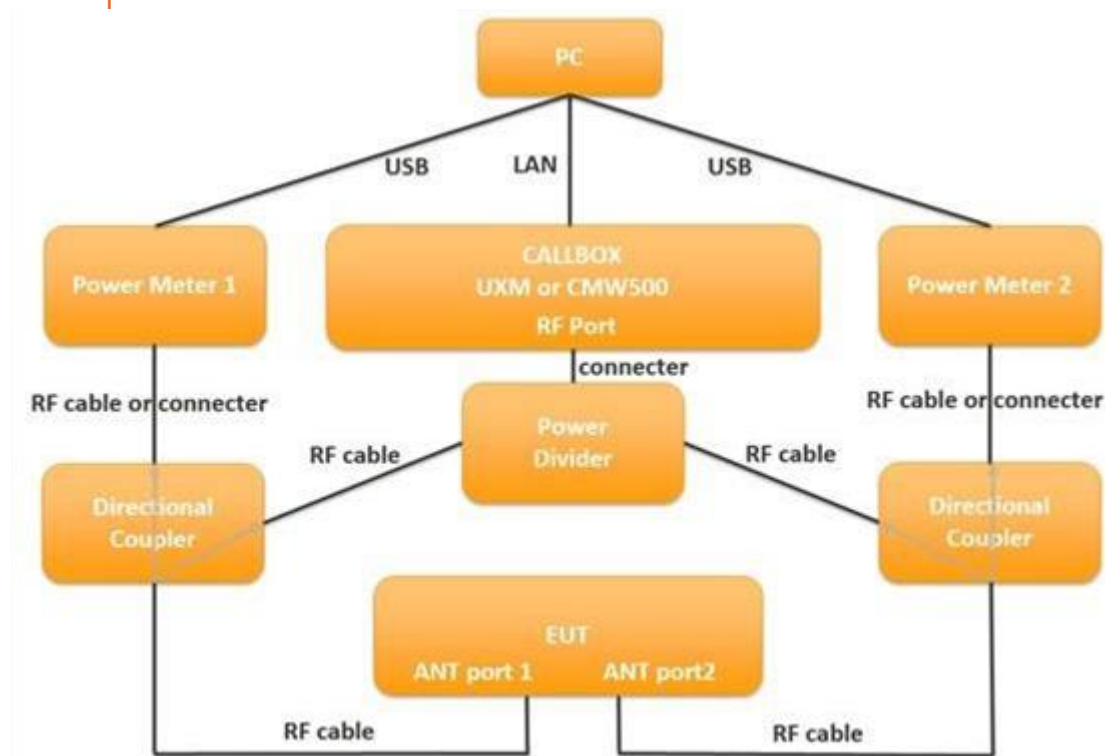


Figure 5-3 TA-SAR GEN2 conductive power test setup block diagram for scenario 6

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Figure 5-4 shows the setup for test scenario 4 (RAT handover) and scenario 8 (SAR exposure switching). Since two RATs need to be controlled in these two scenarios, RF port of RAT #1 and RF port of RAT #2 of the call box are individually connected to an antenna port of the EUT through a directional coupler. It is noted that each of the two RATs individually transmit signals though one antenna port.

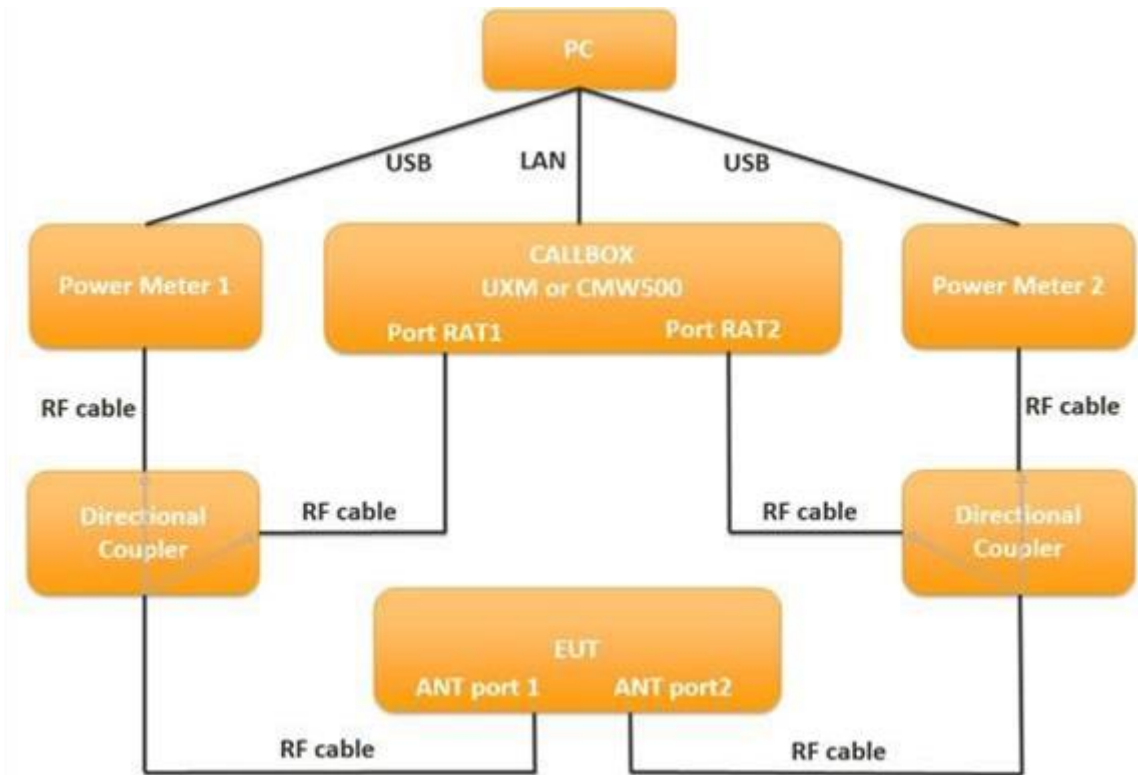


Figure 5-4 TA-SAR GEN2 conductive power test setup block diagram for scenarios 4/8

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5.1.2 sub6 NR/LTE/3G/2G Power Limit Table and Test Configurations

For the supported bands/channels/antennas of each technology, the measured power limit (P_{sub6_limit}), corresponding to *SAR_design_limit*, is listed in the table 5-1. The *SAR_design_limit* is determined by taking 1-dB device uncertainty into consideration. Please note that for TDD bands with TX duty cycles less than or equal to 100%, the measured power limit corresponds to the burst averaged power level which does not account for TX duty cycle.

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Table 5-1 Summary table of power limit (Psub6_limit) for all supported RAT

RAT	Band	Mode	Duty cycle	Channel	Frequency (MHz)	ANT	SPLSR	P_sub6_Limit (dBm) (average)					Pmax (dBm) (average)	P_sub6_Limit (dBm) (burst)					Pmax (dBm) (burst)	SAR_design_limit for P_sub6_limit_setting (W/kg)						
								Group	ECIO (Free)	ECI1 (Grip Sensor #1)	ECI2 (Grip Sensor #2)	ECI3 (Grip Sensor #3)		ECI4 (Grip Sensor #4)	ECI5 (Grip Sensor #5)	ECIO (Free)	ECI1 (Grip Sensor #1)	ECI2 (Grip Sensor #2)		ECI3 (Grip Sensor #3)	ECI4 (Grip Sensor #4)	ECI5 (Grip Sensor #5)	ECI1 (Head)	ECI3 (Extremity Sensor on)	ECI4 (Body&Extremity Sensor off)	ECI5 (Hotspot)
									(dBm)	(dBm)	(dBm)	(dBm)		(dBm)	(dBm)		(dBm)	(dBm)		(dBm)	(dBm)	(dBm)		(dBm)	(dBm)	(dBm)
2G	GSM850	TDD	50.0%	128	824.2	M1	AG0	27.80	N/A	12.80	N/A	N/A	N/A	25.30	30.81	N/A	15.81	N/A	N/A	N/A	28.31	1.00	1.00	1.00	1.00	
	GSM1900	TDD	50.0%	512	1850.2	M1	AG0	27.80	N/A	11.80	18.30	N/A	N/A	22.30	30.81	N/A	14.81	21.31	N/A	N/A	25.31	1.00	1.00	1.00	1.00	
	B2	FDD	100.0%	9538	1907.6	M1	AG0	28.30	N/A	12.00	19.00	N/A	N/A	24.00	28.30	N/A	12.00	19.00	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	B4	FDD	100.0%	1513	1752.6	M1	AG0	27.70	N/A	12.50	19.00	N/A	N/A	24.00	27.70	N/A	12.50	19.00	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	B5	FDD	100.0%	4132	826.4	M1	AG0	26.20	N/A	13.00	N/A	N/A	N/A	24.00	26.20	N/A	13.00	N/A	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
3G WCDMA	LTE_B12/17	FDD	100.0%	23095	707.5	M1	AG0	26.60	N/A	15.00	N/A	N/A	N/A	24.00	26.60	N/A	15.00	N/A	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	LTE_B13	FDD	100.0%	23230	782	M1	AG0	27.10	N/A	16.00	N/A	N/A	N/A	24.00	27.10	N/A	16.00	N/A	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	LTE_B26/5	FDD	100.0%	26865	831.5	M1	AG0	26.30	N/A	13.00	N/A	N/A	N/A	24.00	26.30	N/A	13.00	N/A	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	LTE_B25/2	FDD	100.0%	26865	831.5	M1	AG0	28.50	N/A	12.00	19.00	N/A	N/A	24.00	28.50	N/A	12.00	19.00	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	LTE_B66/4	FDD	100.0%	132572	1770	M1	AG0	27.20	N/A	13.00	18.00	N/A	N/A	24.00	27.20	N/A	13.00	18.00	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	LTE_B66/4	FDD	100.0%	132222	1745	S3	AG1	11.50	11.50	11.50	11.50	11.50	11.50	23.00	11.50	11.50	11.50	11.50	11.50	11.50	23.00	1.00	1.00	1.00	1.00	
	LTE_B41_PC3	TDD	63.3%	39750	2506	M1	AG0	26.10	N/A	10.50	15.00	N/A	N/A	22.00	28.09	N/A	12.49	16.99	N/A	N/A	23.99	1.00	1.00	1.00	1.00	
	LTE_B41_PC2	TDD	43.3%	39750	2506	M1	AG0	26.10	N/A	10.50	15.00	N/A	N/A	22.40	29.60	N/A	14.00	18.50	N/A	N/A	25.90	1.00	1.00	1.00	1.00	
	NRS5G_N5	FDD	100.0%	167300	836.5	M1	AG0	25.40	N/A	13.00	N/A	N/A	N/A	24.00	25.40	N/A	13.00	N/A	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	NRS5G_N25/n2	FDD	100.0%	376500	1882.5	M1	AG0	26.70	N/A	12.00	19.00	N/A	N/A	24.00	26.70	N/A	12.00	19.00	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
4G LTE	NRS5G_N66	FDD	100.0%	349000	1745	M1	AG0	27.70	N/A	13.00	18.00	N/A	N/A	24.00	27.70	N/A	13.00	18.00	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	NRS5G_N41_PC3	TDD	100.0%	518598	2593	M1	AG0	18.00	N/A	11.00	15.00	N/A	N/A	24.00	18.00	N/A	11.00	15.00	N/A	N/A	24.00	1.00	1.00	1.00	1.00	
	NRS5G_N41_PC3	TDD	100.0%	518598	2593	S3	AG1	6.00	6.00	6.00	6.00	6.00	6.00	18.50	6.00	6.00	6.00	6.00	6.00	6.00	18.50	1.00	1.00	1.00	1.00	
	NRS5G_N41_PC3	TDD	100.0%	518598	2593	S2	AG1	10.50	10.50	10.50	10.50	10.50	10.50	20.50	10.50	10.50	10.50	10.50	10.50	10.50	20.50	1.00	1.00	1.00	1.00	
	NRS5G_N41_PC3	TDD	100.0%	518598	2593	S1	AG1	16.50	N/A	N/A	N/A	N/A	11.00	22.00	16.50	N/A	N/A	N/A	N/A	11.00	22.00	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC3	TDD	100.0%	662000	3930	S4	AG1	18.00	N/A	N/A	N/A	8.00	N/A	24.00	18.00	N/A	N/A	N/A	8.00	N/A	24.00	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC3	TDD	100.0%	662000	3930	M4	AG0	13.00	N/A	N/A	7.00	N/A	N/A	20.00	13.00	N/A	N/A	7.00	N/A	N/A	20.00	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC3	TDD	100.0%	662000	3930	S2	AG1	7.50	7.50	7.50	7.50	7.50	7.50	22.00	7.50	7.50	7.50	7.50	7.50	7.50	22.00	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC3	TDD	100.0%	662000	3930	S3	AG1	8.50	8.50	8.50	8.50	8.50	8.50	22.50	8.50	8.50	8.50	8.50	8.50	8.50	22.50	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC3	TDD	100.0%	662000	3930	S4	AG1	18.00	N/A	N/A	N/A	8.00	N/A	27.00	18.00	N/A	N/A	N/A	8.00	N/A	27.00	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC2	TDD	100.0%	662000	3930	M4	AG0	13.00	N/A	N/A	7.00	N/A	N/A	20.00	13.00	N/A	N/A	7.00	N/A	N/A	20.00	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC2	TDD	100.0%	662000	3930	S2	AG1	7.50	7.50	7.50	7.50	7.50	7.50	22.00	7.50	7.50	7.50	7.50	7.50	7.50	22.00	1.00	1.00	1.00	1.00	
	NRS5G_N77_PC2	TDD	100.0%	662000	3930	S3	AG1	8.50	8.50	8.50	8.50	8.50	8.50	22.50	8.50	8.50	8.50	8.50	8.50	8.50	22.50	1.00	1.00	1.00	1.00	

Note:

- For test scenarios 4/6/7/8, need to find that the tested antennas (according to test configurations) locating in the same SPLSR group. If there are not any antennas meeting the conditions, then no need to validate the test scenario(s).

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Table 5-2 summarizes the test configurations of all RATs, and the corresponding worst-case measured SAR for each RAT under the power limit.

Table 5-2 Test configurations of radio technologies and worst-case measured SAR

Test Case	Test Scenario	Test Tech	Test band	Test Sequence	Level_num	BW (MHz)	Modulation	duty cycle	RA size	RA offset	Test Position	Gap (mm)	ANT	ANT Index	ANT data (TX/RX)	EC	UL Channel	UL Freq (MHz)	DL Channel	DL Freq (MHz)	Part 1, SAR limit 1-g or 10-g SAR (W/kg)	SAR req.	P1mit, frame-averaged	Pmax, frame-averaged	P1mit, frame-averaged	Pmax, frame-averaged	min power duration	duration 1	drop call	duration 2	duration 3	
0	1. Range of TA-SAR parameters	LTE	B41_PC3	0	8	20	QPSK	63.30%	50	0	N/A	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	300	570			
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	2	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	570			
		2G	GPRS_B20_4TX	1	8	N/A	GMSK	50.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	251	848.8	251	883.8	0.38	1.6	12.07	24.61	12.80	25.30	150	720			
		2G	GPRS_B20_4TX	1	8	N/A	GMSK	50.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	512	1850.2	512	1930.2	0.415	1.6	11.89	22.15	11.80	22.50	150	720			
		WCDMA	B4	1	8	N/A	W-CDMA	100.00%	N/A	N/A	Right side	0	M1	0	0/0	-3	0	5113	1752.6	5113	1752.6	0.32	1.6	18.97	23.61	19.00	24.00	150	720			
		WCDMA	B7	1	8	N/A	W-CDMA	100.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	5138	1857.6	5138	1857.6	0.290	1.6	12.39	24.09	12.30	24.00	150	720			
1	2. Time-varying TX power	LTE	B21	1	8	20	QPSK	100.00%	50	50	Right side	0	M1	0	0/0	-3	0	25140	1860	25140	1860	0.249	1.6	18.15	24.51	19.00	24.00	150	720			
		LTE	B41_PC3	1	8	20	QPSK	63.30%	50	0	Top Side	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	150	720			
		FDD	n77_PC2	1	8	100	QPSK	100.00%	1	1	Right side	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	150	720			
		FDD	n77_PC2	1	8	100	QPSK	100.00%	1	1	Right side	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	150	720			
		2G	GPRS_B20_4TX	2	8	N/A	GMSK	50.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	251	848.8	251	883.8	0.38	1.6	12.07	24.61	12.80	25.30	150	720			
		2G	GPRS_B20_4TX	2	8	N/A	GMSK	50.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	512	1850.2	512	1930.2	0.415	1.6	11.89	22.15	11.80	22.50	150	720			
2	3. Call disconnection and re-establishment	WCDMA	B4	2	8	N/A	W-CDMA	100.00%	N/A	N/A	Right side	0	M1	0	0/0	-3	0	5113	1752.6	5113	1752.6	0.32	1.6	18.97	23.61	19.00	24.00	150	720			
		WCDMA	B7	2	8	N/A	W-CDMA	100.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	5138	1857.6	5138	1857.6	0.290	1.6	12.39	24.09	12.30	24.00	150	720			
		LTE	B21	2	8	20	QPSK	100.00%	50	50	Right side	0	M1	0	0/0	-3	0	25140	1860	25140	1860	0.249	1.6	18.15	24.51	19.00	24.00	150	720			
		LTE	B41_PC3	2	8	20	QPSK	63.30%	50	0	Top Side	0	M1	0	0/2	-2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	150	720			
		FDD	n77_PC2	2	8	100	QPSK	100.00%	1	1	Right side	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	150	720			
		FDD	n77_PC2	2	8	100	QPSK	100.00%	1	1	Right side	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	150	720			
3	4. Hand handover	LTE	B41_PC3	0	8	20	QPSK	63.30%	50	0	N/A	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	300	200	200	200	200
		WCDMA	B5	0	8	N/A	W-CDMA	100.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	5132	826.4	5132	826.4	0.204	1.6	13.1	23.26	13.00	24.00	150	720			
		LTE	B41_PC3	0	8	20	QPSK	63.30%	50	0	N/A	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
4	5. Change in operating state	LTE	B41_PC3	0	8	20	QPSK	63.30%	50	0	N/A	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	300	200	200	200	200
		WCDMA	B5	0	8	N/A	W-CDMA	100.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	5132	826.4	5132	826.4	0.204	1.6	13.1	23.26	13.00	24.00	150	720			
		LTE	B41_PC3	0	8	20	QPSK	63.30%	50	0	N/A	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
5	6. Time window switching	LTE	B41_PC3	0	8	20	QPSK	63.30%	50	0	N/A	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	300	200	200	200	200
		WCDMA	B5	0	8	N/A	W-CDMA	100.00%	N/A	N/A	Top Side	0	M1	0	0/0	-2	0	5132	826.4	5132	826.4	0.204	1.6	13.1	23.26	13.00	24.00	150	720			
		LTE	B41_PC3	0	8	20	QPSK	63.30%	50	0	N/A	0	M1	0	0/2	2	0	39750	2506	39750	2506	0.484	1.6	9.88	21.34	10.50	22.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200
		FDD	n77_PC2	0	8	100	QPSK	100.00%	1	1	N/A	0	M1	0	0/2	-3	0	518598	2502.99	518598	2502.99	0.484	1.6	10.18	23.24	11.00	24.00	300	200	200	200	200

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5.2 Conducted Power Measurement Results for Scenario1: Range of TA-SAR Gen2 Parameters

In this scenario, two TA-SAR Gen2 parameters are swept to validate Mediatek's TA-SAR Gen2 algorithm. The parameter sets are summarized in Table 5-3, and the test procedure follows section 4.2.2. The measurement setup is shown in Figure 5-2. The high-level summary of the final validation results are also listed in the last column of the table, which concludes that Mediatek's TA-SAR Gen2 algorithm can maintain the time-averaged SAR is always below the FCC requirement for all test cases. The following section will demonstrate case-by-case to show how Mediatek's TA-SAR Gen2 algorithm behaves for different parameters.

Table 5-3 TA-SAR Gen2 parameters setting for scenario 1

Test case	RAT	Test band	Test seq.	ECI	Level_num	Algo_avg_window	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{LowThresh}$ (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
0	LTE	B41_PC3	0	2	8	100s	23.99	12.49	11.24	10.74	19.49	Pass
1	FR1	n41_PC3	0	2	8	100s	24.00	11.00	9.75	9.25	18.00	Pass

For the figure set of each case, the first figure demonstrates the EUT's instantaneous conducted TX power, the time-averaged conducted TX power behavior over time, and the power limit ($P_{reg_sub6_limit} = P_{sub6_limit} + 1\text{dB}$ device uncertainty). The second figure illustrates the corresponding time-averaged SAR over time converted from the TX time-averaged power by using the equation listed in section 4.2.2. For all test cases, the time-averaged SAR does not exceed the FCC limit.

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■ Case 0 in table 5-3

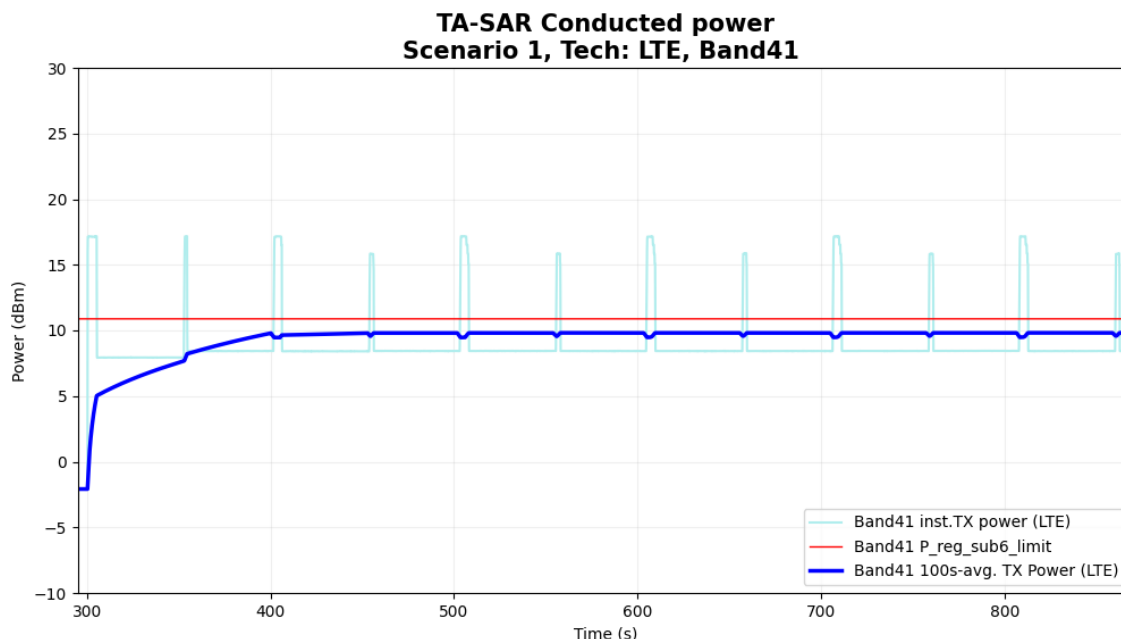


Figure 5-5 Time-averaged conducted TX power over time for case 0

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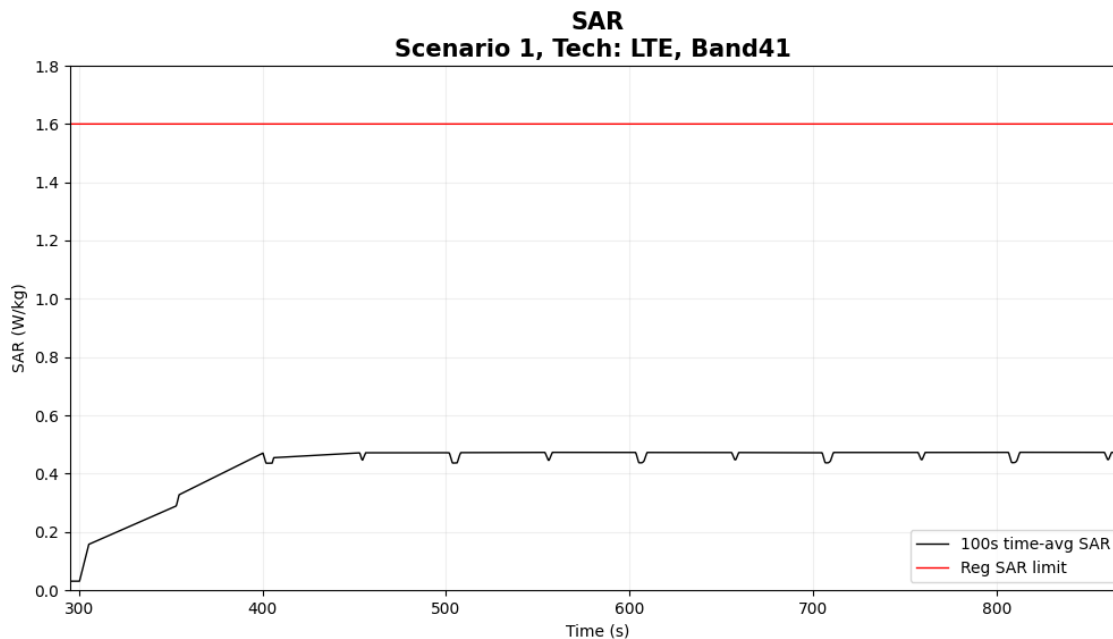


Figure 5-6 Time-averaged SAR for case 0

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.473 W/kg
Validation result: pass	

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■ Case 1 in table 5-3

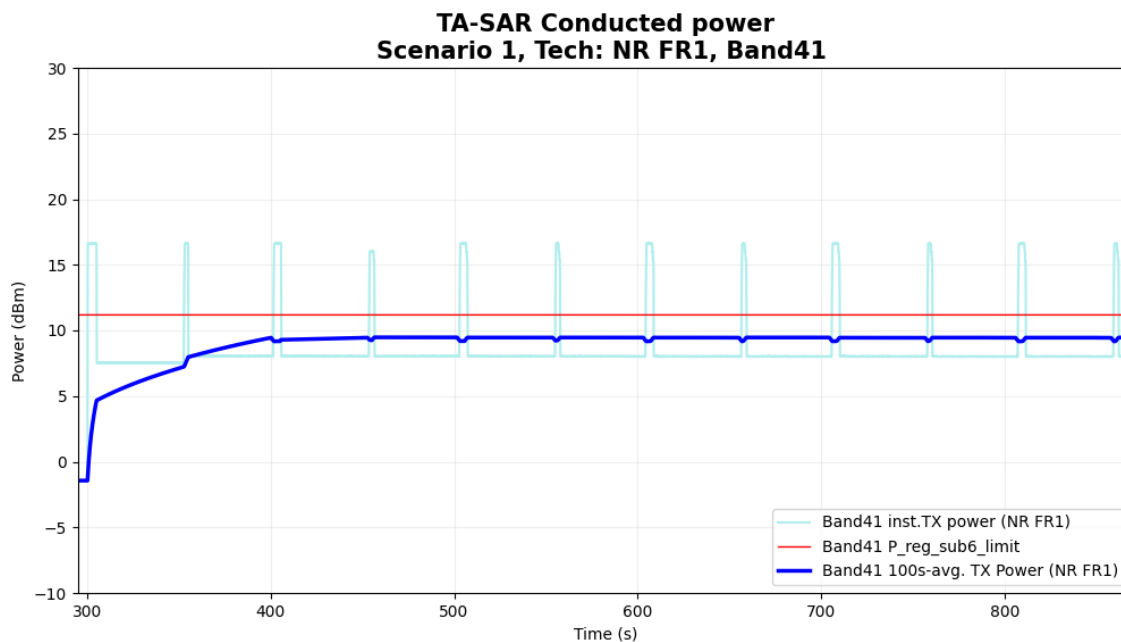


Figure 5-7 Time-averaged conducted TX power over time for case 1

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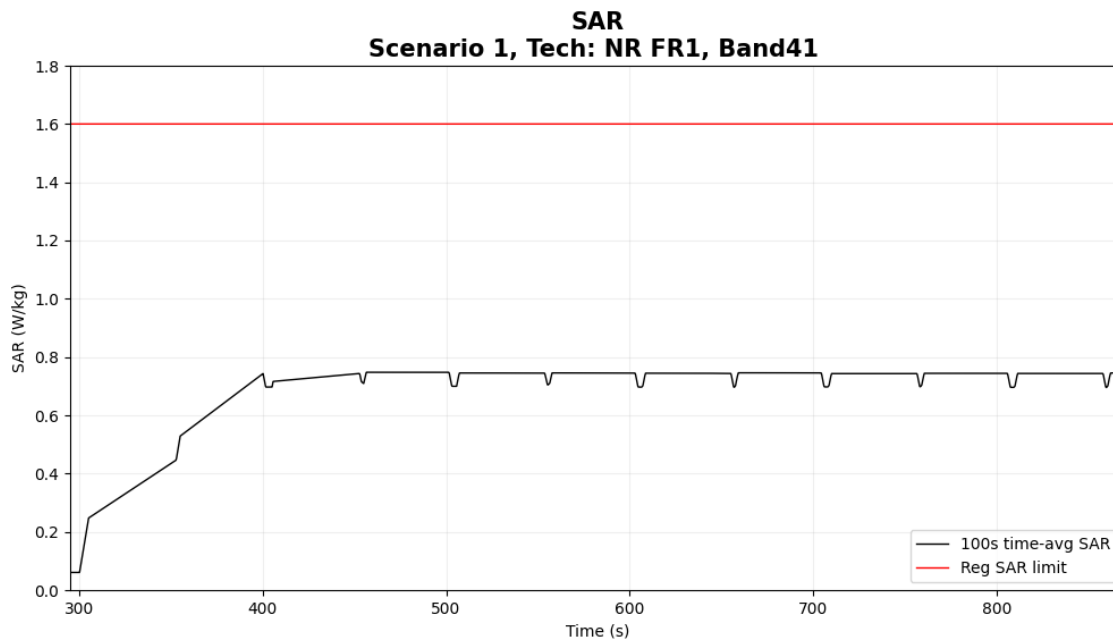


Figure 5-8 Time-averaged SAR for case 1

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.748 W/kg
Validation result: pass	

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5.3 Conducted Power Measurement Results for Scenario 2: Time-Varying TX Power

In this scenario, Mediatek's TA-SAR Gen2 algorithm is tested under more dynamic power test sequences. The test sequence #1 is shown in section 4.1 and test sequence #2 is tabulated in table 4.4. All of the test cases for this scenario are relegated in Table 5-4, and the test procedure follows section 4.3.2. The measurement setup is shown in Figure 5-2. The high-level summary of the final validation results are also listed in the last column of the table, which concludes that Mediatek's TA-SAR Gen2 algorithm can maintain the time-averaged SAR is always below the FCC requirement for all test cases. The following sections will demonstrate case-by-case to show how Mediatek's TA-SAR Gen2 algorithm behaves for each RAT.

Table 5-4 TA-SAR Gen2 parameters setting for scenario 1

Test case	RAT	Test band	Test seq.	ECI	Level_num	Max power (dBm)	$P_{sub6\ limit}$ (dBm)	$P_{LowThresh}$ (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
2	2G	GPRS 850 4TX	1	2	8	28.31	15.81	14.56	14.06	22.81	Pass
3	2G	GPRS 1900 4TX	1	2	8	25.31	14.81	13.56	13.06	21.81	Pass
4	WCDMA	B4	1	3	8	24.00	19.00	17.75	17.25	24.00	Pass
5	WCDMA	B2	1	2	8	24.00	12.00	10.75	10.25	19.00	Pass
6	LTE	B25	1	3	8	24.00	19.00	17.75	17.25	24.00	Pass
7	LTE	B41 PC3	1	2	8	23.99	12.49	11.24	10.74	19.49	Pass
8	FR1	n25	1	3	8	24.00	19.00	17.75	17.25	24.00	Pass
9	FR1	n77 PC2	1	3	8	20.00	7.00	5.75	5.25	14.00	Pass
10	2G	GPRS 850 4TX	2	2	8	28.31	15.81	14.56	14.06	22.81	Pass
11	2G	GPRS 1900 4TX	2	2	8	25.31	14.81	13.56	13.06	21.81	Pass
12	WCDMA	B4	2	3	8	24.00	19.00	17.75	17.25	24.00	Pass
13	WCDMA	B2	2	2	8	24.00	12.00	10.75	10.25	19.00	Pass
14	LTE	B25	2	3	8	24.00	19.00	17.75	17.25	24.00	Pass
15	LTE	B41 PC3	2	2	8	23.99	12.49	11.24	10.74	19.49	Pass
16	FR1	n25	2	3	8	24.00	19.00	17.75	17.25	24.00	Pass
17	FR1	n77 PC2	2	3	8	20.00	7.00	5.75	5.25	14.00	Pass

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5.3.1 Measurement results for NR

For the figure set of each case, the first figure demonstrates the EUT's instantaneous conducted TX power, the time-averaged conducted TX power behavior over time, and the power limit ($P_{\text{reg_sub6_limit}} = P_{\text{sub6_limit}} + 1\text{dB device uncertainty}$). The second figure illustrates the corresponding time-averaged SAR over time converted from the TX time-averaged power by using the equation listed in section 4.3.2. For all test cases, the time-averaged SAR does not exceed the FCC limit.

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■ Case 8 in table 5-4: NR n25 result for test sequence 1

**TA-SAR Conducted power
Scenario 2, Tech: NR FR1, Band25**

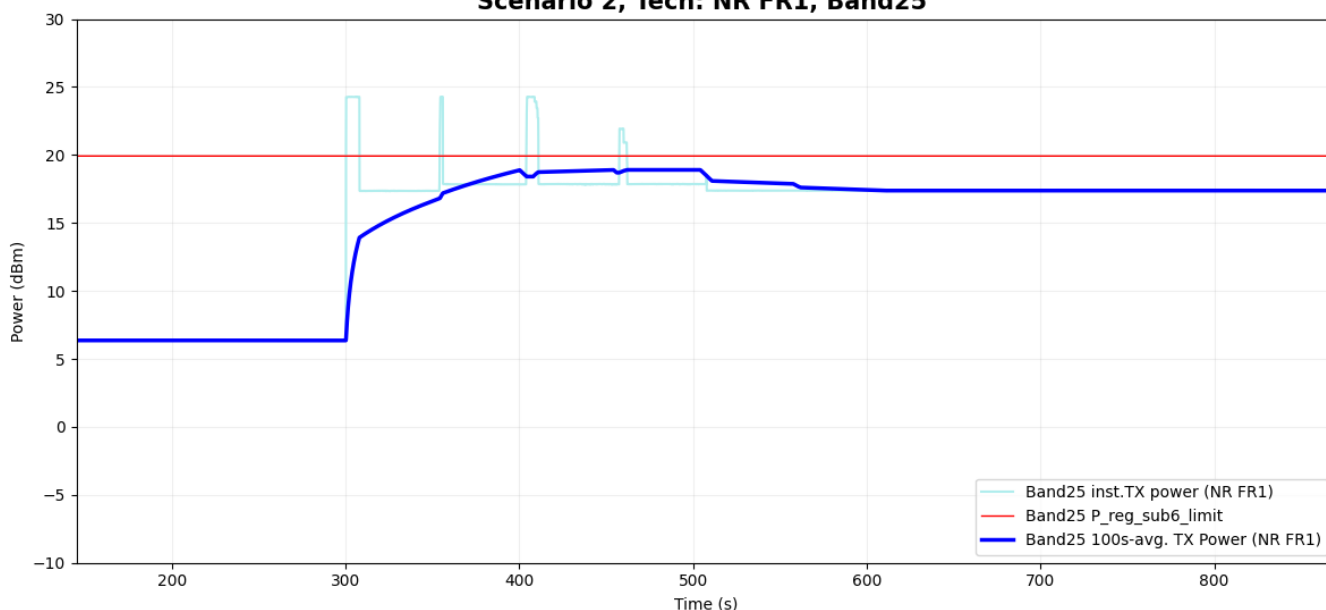


Figure 5-9 Time-averaged conducted TX power over time for case 8 (sub6 NR n25)

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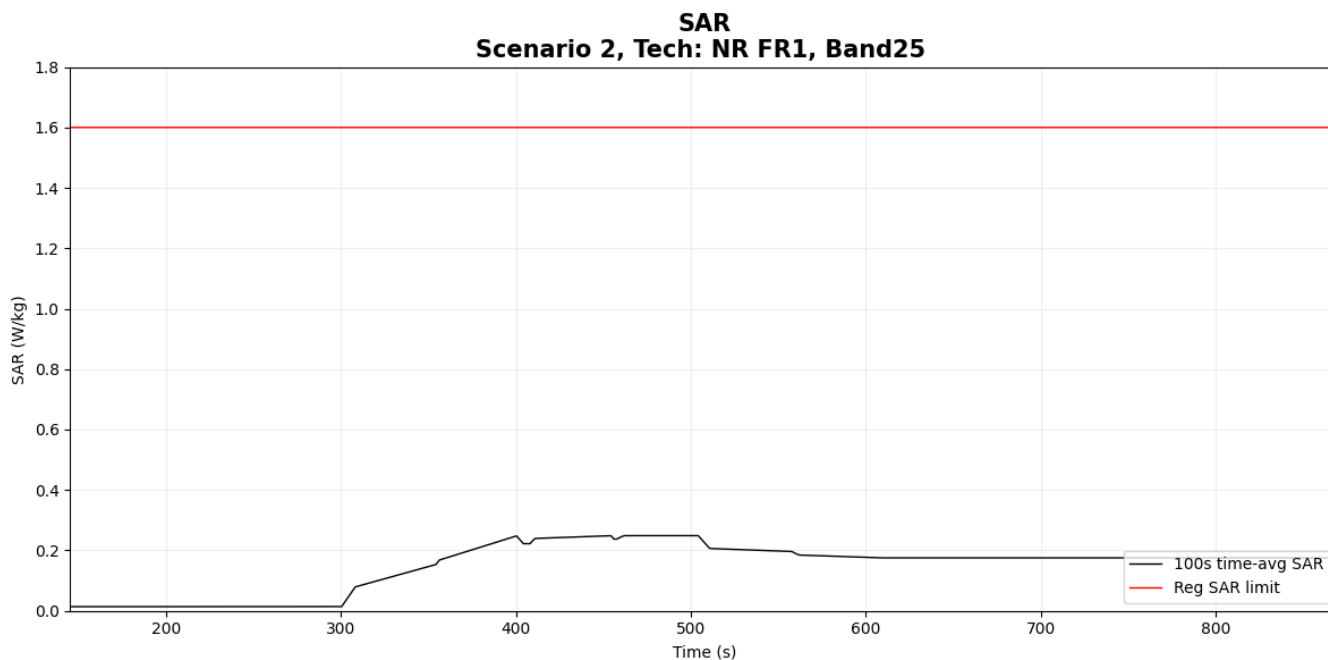


Figure 5-10 Time-averaged SAR for case 8 (sub6 NR n25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.249 W/kg
Validation result: pass	

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■ Case 9 in table 5-4: NR n77 result for test sequence 1

TA-SAR Conducted power
Scenario 2, Tech: NR FR1, Band77

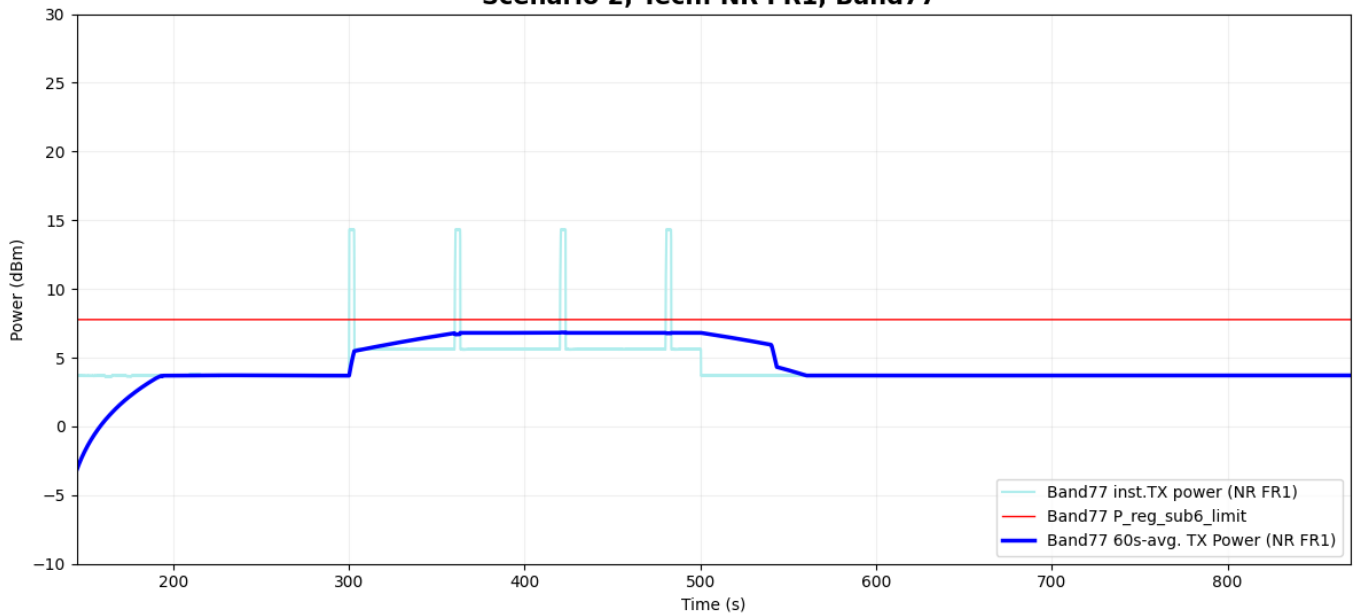


Figure 5-11 Time-averaged conducted TX power over time for case 9 (sub6 NR n77)

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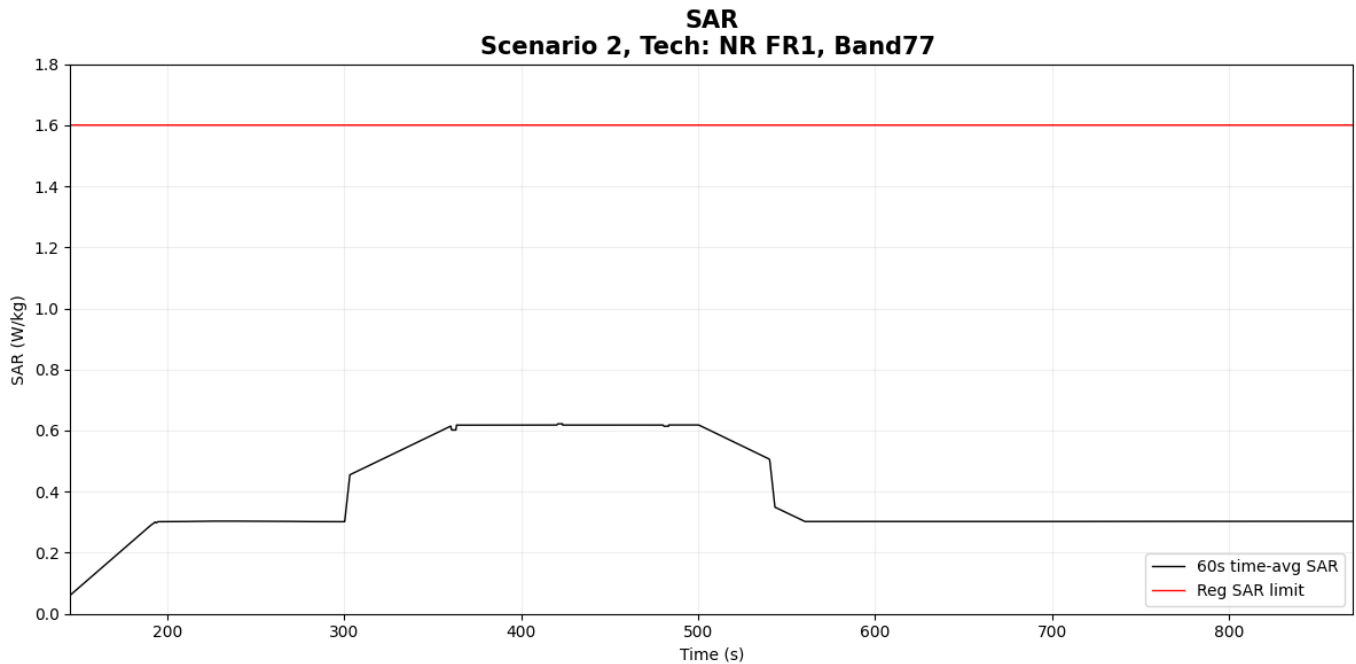


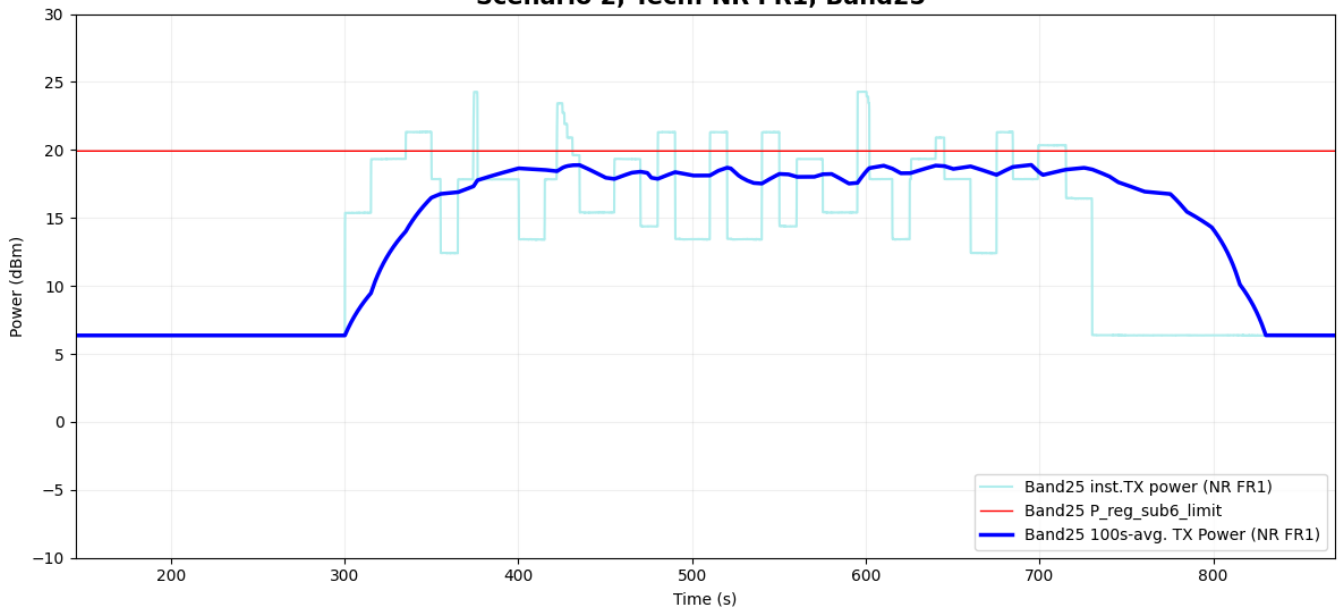
Figure 5-12 Time-averaged SAR for case 9 (sub6 NR n77)

FCC 1gSAR limit	1.6 W/kg
Max 60s-time averaged 1gSAR	0.622 W/kg
Validation result: pass	

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■ Case 16 in table 5-4: NR n25 result for test sequence 2

**TA-SAR Conducted power
Scenario 2, Tech: NR FR1, Band25****Figure 5-13 Time-averaged conducted TX power over time for case 16 (sub6 NR n25)**

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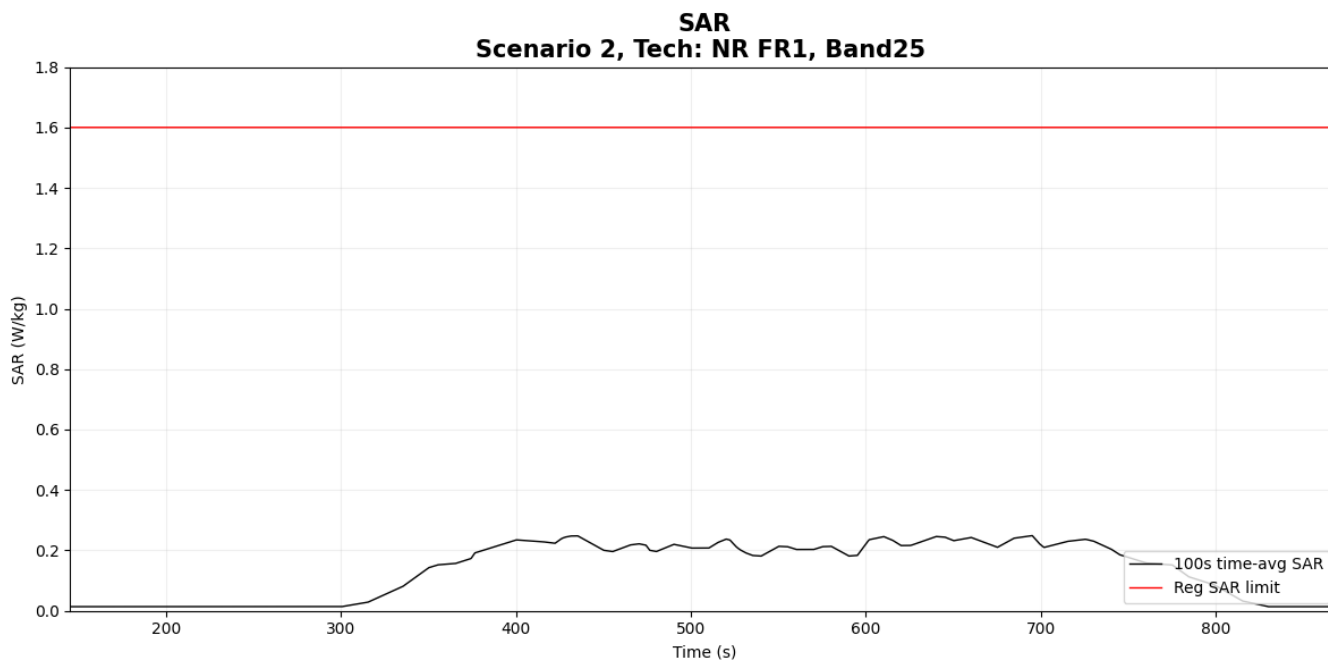


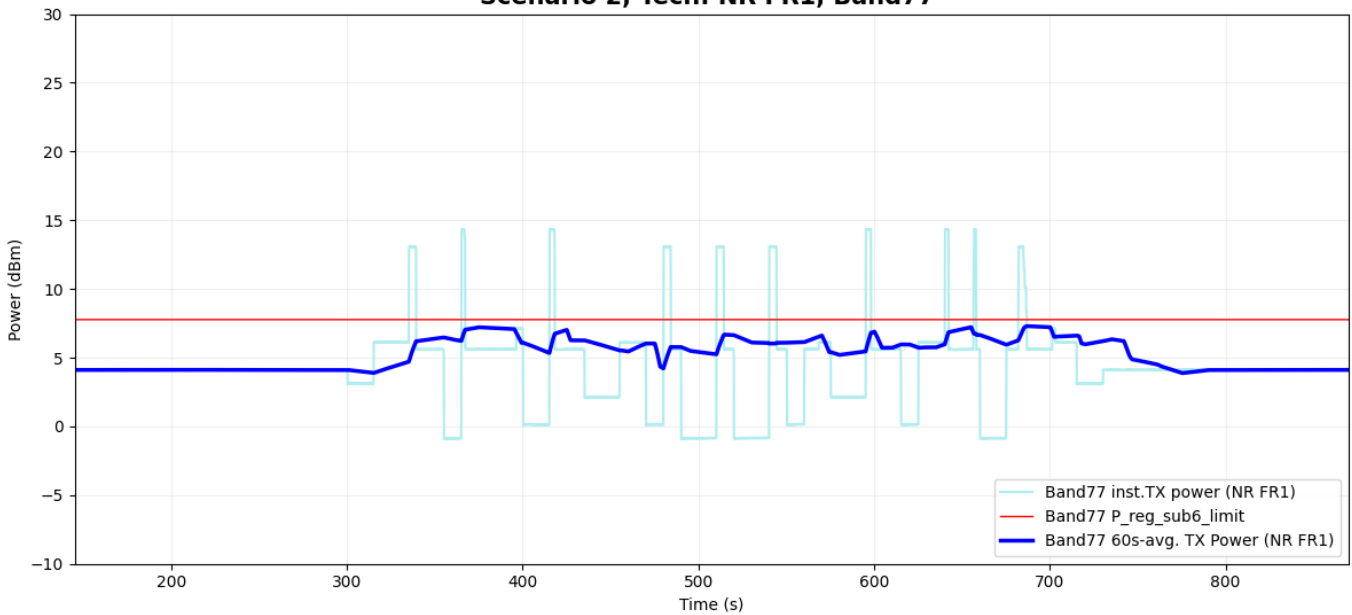
Figure 5-14 Time-averaged SAR for case 16 (sub6 NR n25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.249 W/kg
Validation result: pass	

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■ Case 17 in table 5-4: NR n77 result for test sequence 2

**TA-SAR Conducted power
Scenario 2, Tech: NR FR1, Band77****Figure 5-15 Time-averaged conducted TX power over time for case 17 (sub6 NR n77)**

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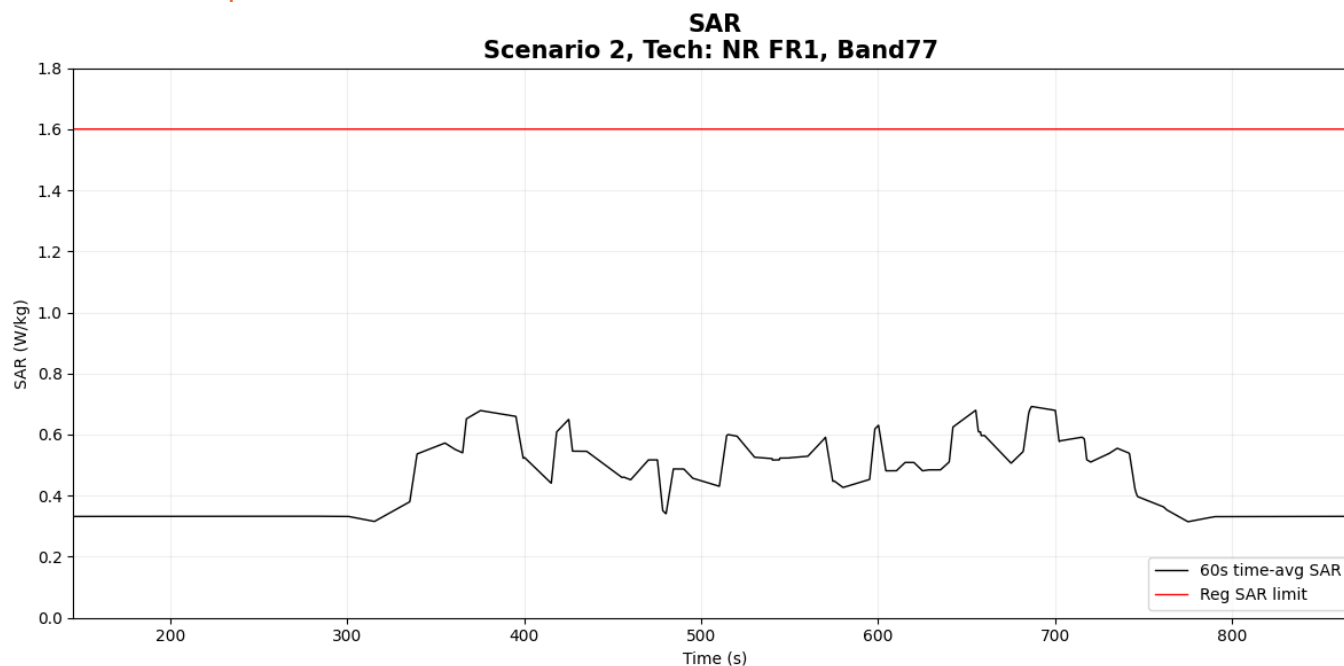


Figure 5-16 Time-averaged SAR for case 17 (sub6 NR n77)

FCC 1gSAR limit	1.6 W/kg
Max 60s-time averaged 1gSAR	0.692 W/kg
Validation result: pass	

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5.3.2 Measurement results for LTE

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■ Case 6 in table 5-4: LTE B25 result for test sequence 1

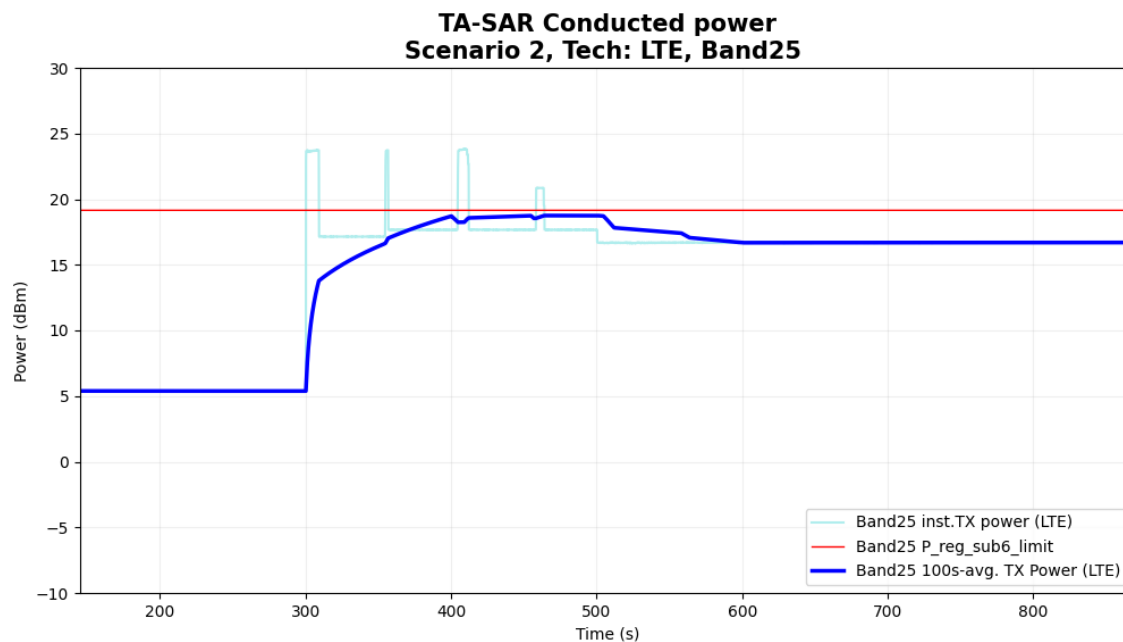


Figure 5-17 Time-averaged conducted TX power over time for case 6 (LTE B25)

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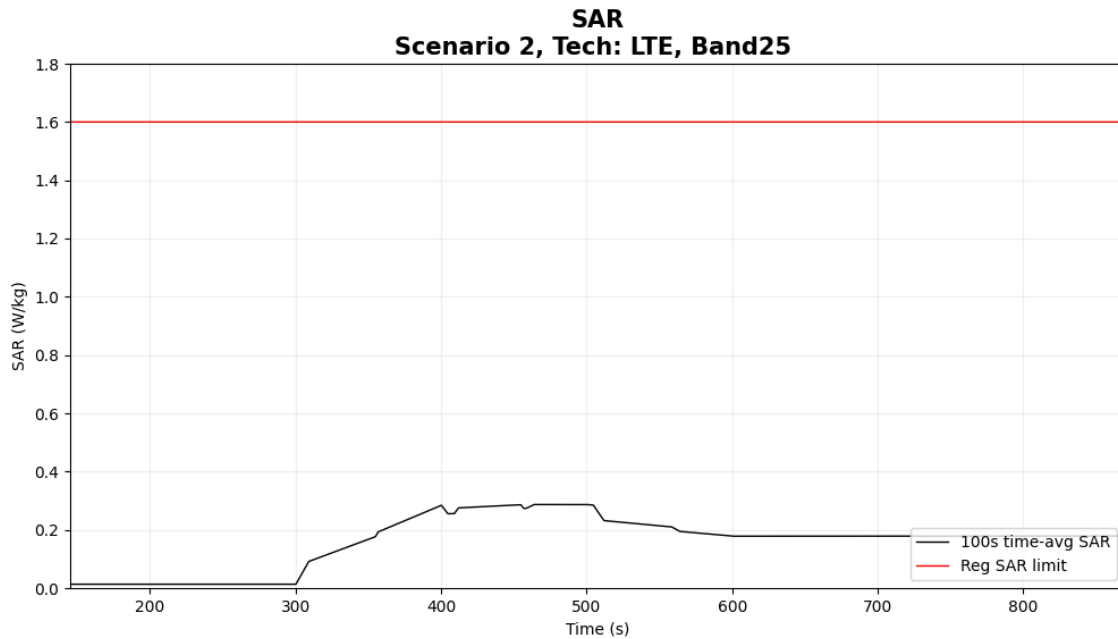


Figure 5-18 Time-averaged SAR for case 6 (LTE B25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.287 W/kg
Validation result:	pass

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■ Case 7 in table 5-4: LTE B41 result for test sequence 1

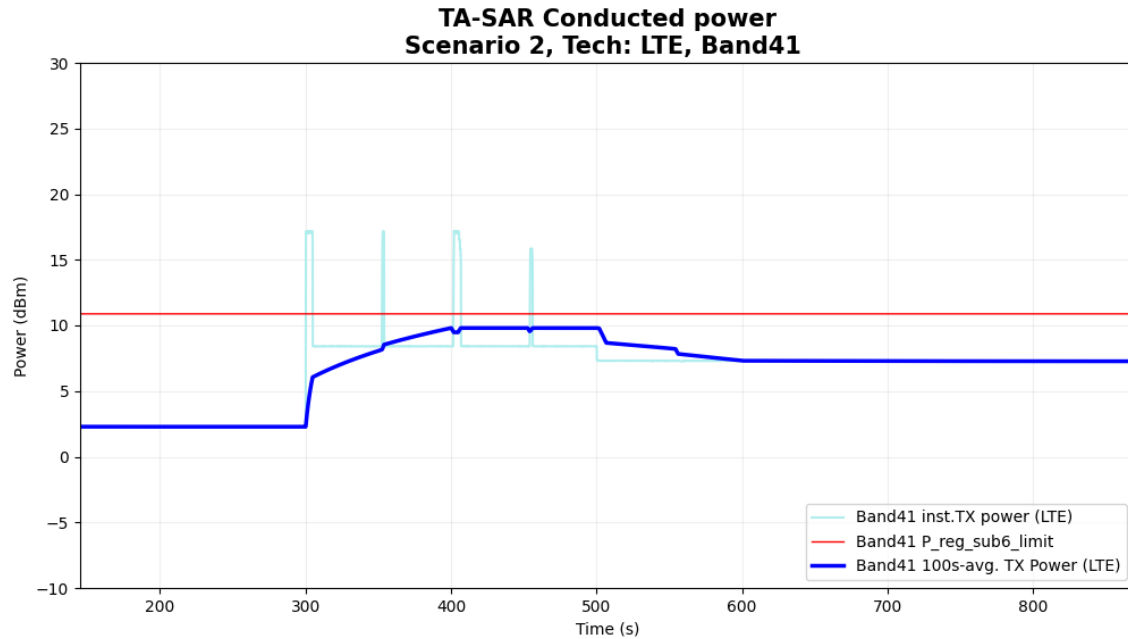


Figure 5-19 Time-averaged conducted TX power over time for case 7 (LTE B41)

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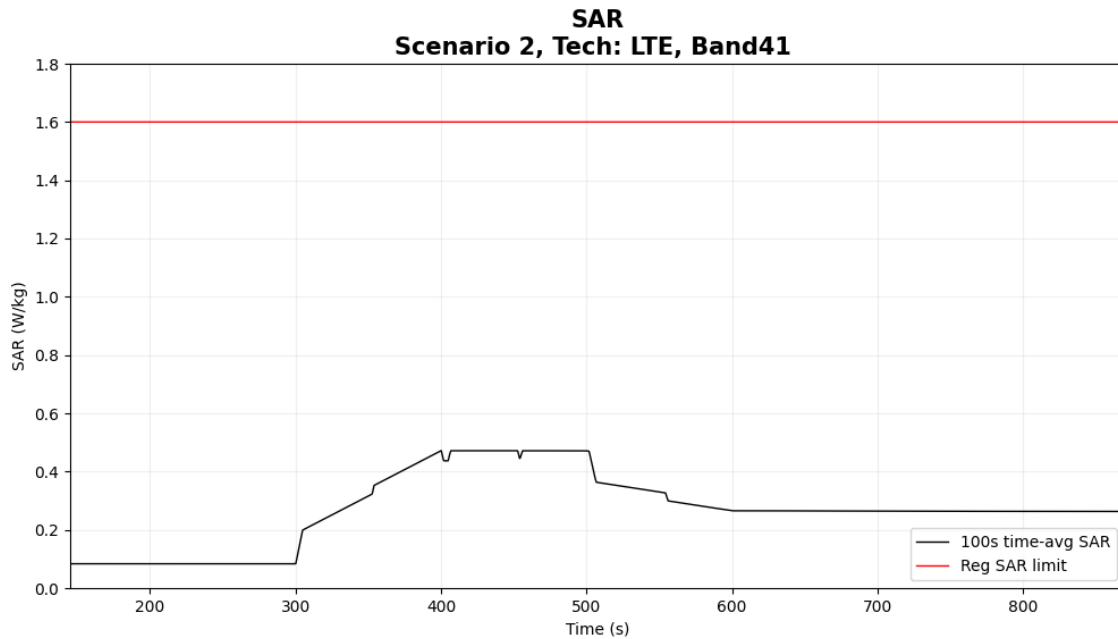


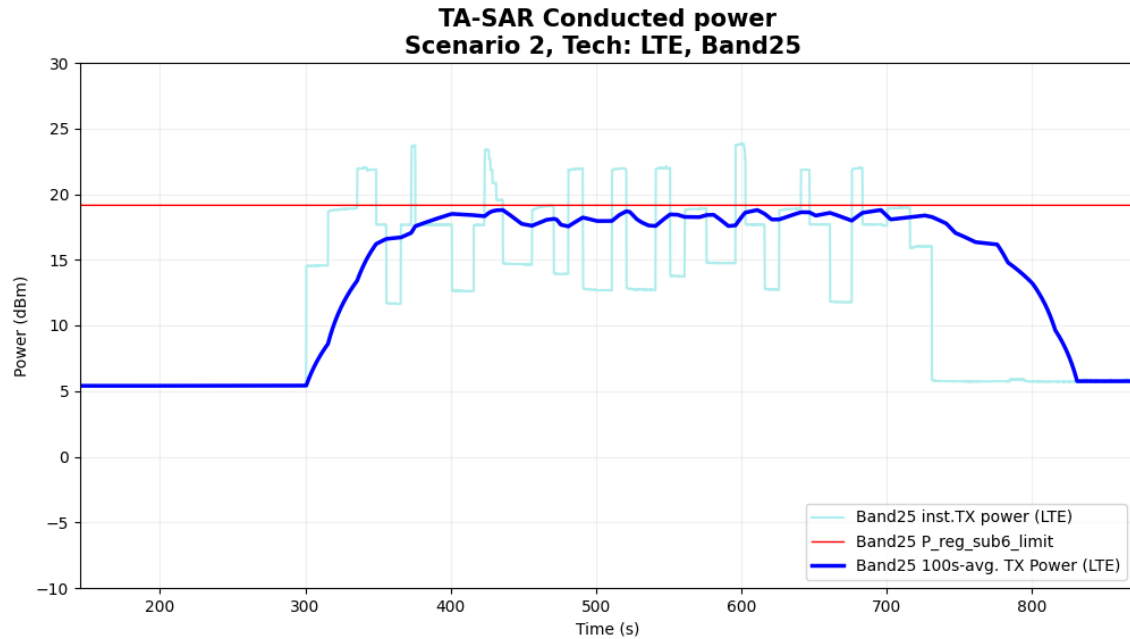
Figure 5-20 Time-averaged SAR for case 7 (LTE B41)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.472 W/kg
Validation result:	pass

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■ Case 14 in table 5-4: LTE B25 result for test sequence 2

**Figure 5-21 Time-averaged conducted TX power over time for case 14 (LTE B25)**

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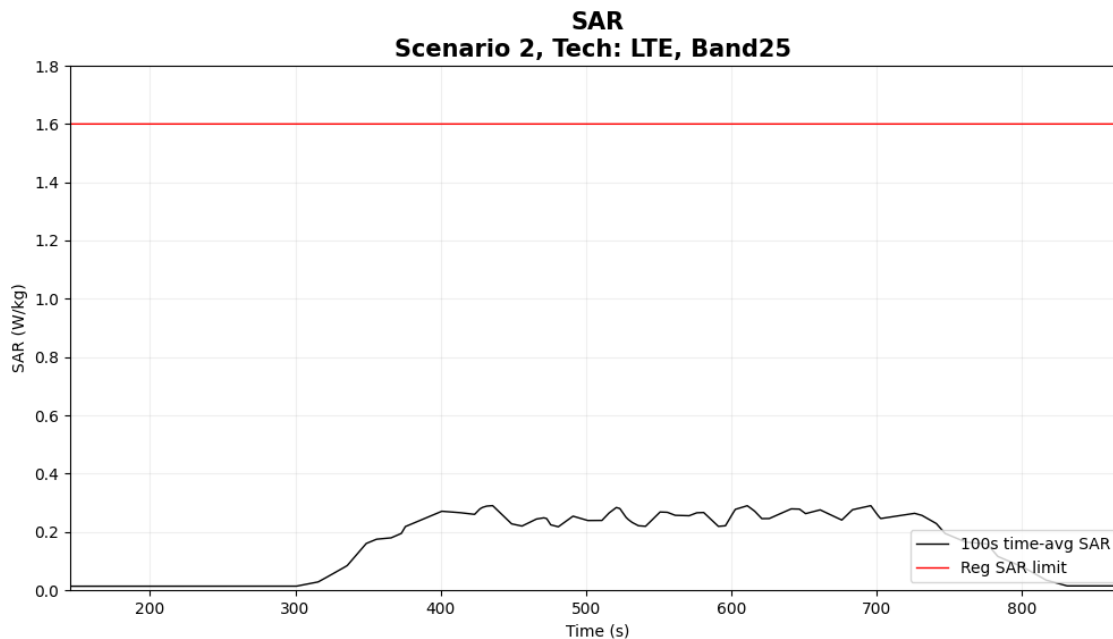


Figure 5-22 Time-averaged SAR for case 14 (LTE B25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.290 W/kg
Validation result:	pass

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■ Case 15 in table 5-4: LTE B41 result for test sequence 2

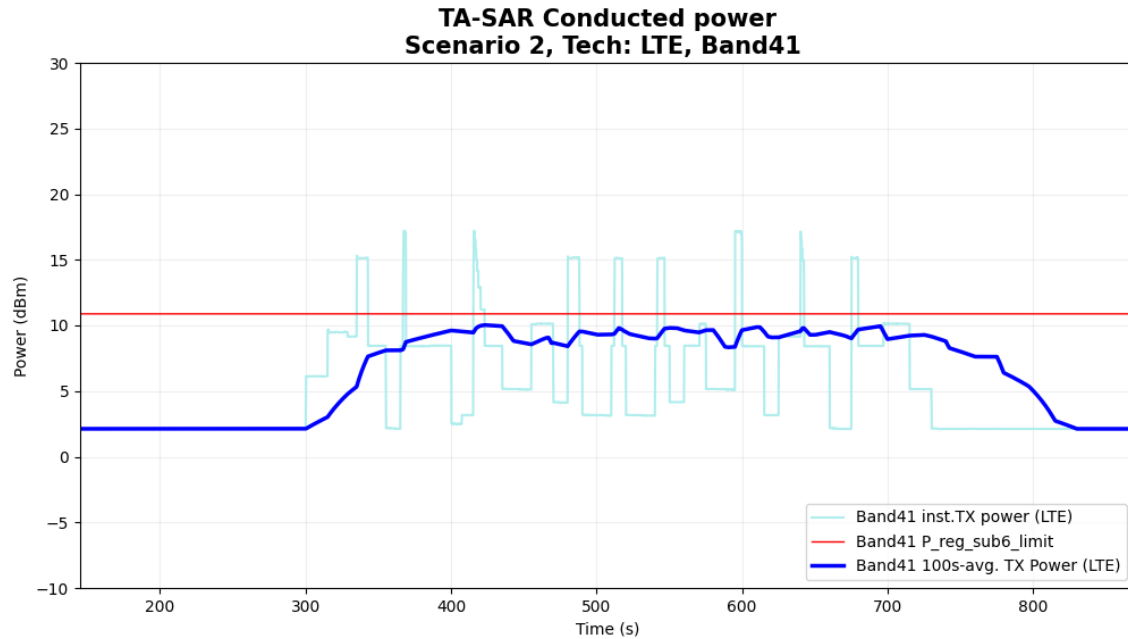


Figure 5-23 Time-averaged conducted TX power over time for case 15 (LTE B41)

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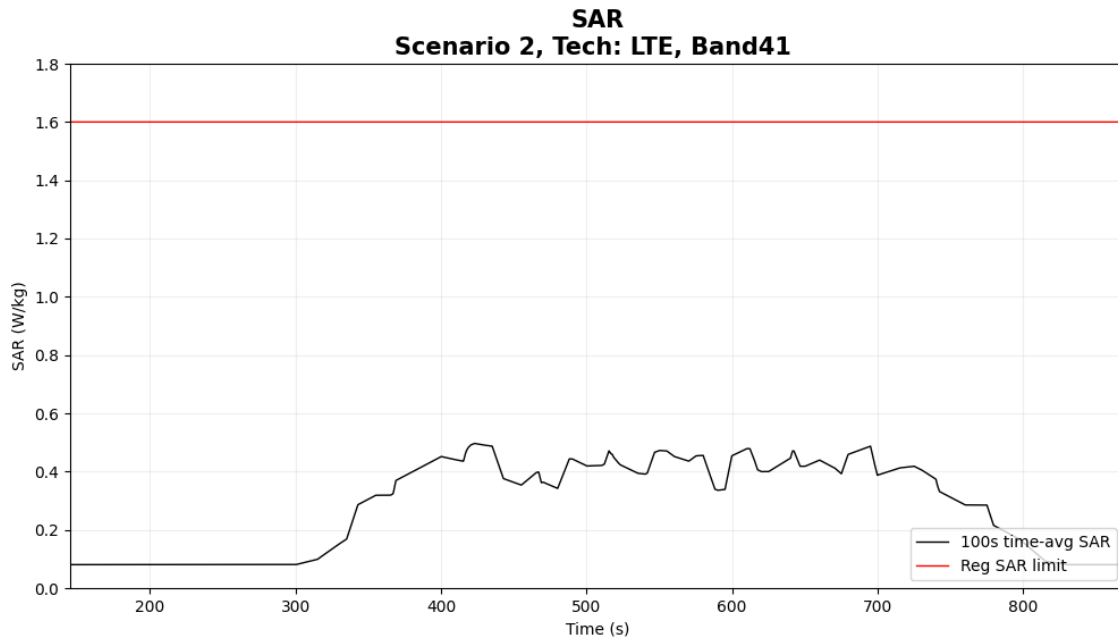


Figure 5-24 Time-averaged SAR for case 15 (LTE B41)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.497 W/kg
Validation result:	pass

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5.3.3 Measurement results for WCDMA

For the figure set of each case, the first figure demonstrates the EUT's instantaneous conducted TX power, the time-averaged conducted TX power behavior over time, and the power limit ($P_{\text{reg_sub6_limit}} = P_{\text{sub6_limit}} + 1\text{dB device uncertainty}$). The second figure illustrates the corresponding time-averaged SAR over time converted from the TX time-averaged power by using the equation listed in section 4.3.2. For all test cases, the time-averaged SAR does not exceed the FCC limit.

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■ Case 4 in table 5-4: WCDMA B4 result for test sequence 1

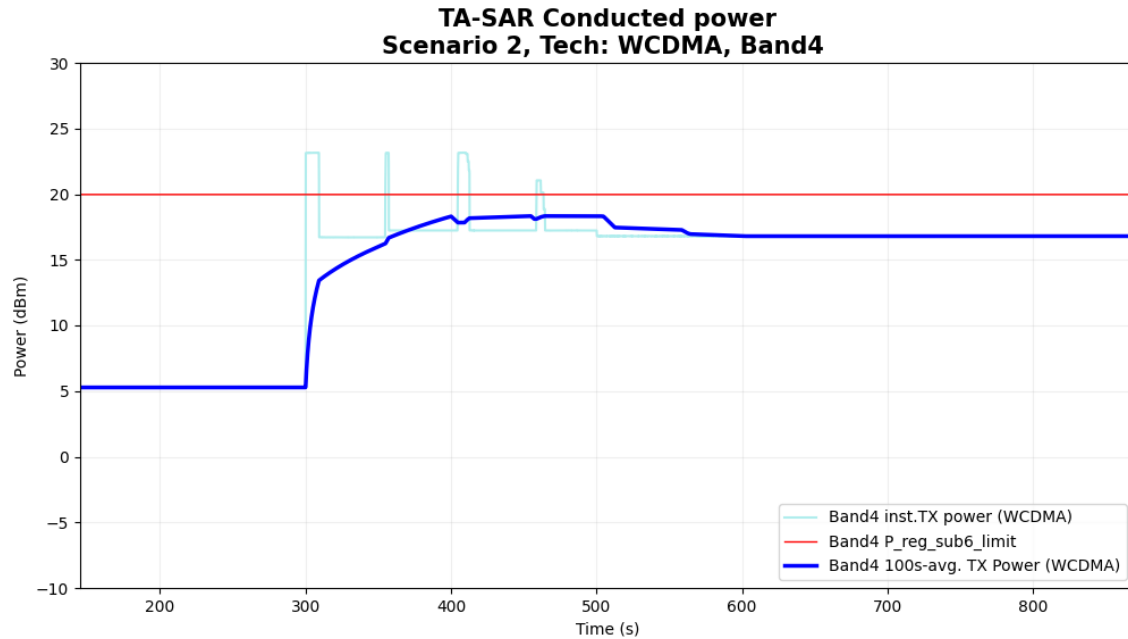


Figure 5-25 Time-averaged conducted TX power over time for case 4 (WCDMA B4)

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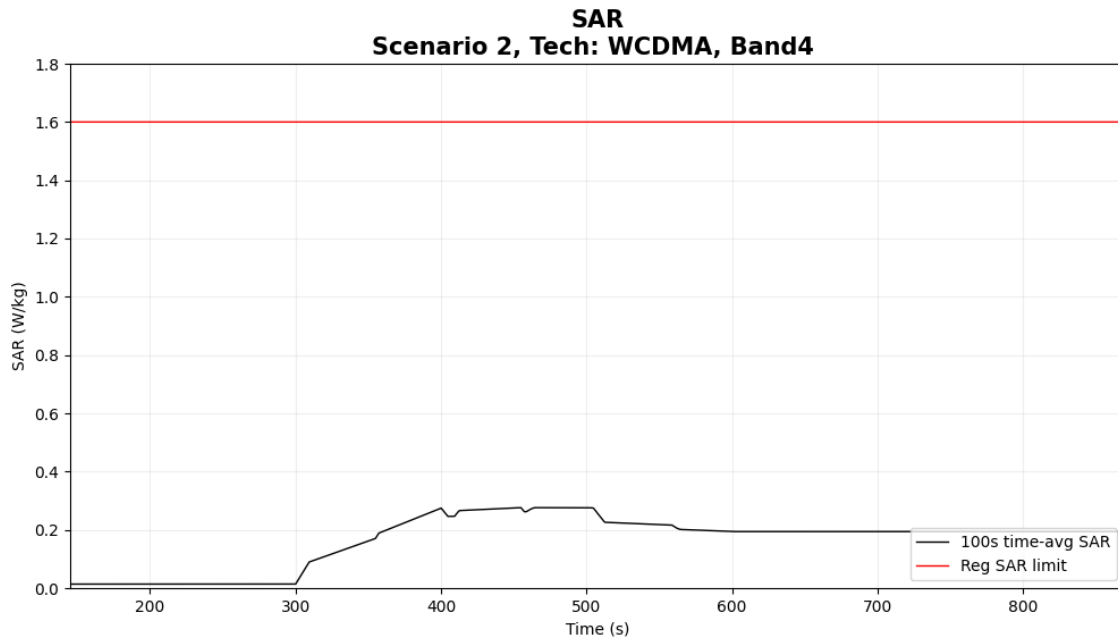


Figure 5-26 Time-averaged SAR for case 4 (WCDMA B4)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.276 W/kg
Validation result:	pass

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■ Case 5 in table 5-4: WCDMA B2 result for test sequence 1

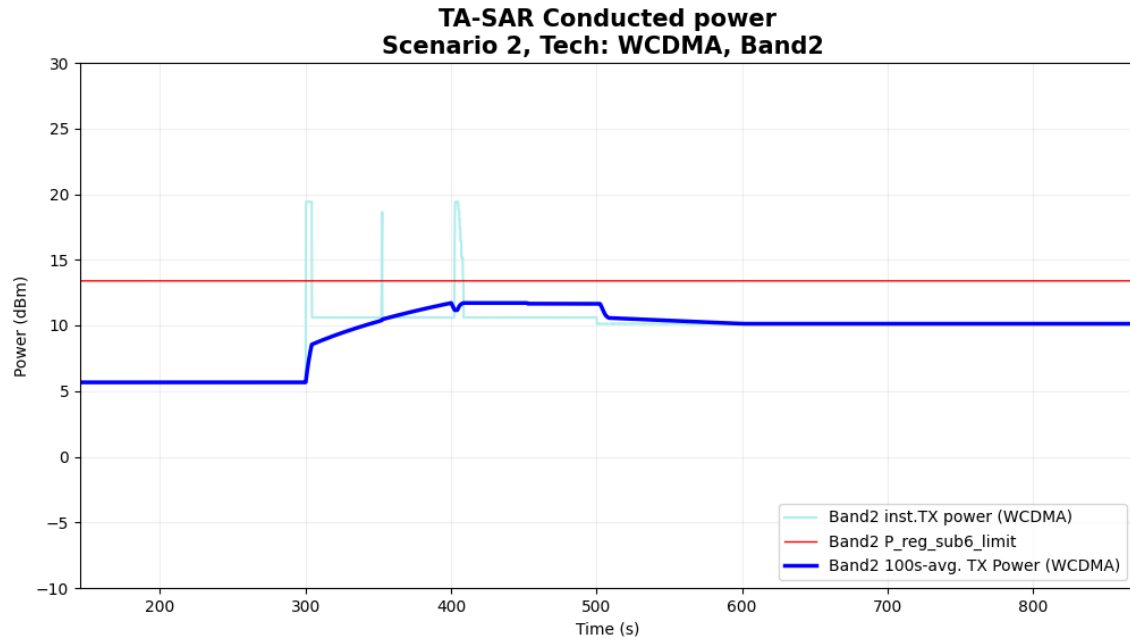


Figure 5-27 Time-averaged conducted TX power over time for case 5 (WCDMA B2)

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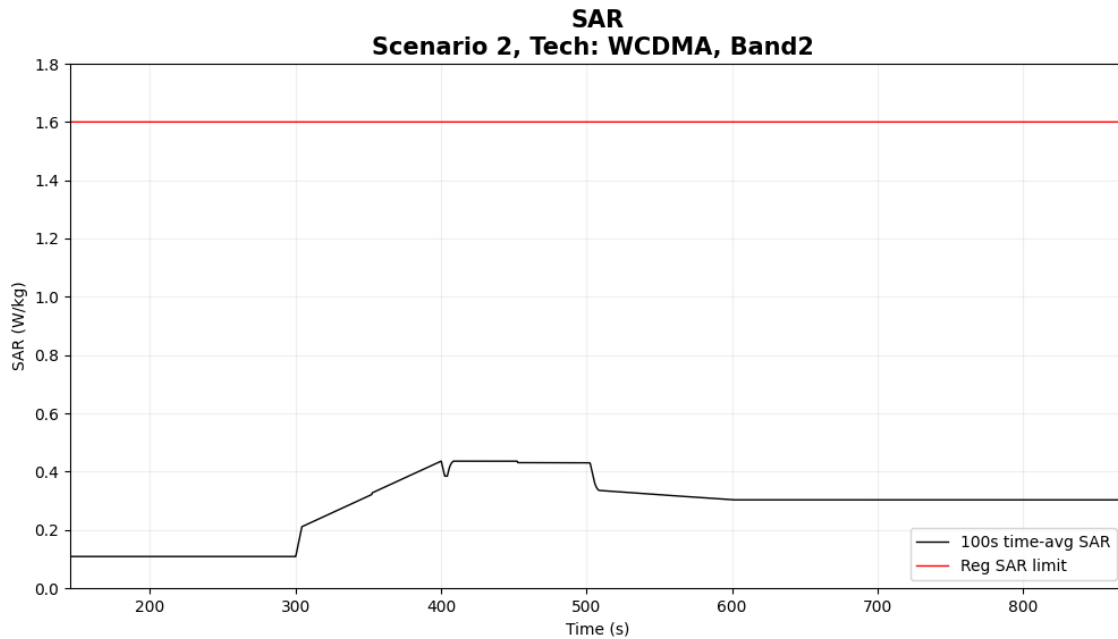


Figure 5-28 Time-averaged SAR for case 5 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.436 W/kg
Validation result: pass	

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■ Case 12 in table 5-4: WCDMA B4 result for test sequence 2

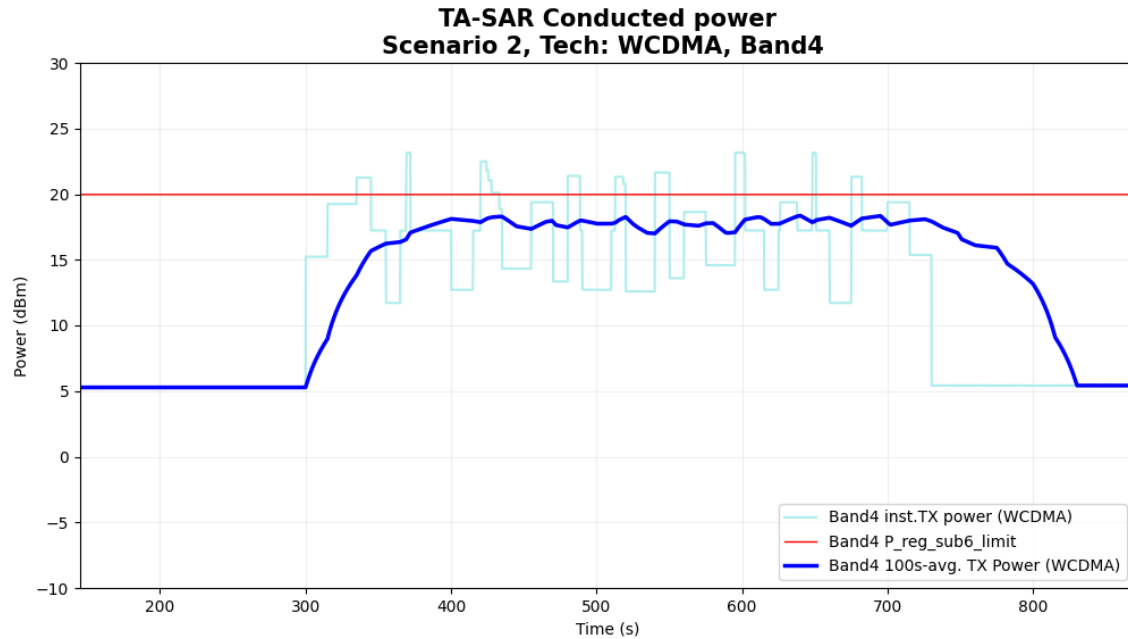


Figure 5-29 Time-averaged conducted TX power over time for case 12 (WCDMA B4)

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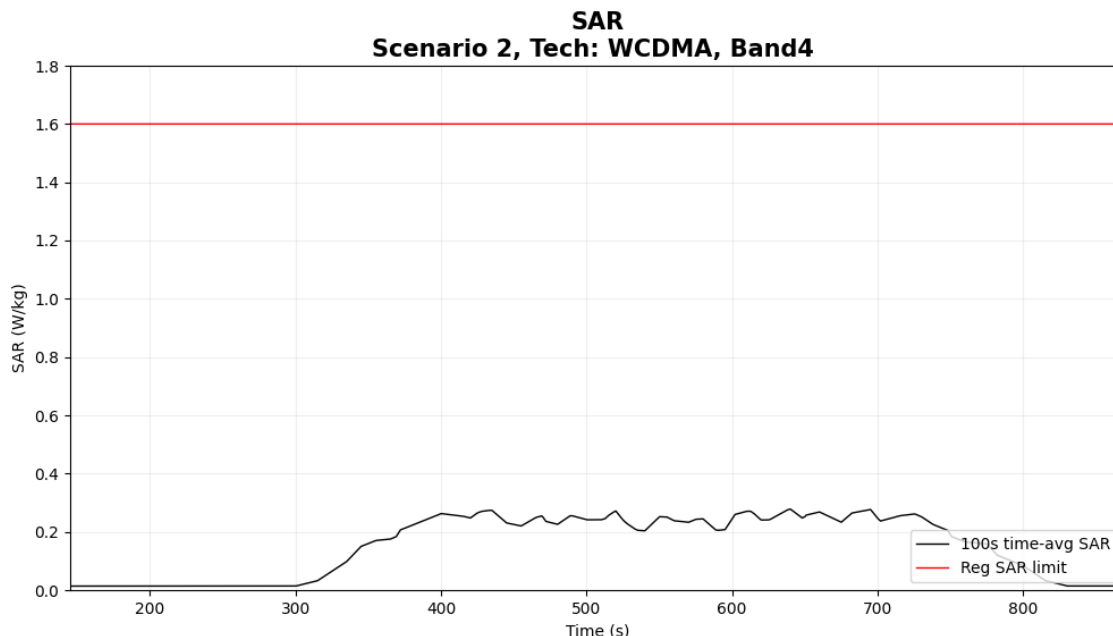


Figure 5-30 Time-averaged SAR for case 12 (WCDMA B4)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.278 W/kg
Validation result: pass	

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■ Case 13 in table 5-4: WCDMA B2 result for test sequence 2

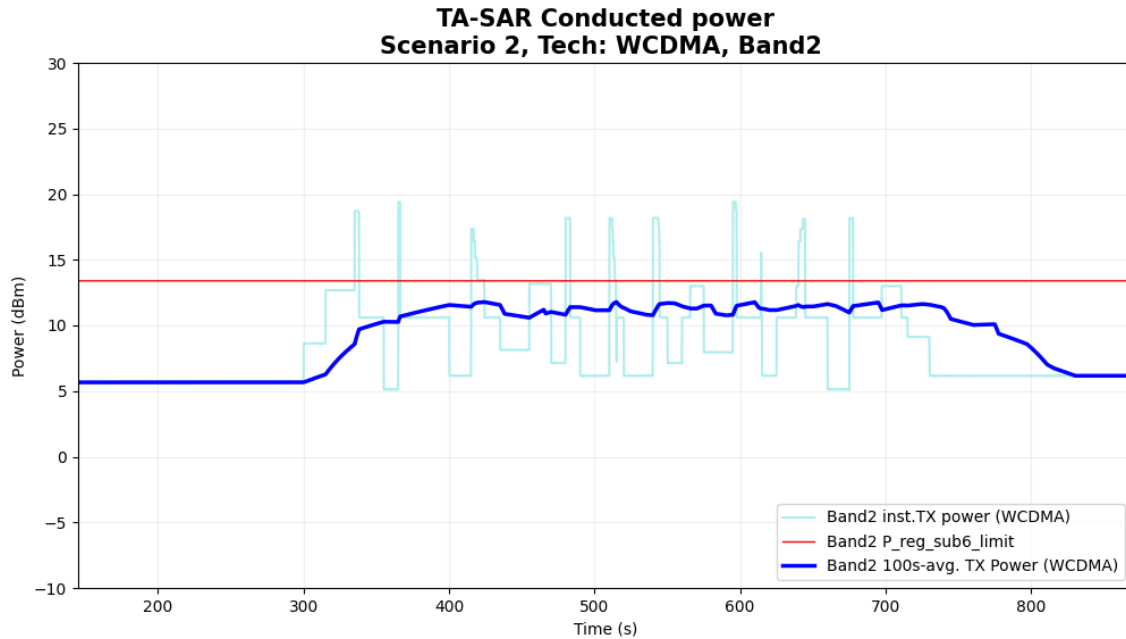


Figure 5-31 Time-averaged conducted TX power over time for case 13 (WCDMA B2)

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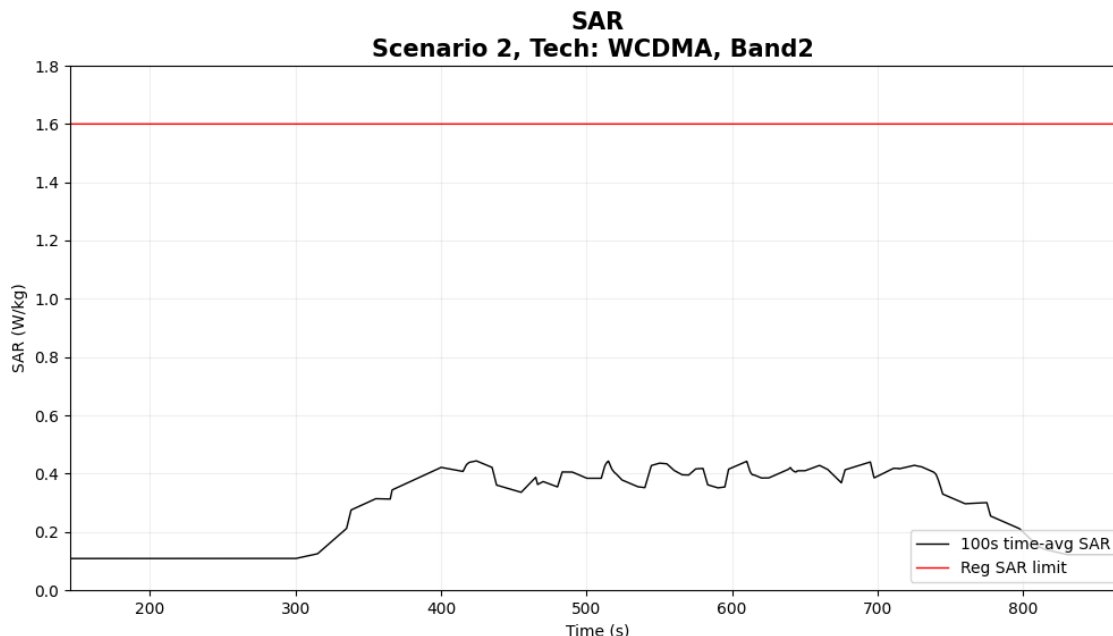


Figure 5-32 Time-averaged SAR for case 13 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.444 W/kg
Validation result: pass	

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5.3.4 Measurement results for 2G

For the figure set of each case, the first figure demonstrates the EUT's instantaneous conducted TX power, the time-averaged conducted TX power behavior over time, and the power limit ($P_{\text{reg_sub6_limit}} = P_{\text{sub6_limit}} + 1\text{dB device uncertainty}$). The second figure illustrates the corresponding time-averaged SAR over time converted from the TX time-averaged power by using the equation listed in section 4.3.2.

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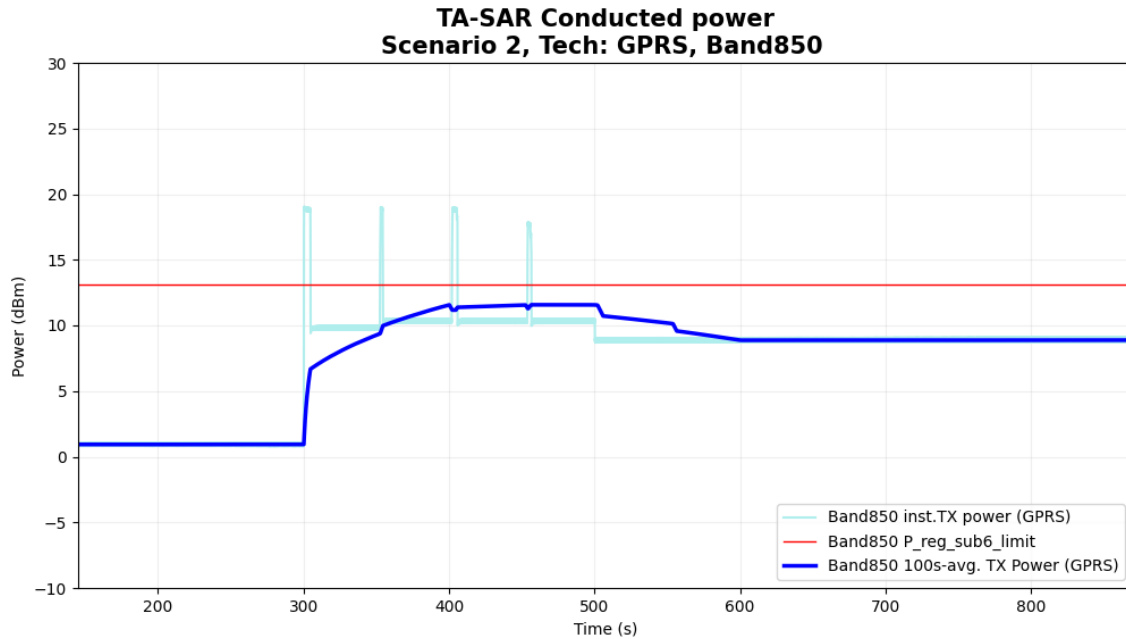
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■ Case 2 in table 5-4: 2G GPRS 850 result for test sequence 1

**Figure 5-33 Time-averaged conducted TX power over time for case 2 (2G GPRS 850)**

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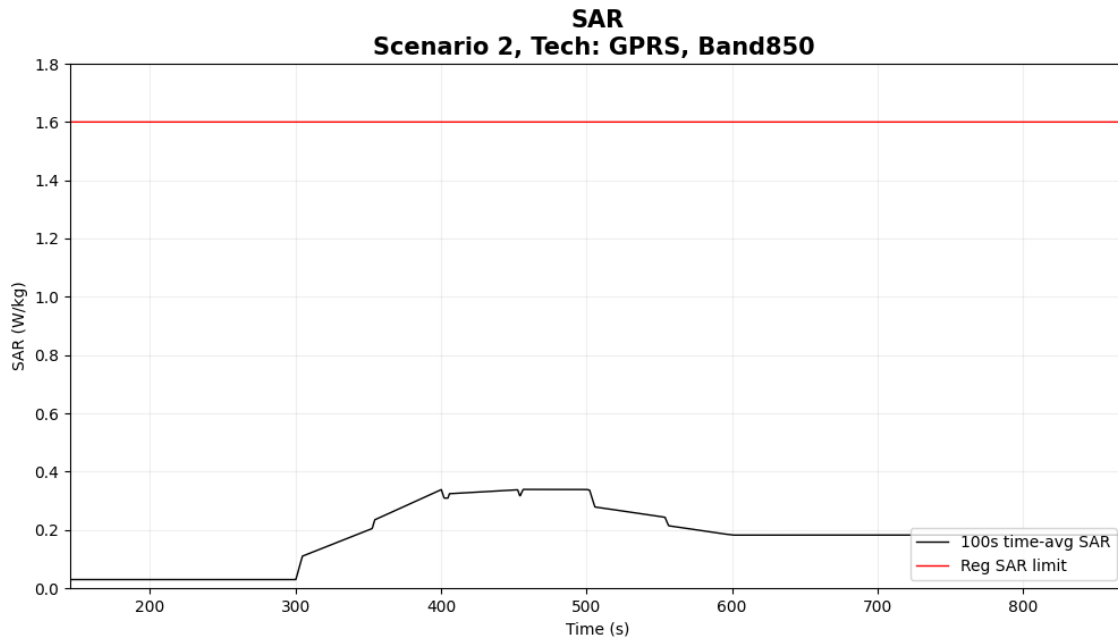


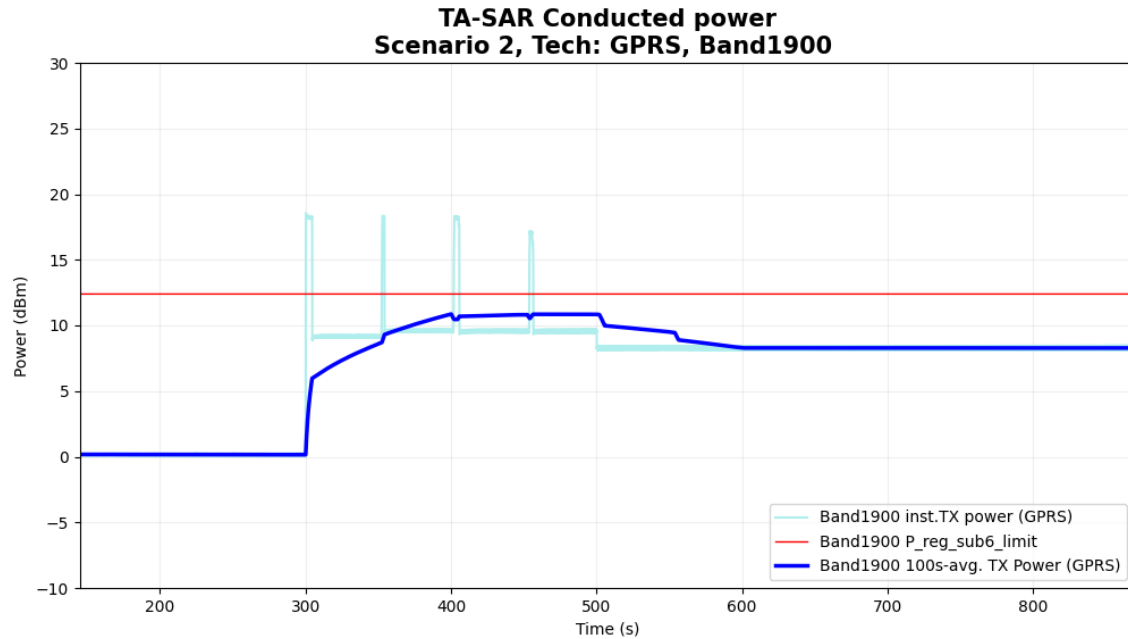
Figure 5-34 Time-averaged SAR for case 2 (2G GPRS 850)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.339 W/kg
Validation result: pass	

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■ Case 3 in table 5-4: 2G GPRS 1900 result for test sequence 1

**Figure 5-35 Time-averaged conducted TX power over time for case 3 (2G GPRS 1900)**

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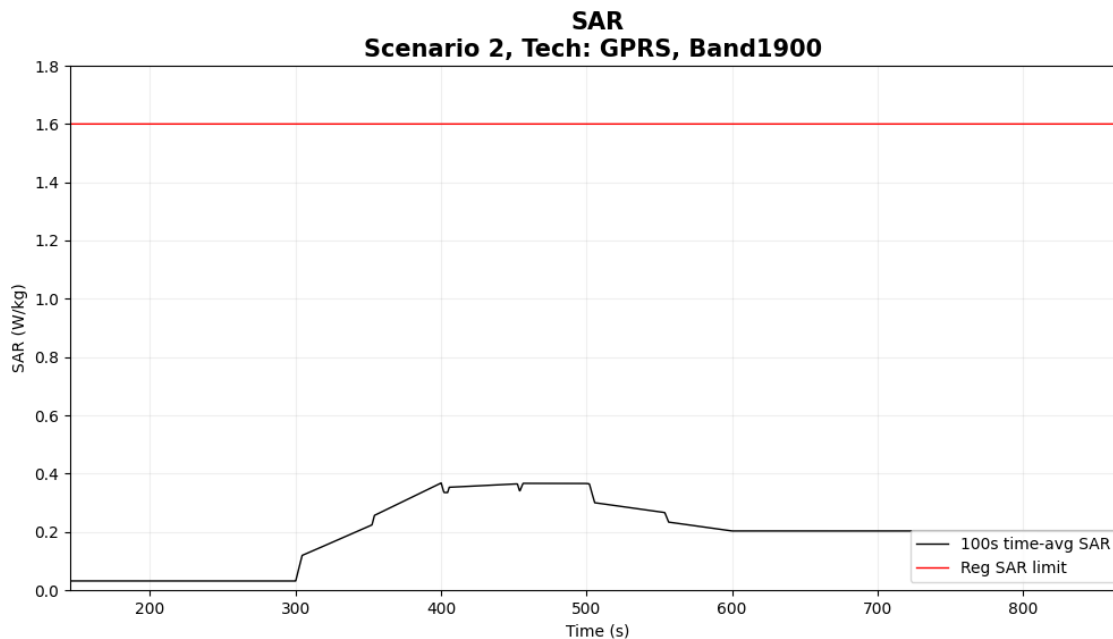


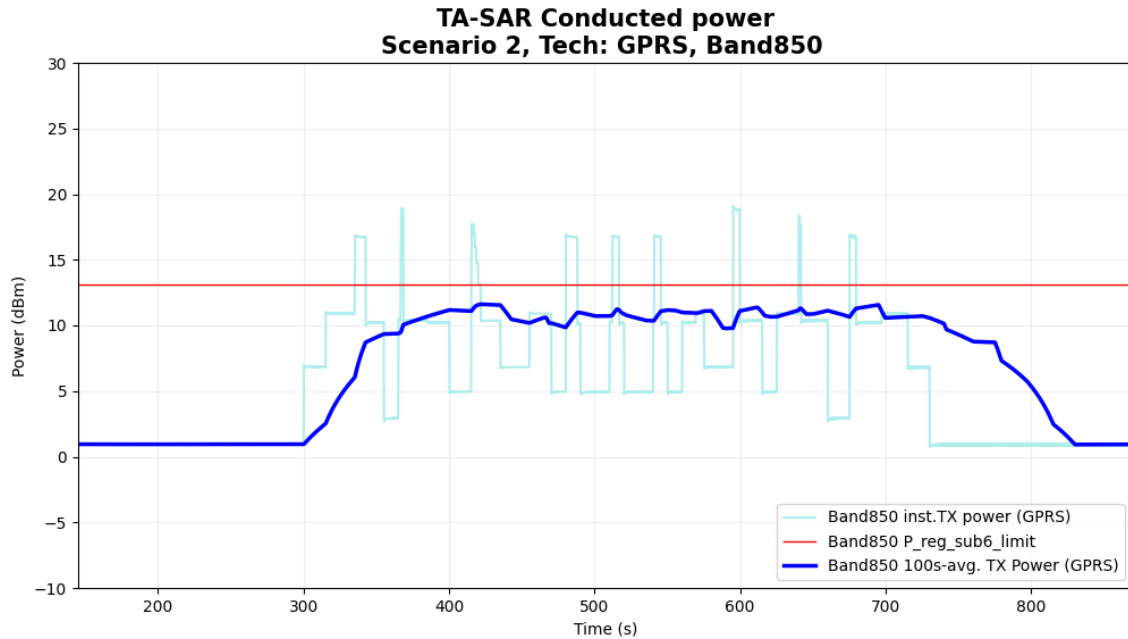
Figure 5-36 Time-averaged SAR for case 3 (2G GPRS 1900)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.368 W/kg
Validation result: pass	

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■ Case 10 in table 5-4: 2G GPRS 850 result for test sequence 2

**Figure 5-37 Time-averaged conducted TX power over time for case 10 (2G GPRS 850)**

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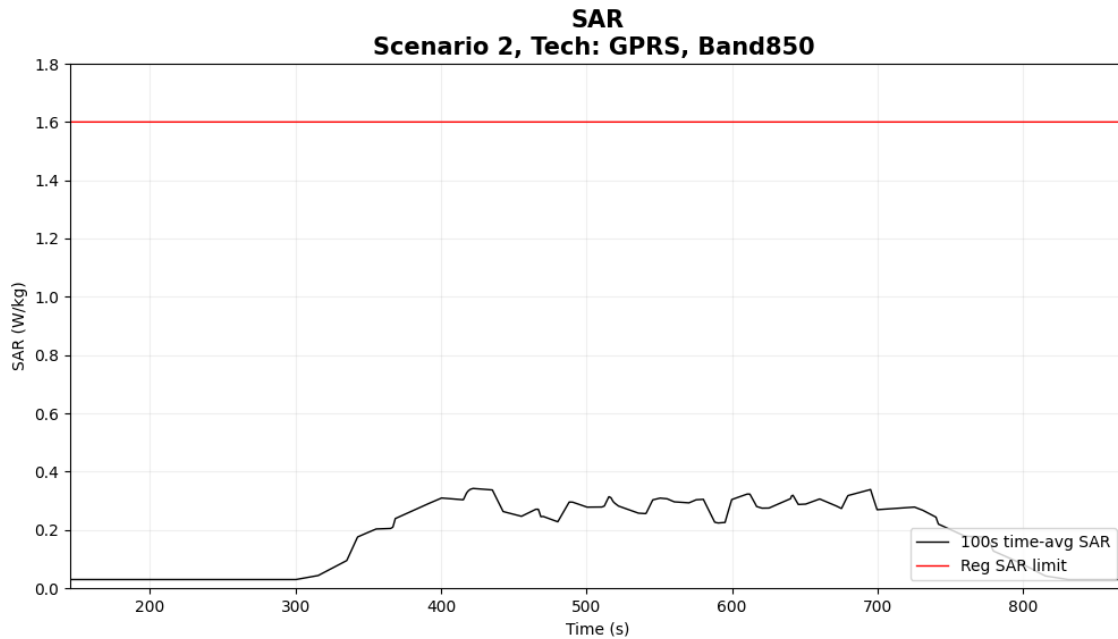


Figure 5-38 Time-averaged SAR for case 10 (2G GPRS 850)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.342 W/kg
Validation result: pass	

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■ Case 11 in table 5-4: 2G GPRS 1900 result for test sequence 2

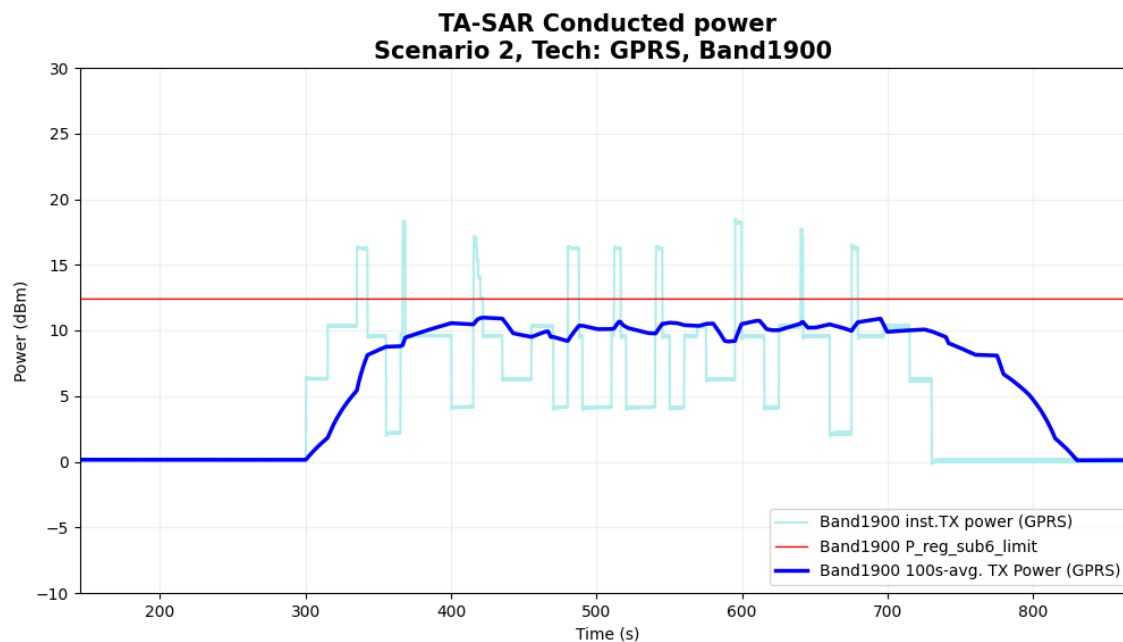


Figure 5-39 Time-averaged conducted TX power over time for case 11 (2G GPRS 1900)

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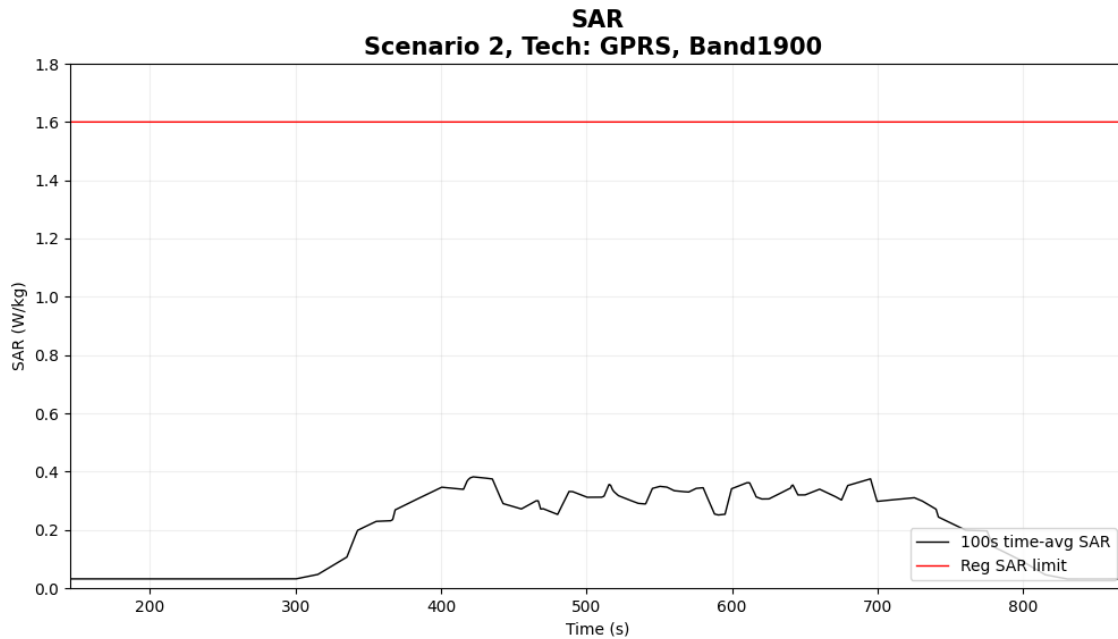


Figure 5-40 Time-averaged SAR for case 11 (2G GPRS 1900)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.382 W/kg
Validation result: pass	

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5.4 Conducted Power Measurement Results for Scenario 3: Call Disconnection and Re-establishment

In this scenario, the test power sequence #0 (i.e., maximum TX power is requested by a call box for each RAT) is used, and the call drop is manually configured for a pre-defined period and then the call is re-established to continue data transmission. The test case for this scenario is relegated in Table 5-5, and the test procedure follows section 4.4.2. The measurement setup is shown in Figure 5-2. The high-level summary of the final validation results is also listed in the last column of the table, which concludes that Mediatek's TA-SAR Gen2 algorithm can maintain the time-averaged SAR is always below the FCC requirement. The following section will demonstrate how Mediatek's TA-SAR Gen2 algorithm behaves.

Table 5-5 TA-SAR Gen2 parameters setting for scenario 3

Test case	RAT	Test band	Test seq.	ECI	Level_num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{LowThresh}$ (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
18	FR1	n77 PC2	0	3	8	20.00	7.00	5.75	5.25	14.00	Pass

Figure 5-42 demonstrates the EUT's instantaneous conducted TX power, the time-averaged conducted TX power behavior over time, and the power limit ($P_{reg_sub6_limit} = P_{sub6_limit} + 1\text{dB}$ device uncertainty). Figure 5-43 illustrates the corresponding time-averaged SAR over time converted from the TX time-averaged power by using the equation listed in section 4.4.2. As seen in this figure, the time-averaged SAR does not exceed the FCC limit.

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- Case 18 in table 5-5: call drop happens at the time instance of 500 seconds.

TA-SAR Conducted power
Scenario 3, Tech: NR FR1, Band77

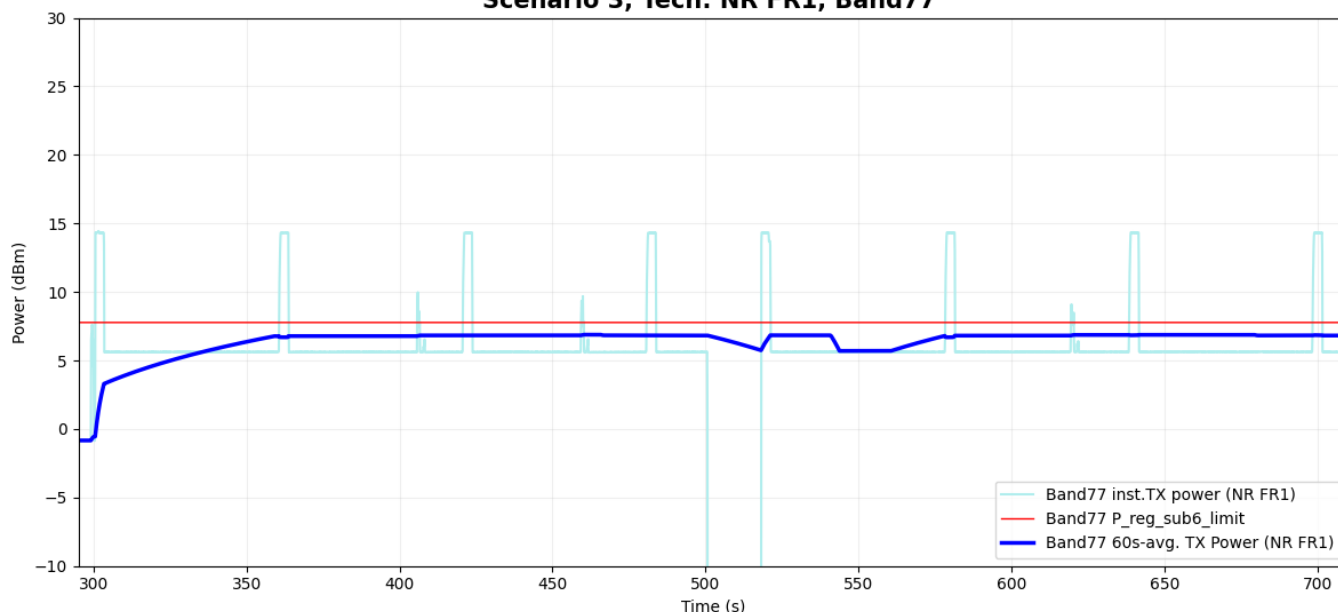


Figure 5-41 Time-averaged conducted TX power over time for case 18

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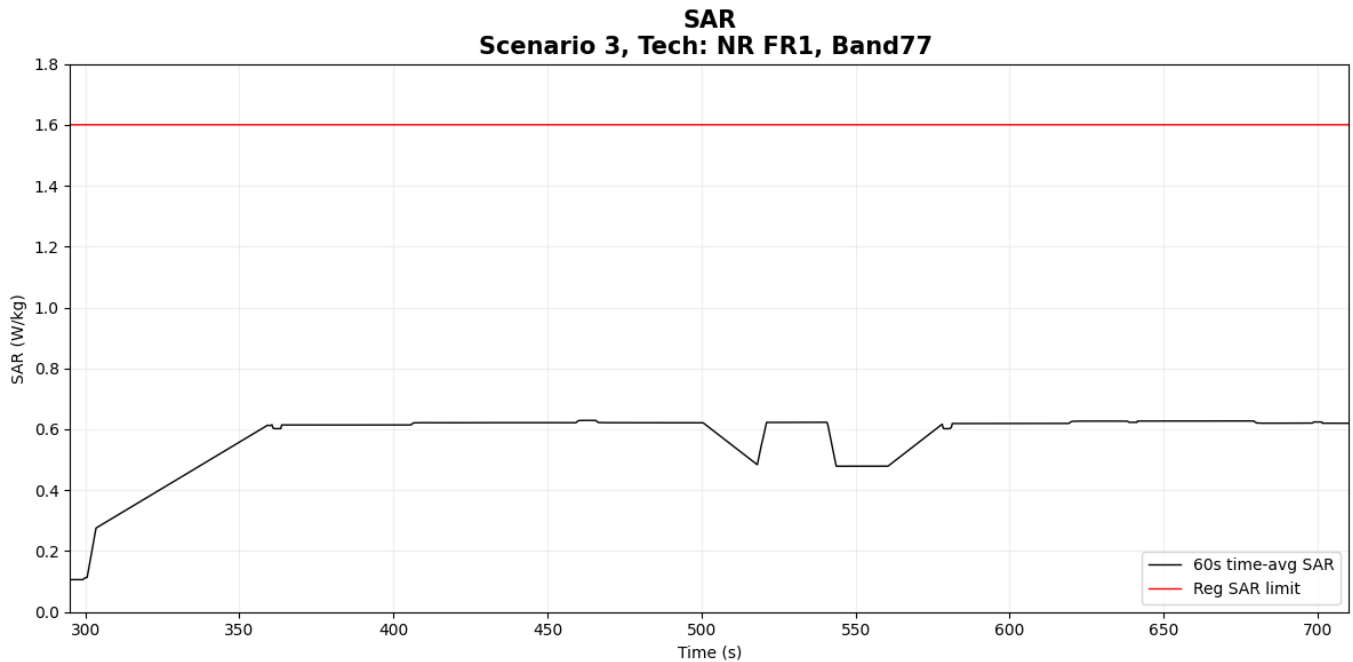


Figure 5-42 Time-averaged SAR for case 18

FCC 1gSAR limit	1.6 W/kg
Max 60s-time averaged 1gSAR	0.629 W/kg
Validation result: pass	

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5.5 Conducted Power Measurement Results for Scenario 4: Band Handover

In this scenario, the test power sequence #0 (i.e., maximum TX power is requested by a call box for each RAT) is used, and band (and RAT) handover is manually configured at a specific time instance. The test case widely cover handover scenarios between two RATs. The test case for this scenario is relegated in Table 5-6, and the test procedure follows section 4.5.2. The measurement setup is shown in Figure 5-3 (band handover) and Figure 5-5 (RAT handover). The high-level summary of the final validation results is also listed in the last column of the table, which concludes that Mediatek's TA-SAR Gen2 algorithm can maintain the time-averaged SAR is always below the FCC requirement. The following section will demonstrate how Mediatek's TA-SAR Gen2 algorithm behaves.

Table 5-6 TA-SAR Gen2 parameters setting for scenario 4

Test case	RAT	Test band	Test seq.	ECI	Level_num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{LowThresh}$ (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
19	LTE	B41_PC3	0	2	8	23.99	12.49	11.24	10.74	19.49	Pass
	WCDMA	B5	0	2	8	24.00	13.00	11.75	11.25	20.00	

The corresponding detailed test procedure is described in 4.5.2. The first figure demonstrates the EUT's instantaneous conducted TX power and the time-averaged conducted TX power behavior over time, and the power limit ($P_{reg_sub6_limit} = P_{sub6_limit} + 1\text{dB}$ device uncertainty). The handover is configured at the time instance of 500 seconds. It is observed in the figure that the time-averaged TX power of the individual RAT is below its own P_{sub6_limit} . The second figure illustrates the corresponding time-averaged normalized SAR over time converted from the TX time-averaged power by using the equation listed in section 4.5.2. The figure shows that the time-averaged normalized SAR does not exceed the normalized FCC limit of 1.

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- Case 19 in table 5-6: band handover happens at the time instance of 500 seconds.

TA-SAR Conducted power
Scenario 4, Tech: LTE, Band41
/ Tech: WCDMA, Band5

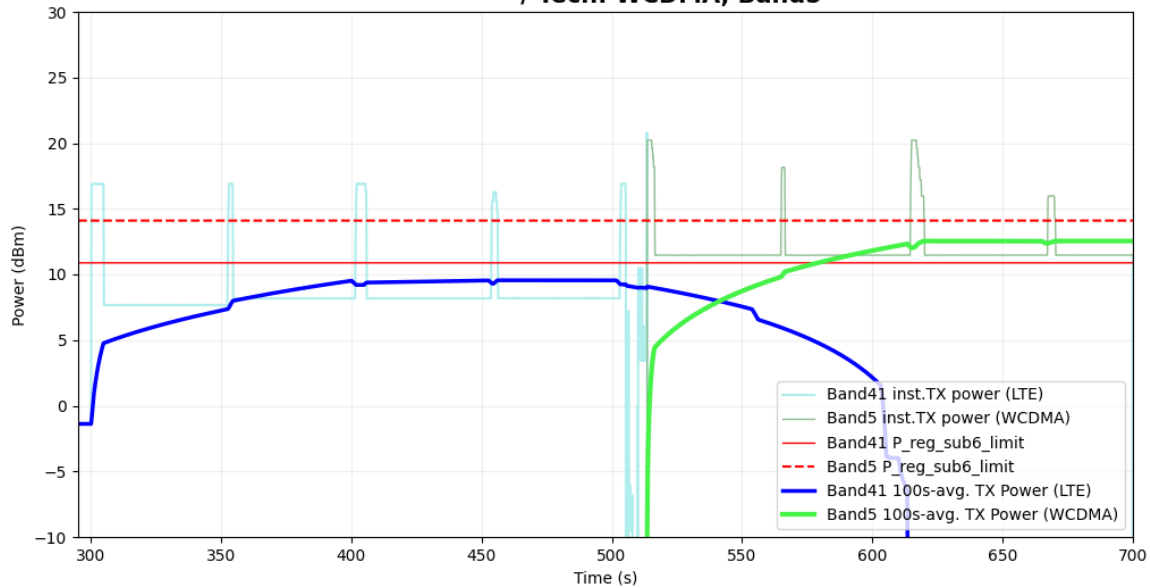


Figure 5-43 Time-averaged conducted TX power over time for case 19

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**Total normalized Time-averaged RF exposure
Scenario 4, Tech: LTE, Band41
/ Tech: WCDMA, Band5**

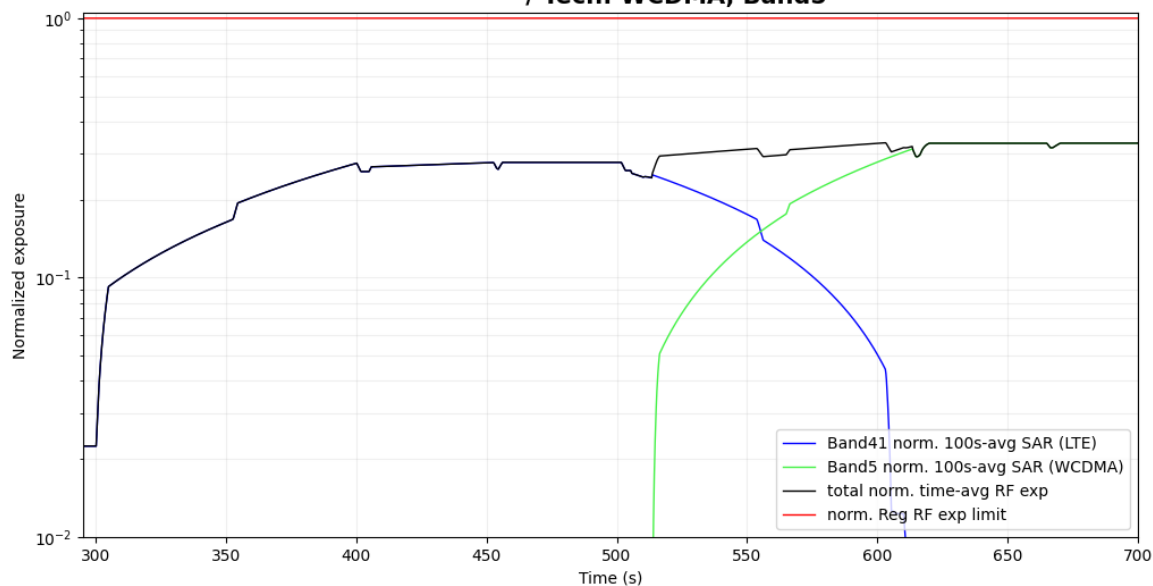


Figure 5-44 Normalized time-averaged SAR for case 19

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.331
Validation result:	pass

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5.6 Conducted Power Measurement Results for Scenario 5: ECI Change

In this scenario, the test power sequence #0 (i.e., maximum TX power is requested by a call box for each RAT) is used, and ECI change at the EUT side is manually configured at a specific time instance. The test case cover ECI switching scenario between two ECIs. The test case for this scenario is relegated in Table 5-7, and the test procedure follows section 4.6.2. The measurement setup is shown in Figure 5-2. The high-level summary of the final validation results is also listed in the last column of the table, which concludes that Mediatek's TA-SAR Gen2 algorithm can maintain the time-averaged SAR is always below the FCC requirement. The following section will demonstrate how Mediatek's TA-SAR Gen2 algorithm behaves.

Table 5-7 TA-SAR Gen2 parameters setting for scenario 5

Test case	RAT	Test band	Test seq.	ECI	Level_num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{LowThresh}$ (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
20	LTE	B41_PC3	0	2	8	23.99	12.49	11.24	10.74	19.49	Pass
				3	8	23.99	16.99	15.74	15.24	23.99	

The first figure demonstrates the EUT's instantaneous conducted TX power and the time-averaged conducted TX power behavior over time, and the power limit ($P_{reg_sub6_limit} = P_{sub6_limit} + 1\text{dB device uncertainty}$). During the test period, there are two ECI change events configured individually at the time instances 500 seconds and 700 seconds. It is observed in the figure that the time-averaged TX power of the individual RAT is below its own P_{sub6_limit} . The second figure illustrates the corresponding time-averaged normalized SAR over time converted from the TX time-averaged power by using the equation listed in section 4.6.2. The figure shows that the time-averaged normalized SAR does not exceed the normalized FCC limit of 1.

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- Case 20 in table 5-7: two ECI changes happen at the time instances of 500 and 700 seconds, respectively.

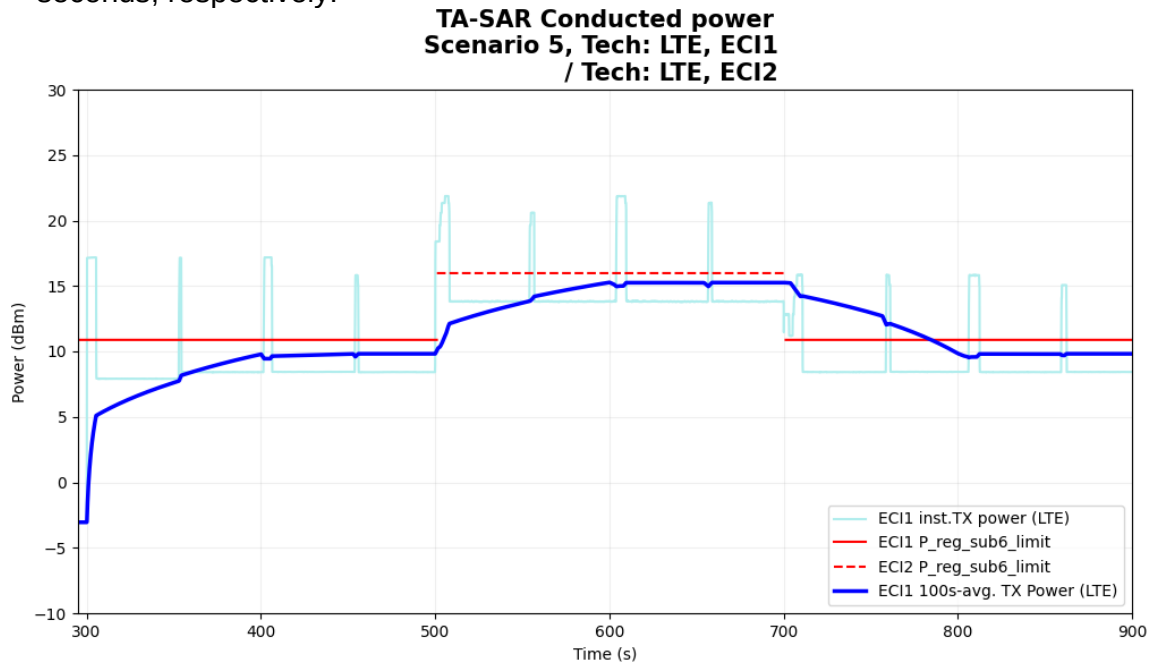


Figure 5-45 Time-averaged conducted TX power over time for case 20 (LTE B41_PC3)

NOTE : The inst. TX power should be compared with P_reg_sub6_limit of the corresponding configuration, then transformed and averaged in SAR perspective to check compliance. Therefore, even though the time-averaged TX power seems to exceed P_reg_sub6_limit after configuration changed (from 500s to 530s), the time-averaged SAR pass regulation as a matter of fact.

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Total normalized Time-averaged RF exposure
Scenario 5, Tech: LTE, ECI1
/ Tech: LTE, ECI2

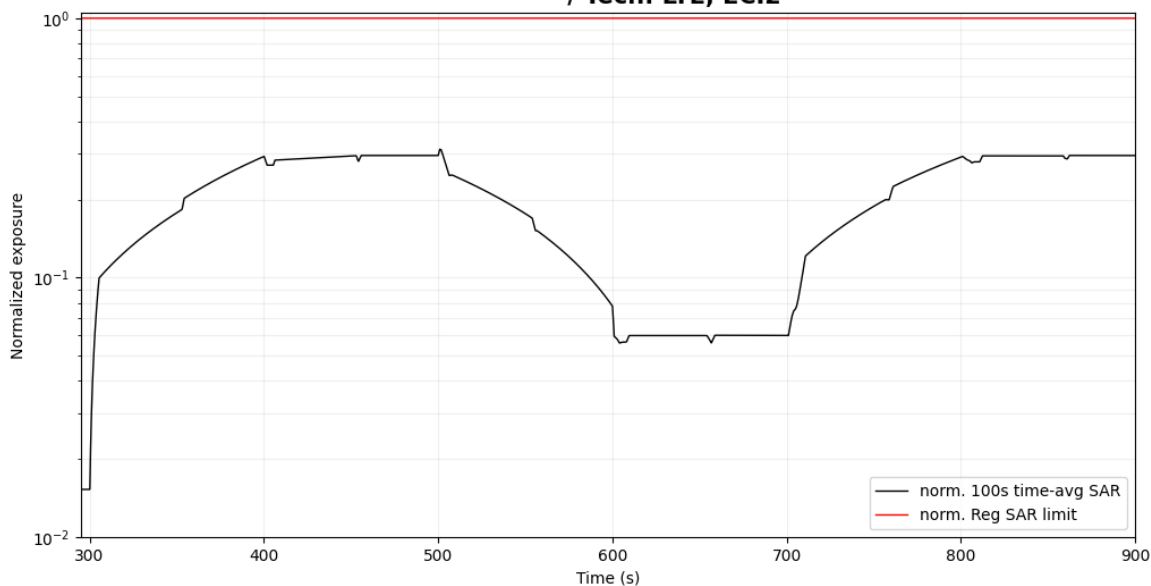


Figure 5-46 Normalized time-averaged SAR for case 20 (LTE B41_PC3)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.312
Validation result: pass	

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5.7 Conducted Power Measurement Results for Scenario 7: Time Window Switching

In this scenario, the test power sequence #0 (i.e., maximum TX power is requested by a call box for each RAT) is used, and band handover events within a RAT are manually configured at specific time instances. This scenario aims to validate the correctness of the TA-SAR Gen2 algorithm with existence of moving average time window change. The two test cases for this scenario are relegated in Table 5-9, and the test procedure follows section 4.8.2. The measurement setup is shown in Figure 5-3. The high-level summary of the final validation results are also listed in the last column of the table, which concludes that Mediatek's TA-SAR Gen2 algorithm can maintain the time-averaged SAR is always below the FCC requirement for all the cases. The following sections will demonstrate how Mediatek's TA-SAR Gen2 algorithm behaves.

Table 5-8 TA-SAR Gen2 parameters setting for scenario 7

Test case	RAT	Test band	Test seq.	ECl	Level_num	Algo_avg_window	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{LowThresh}$ (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
21	FR1	n77 PC2	0	3	8	60s	20.00	7.00	5.75	5.25	14.00	Pass
	FR1	n41 PC3			8	100s	24.00	15.00	13.75	13.25	22.00	
22	FR1	n41 PC3	0	3	8	100s	24.00	15.00	13.75	13.25	22.00	Pass
	FR1	n77 PC2			8	60s	20.00	7.00	5.75	5.25	14.00	

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5.7.1 Measurement results for test case 21

The corresponding detailed test procedure is described in 4.8.2. During the test period, there are two band handover events configured individually at the time instances 500 seconds and 620 seconds. The first figure demonstrates the EUT's instantaneous conducted TX power and the time-averaged conducted TX power behavior over time, and the power limit ($P_{\text{reg_sub6_limit}} = P_{\text{sub6_limit}} + 1\text{dB device uncertainty}$). It is observed in the figure that the time-averaged TX power during the transitions of the band changes is maintained below the power limitation. The second figure illustrates the corresponding time-averaged normalized SAR over time converted from the TX time-averaged power by using the equation listed in section 4.8.2. The figure shows that the time-averaged normalized SAR does not exceed the normalized FCC limit of 1.

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- Case 21 in table 5-9: band handover happens at the time instances of 500 and 620 seconds.

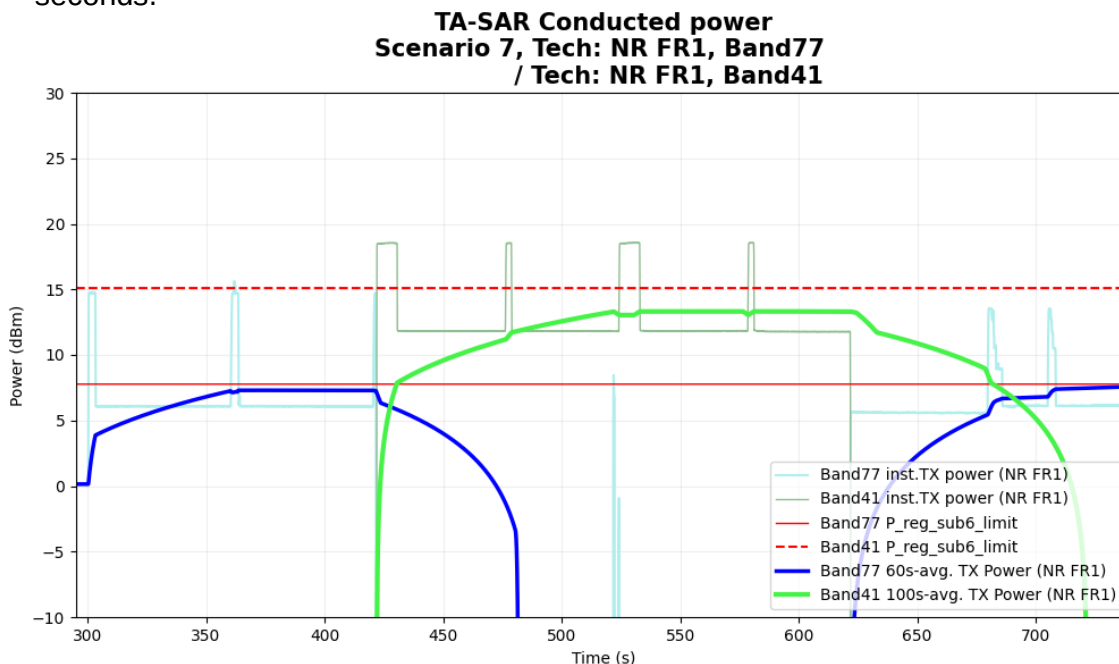


Figure 5-47 Time-averaged conducted TX power over time for case 21 (sub6 NR n77, n41)

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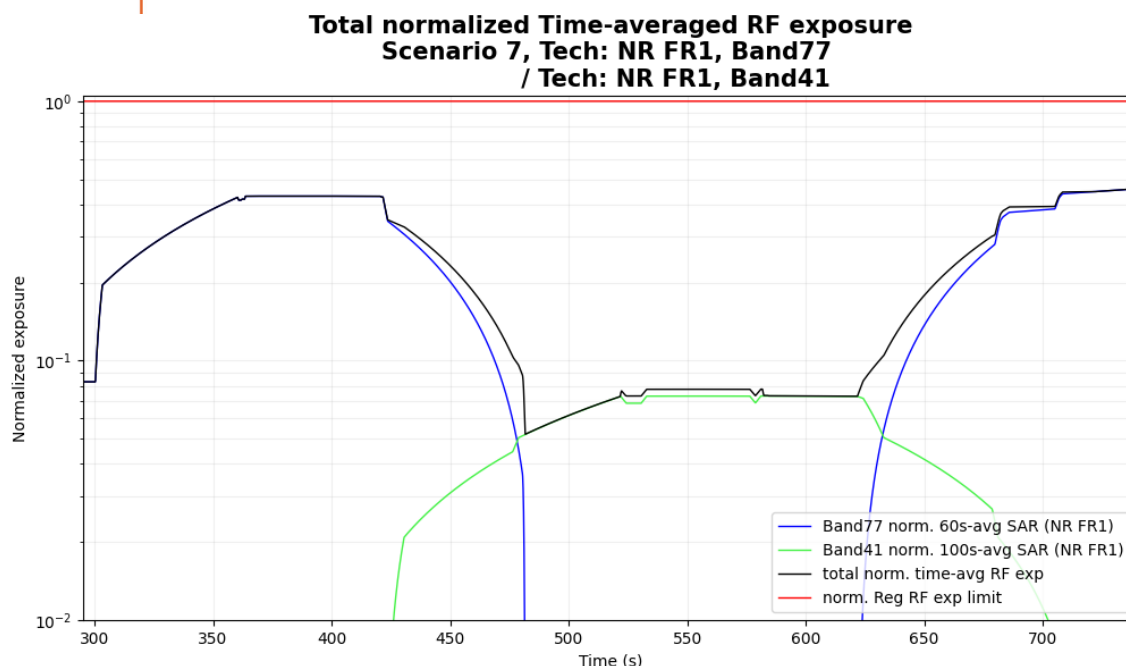


Figure 5-48 Normalized time-averaged SAR for case 21 (sub6 NR n77, n41)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.460
Validation result: pass	

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5.7.2 Measurement results for test case 22

The corresponding detailed test procedure is described in 4.8.2. During the test period, there are two band handover events configured individually at the time instances 500 seconds and 620 seconds. The first figure demonstrates the EUT's instantaneous conducted TX power and the time-averaged conducted TX power behavior over time, and the power limit ($P_{reg_sub6_limit} = P_{sub6_limit} + 1\text{dB device uncertainty}$). It is observed in the figure that the time-averaged TX power during the transitions of the band changes is maintained below the power limitation. The second figure illustrates the corresponding time-averaged normalized SAR over time converted from the TX time-averaged power by using the equation listed in section 4.8.2. The figure shows that the time-averaged normalized SAR does not exceed the normalized FCC limit of 1.

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- Case 22 in table 5-9: band handover happens at the time instances of 420 and 620 seconds.

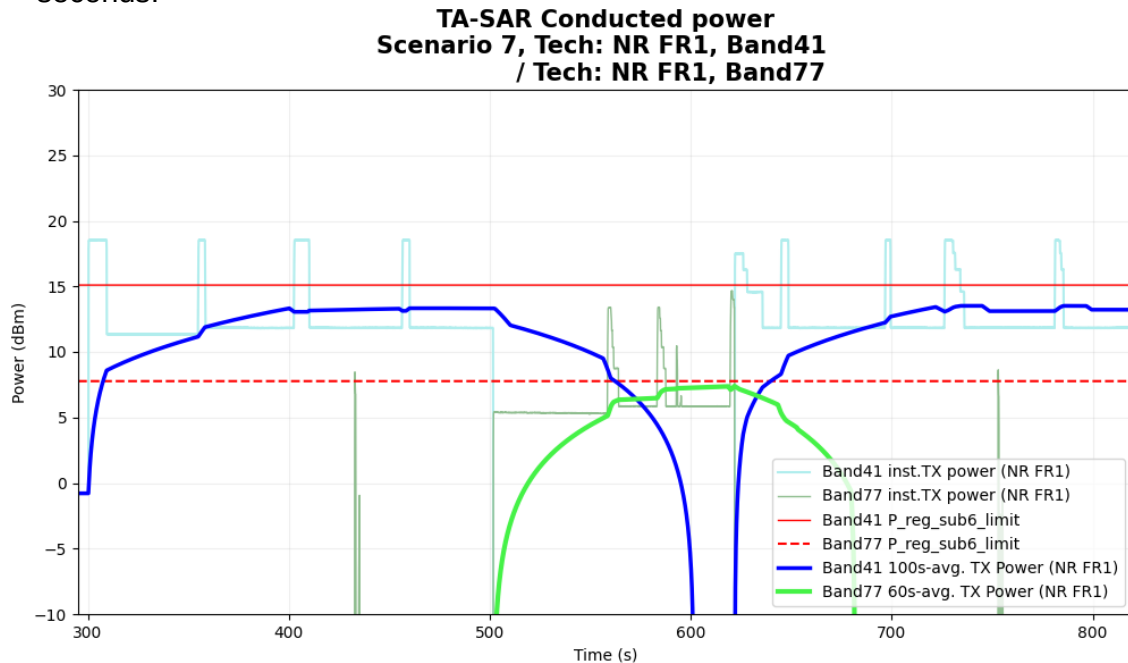


Figure 5-49 Time-averaged conducted TX power over time for case 22 (sub6 NR n41, n77)

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Total normalized Time-averaged RF exposure
Scenario 7, Tech: NR FR1, Band41
/ Tech: NR FR1, Band77

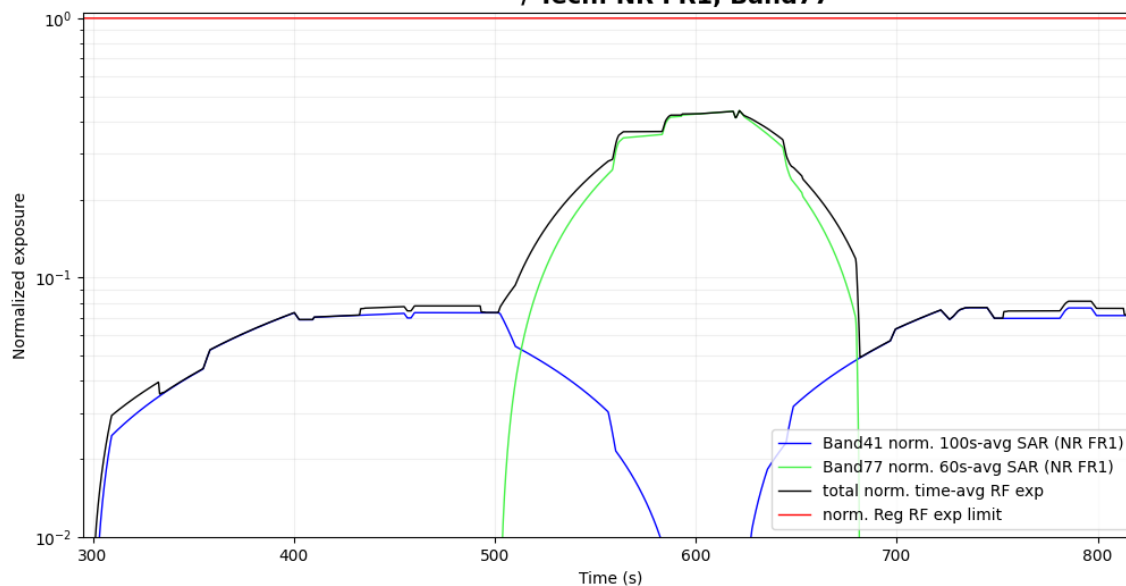


Figure 5-50 Normalized time-averaged SAR for case 22 (sub6 NR n41, n77)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.440
Validation result:	pass

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6 TA-SAR GEN2 VALIDATION VIA SAR MEASUREMENTS

6.1 Measurement Setup

The measurement setup is similar to normal fixed power SAR measurement. The difference in SAR measurement setup for time averaging feature validation is that the call box operates under the close loop power control mode and is connected to the PC, so that the PC can control the call box based on the test sequence to configure EUT's TX target power. The same test procedure used in conducted power setup for time-varying TX power measurement is also used in this section for time-averaging SAR measurements. Since the SAR chamber is an uncontrolled environment, the path loss between call box antenna and the EUT are well calibrated. The test setup is illustrated in Figure 6-1.

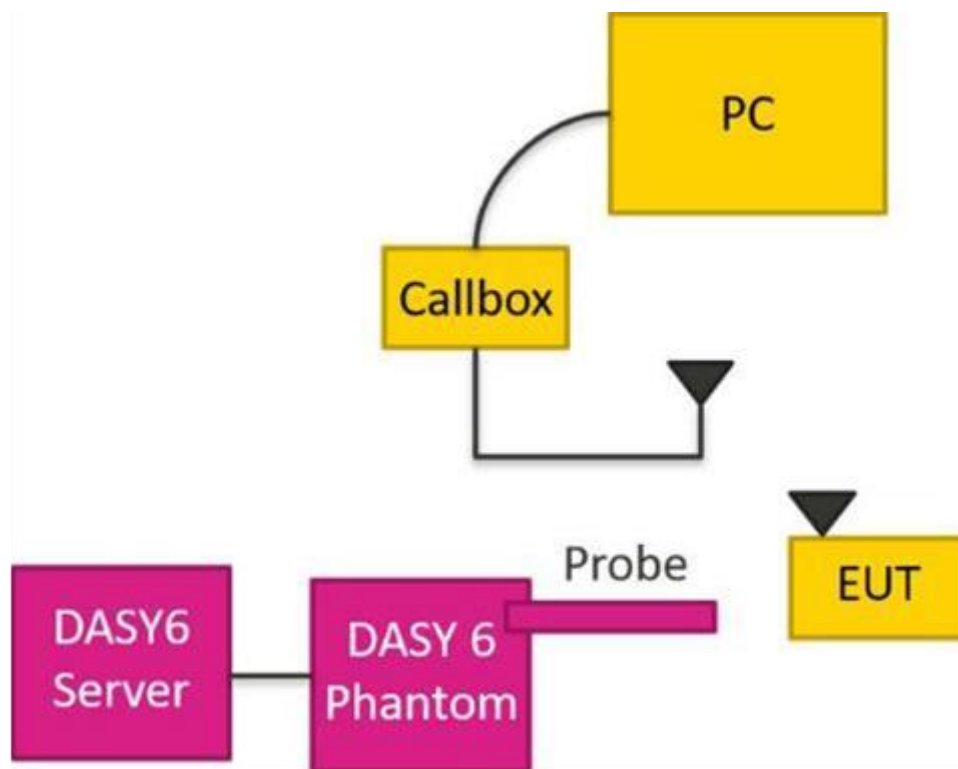


Figure 6-1 TA-SAR Gen2 wireless test environment

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6.2 SAR Measurement Results for Scenario 2: Time-Varying TX Power

In this scenario, Mediatek's TA-SAR Gen2 algorithm is tested under more dynamic power test sequences. The test sequence #1 is shown in section 4.1 and test sequence #2 is tabulated in table 4.4. All of the test cases for this scenario are relegated in Table 6-1, and the test procedure follows section 4.10.2. The measurement setup is shown in Figure 6-1, 6-2(a) and 6-2(b). All of the measurements are conduct by using DASY6. The high-level summary of the final validation results is given in the last column of the table, which concludes that Mediatek's TA-SAR Gen2 algorithm can maintain the time-averaged SAR is always below the FCC requirement for all test cases. The following sections will demonstrate case-by-case to show how Mediatek's TA-SAR Gen2 algorithm behaves for each RAT.

Table 6-1 Operating parameters for different TA-SAR Gen2 parameters setting

Test case	RAT	Test band	Test seq.	ECl	Level_num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{LowThresh}$ (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
2	2G	GPRS 850 4TX	1	2	8	28.31	15.81	14.56	14.06	22.81	Pass
3	2G	GPRS 1900 4TX	1	2	8	25.31	14.81	13.56	13.06	21.81	Pass
4	WCDMA	B4	1	3	8	24.00	19.00	17.75	17.25	24.00	Pass
5	WCDMA	B2	1	2	8	24.00	12.00	10.75	10.25	19.00	Pass
6	LTE	B25	1	3	8	24.00	19.00	17.75	17.25	24.00	Pass
7	LTE	B41_PC3	1	2	8	23.99	12.49	11.24	10.74	19.49	Pass
8	FR1	n25	1	3	8	24.00	19.00	17.75	17.25	24.00	Pass
9	FR1	n77_PC2	1	3	8	20.00	7.00	5.75	5.25	14.00	Pass
10	2G	GPRS 850 4TX	2	2	8	28.31	15.81	14.56	14.06	22.81	Pass
11	2G	GPRS 1900 4TX	2	2	8	25.31	14.81	13.56	13.06	21.81	Pass
12	WCDMA	B4	2	3	8	24.00	19.00	17.75	17.25	24.00	Pass
13	WCDMA	B2	2	2	8	24.00	12.00	10.75	10.25	19.00	Pass
14	LTE	B25	2	3	8	24.00	19.00	17.75	17.25	24.00	Pass
15	LTE	B41_PC3	2	2	8	23.99	12.49	11.24	10.74	19.49	Pass
16	FR1	n25	2	3	8	24.00	19.00	17.75	17.25	24.00	Pass
17	FR1	n77_PC2	2	3	8	20.00	7.00	5.75	5.25	14.00	Pass

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6.2.1 SAR Measurement results for NR

- Case 8 in table 6-1: NR n25 result for test sequence 1

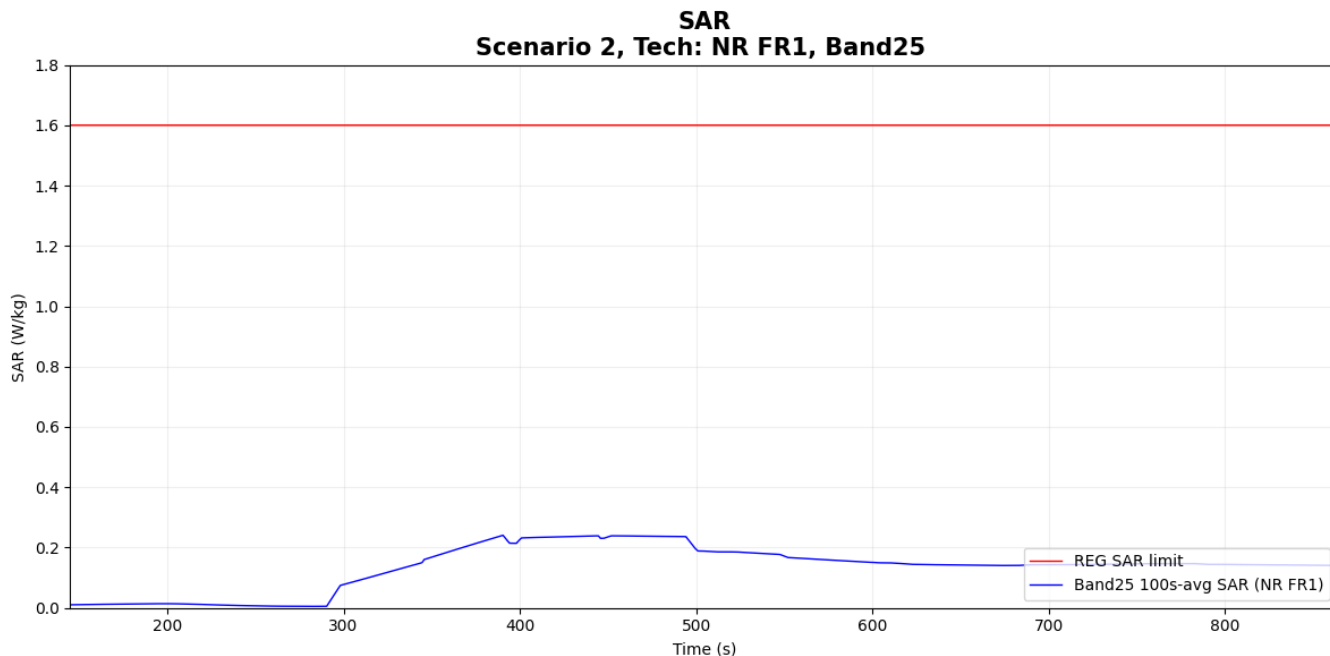


Figure 6-2 Time-averaged SAR for case 8 in table 6-1 (sub6 NR n25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.241 W/kg
Validation result: pass	

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■ Case 9 in table 6-1: NR n77 result for test sequence 1

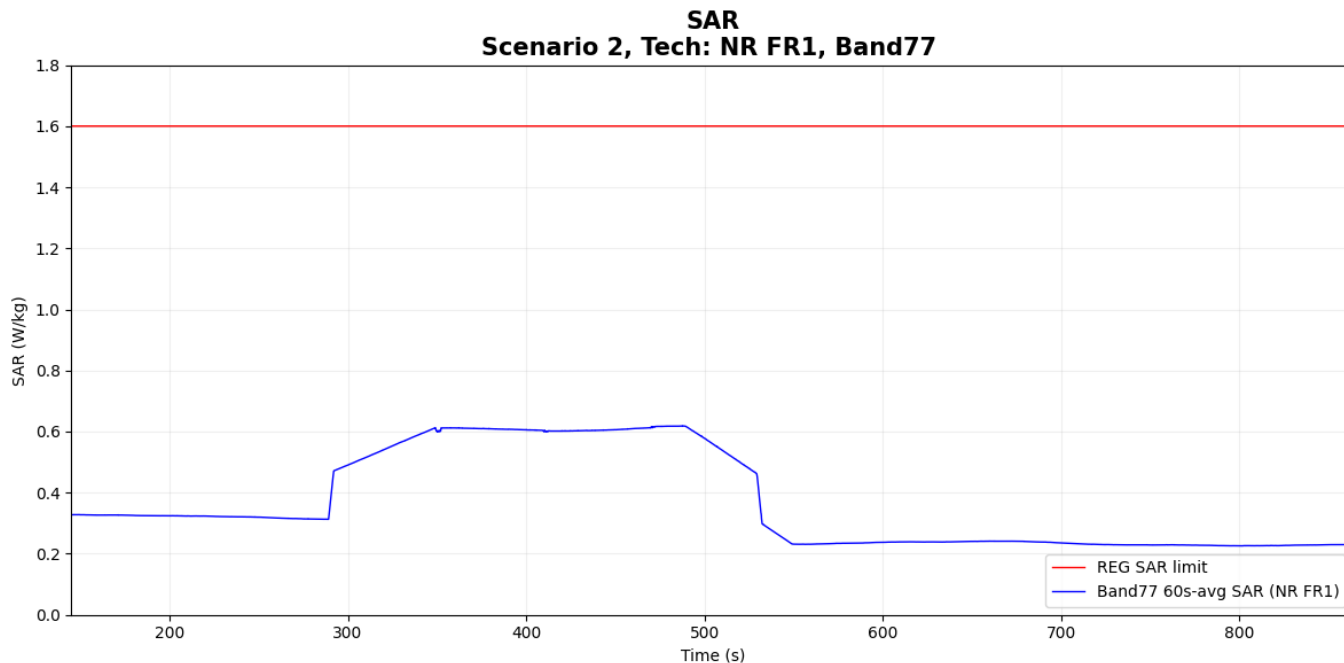


Figure 6-3 Time-averaged SAR for case 9 in table 6-1 (sub6 NR n77)

FCC 1gSAR limit	1.6 W/kg
Max 60s-time averaged 1gSAR	0.619 W/kg
Validation result:	pass

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■ Case 16 in table 6-1: NR n25 result for test sequence 2

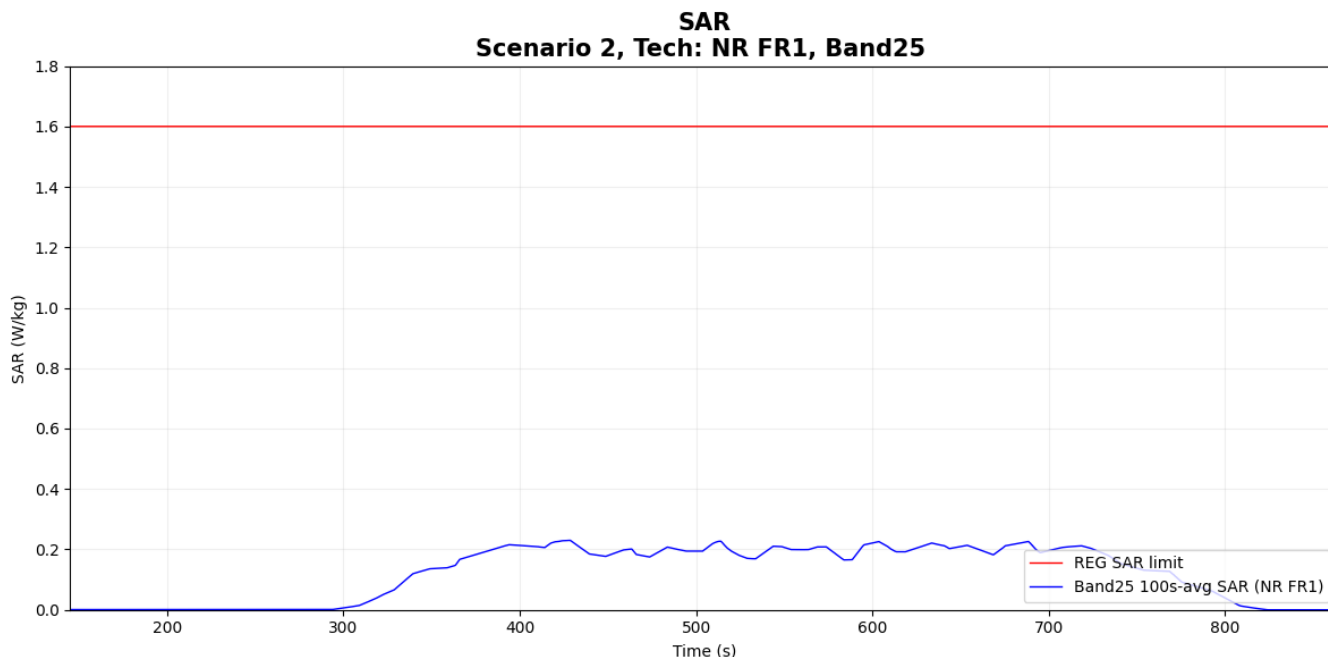


Figure 6-4 Time-averaged SAR for case 16 in table 6-1 (sub6 NR n25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.230 W/kg
Validation result: pass	

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■ Case 17 in table 6-1: NR n77 result for test sequence 2

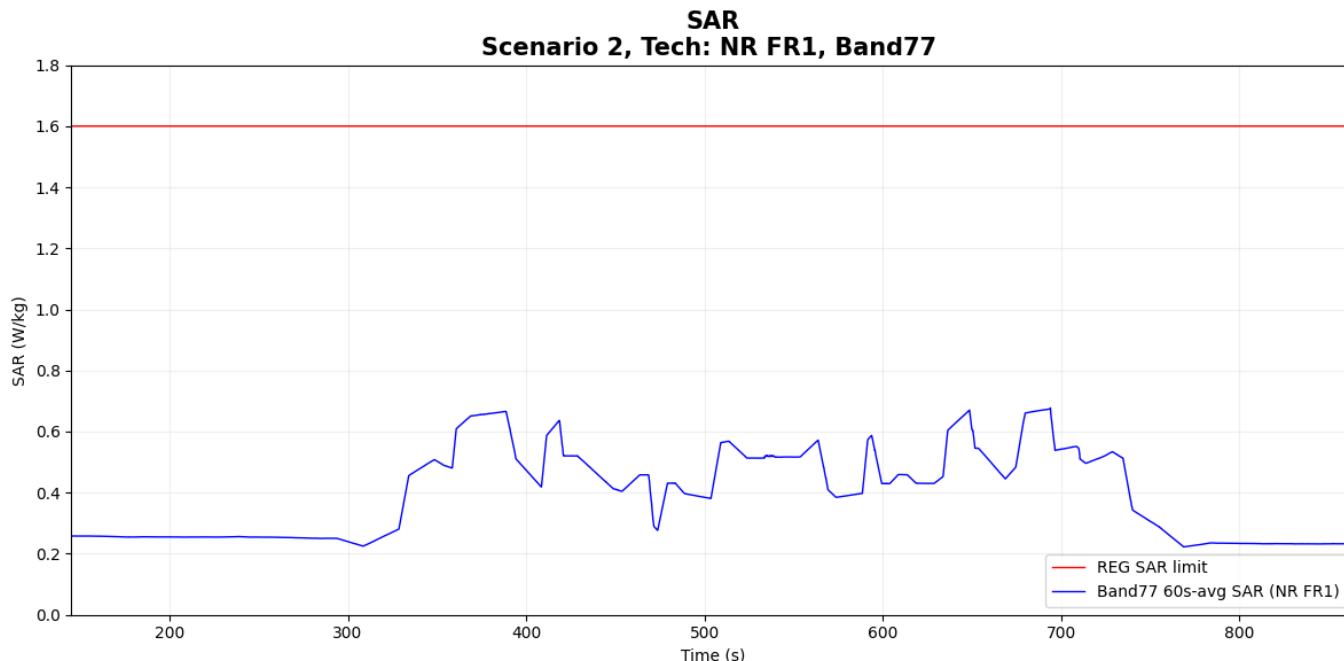


Figure 6-5 Time-averaged SAR for case 17 in table 6-1 (sub6 NR n77)

FCC 1gSAR limit	1.6 W/kg
Max 60s-time averaged 1gSAR	0.677 W/kg
Validation result: pass	

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6.2.2 SAR Measurement results for LTE

- Case 6 in table 6-1: LTE B25 result for test sequence 1

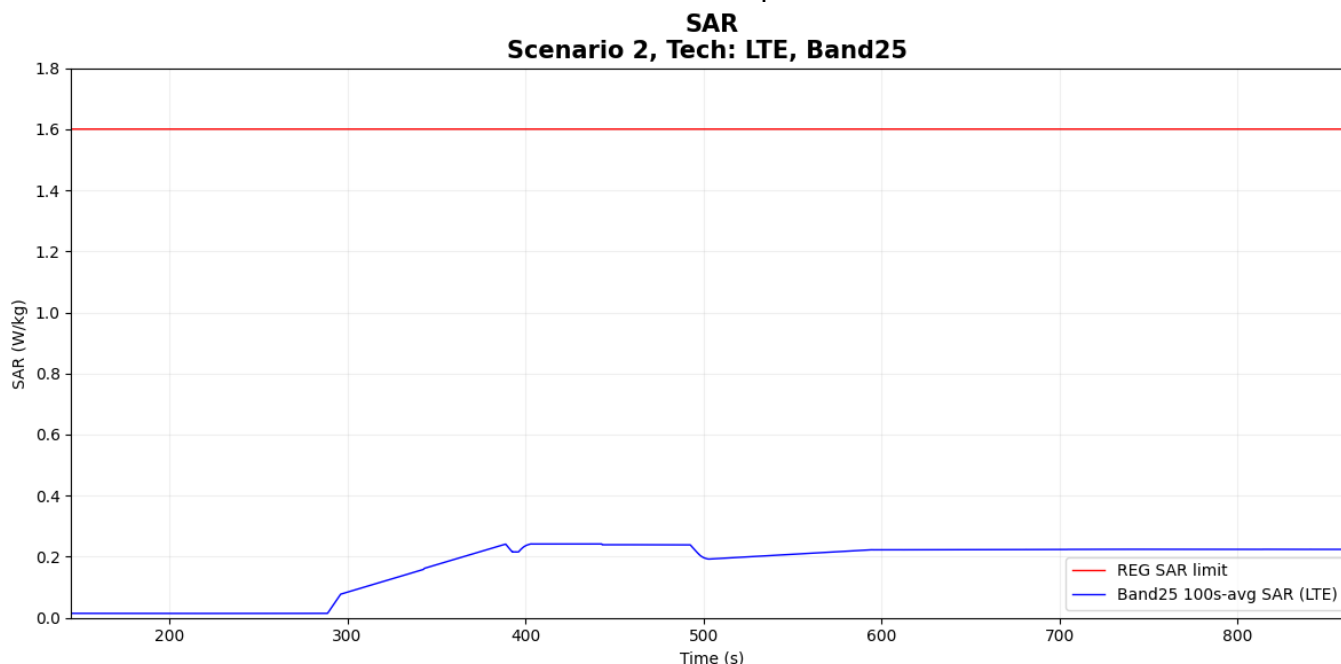


Figure 6-6 Time-averaged SAR for case 6 in table 6-1 (LTE B25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.242 W/kg
Validation result:	pass

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■ Case 7 in table 6-1: LTE B41 result for test sequence 1

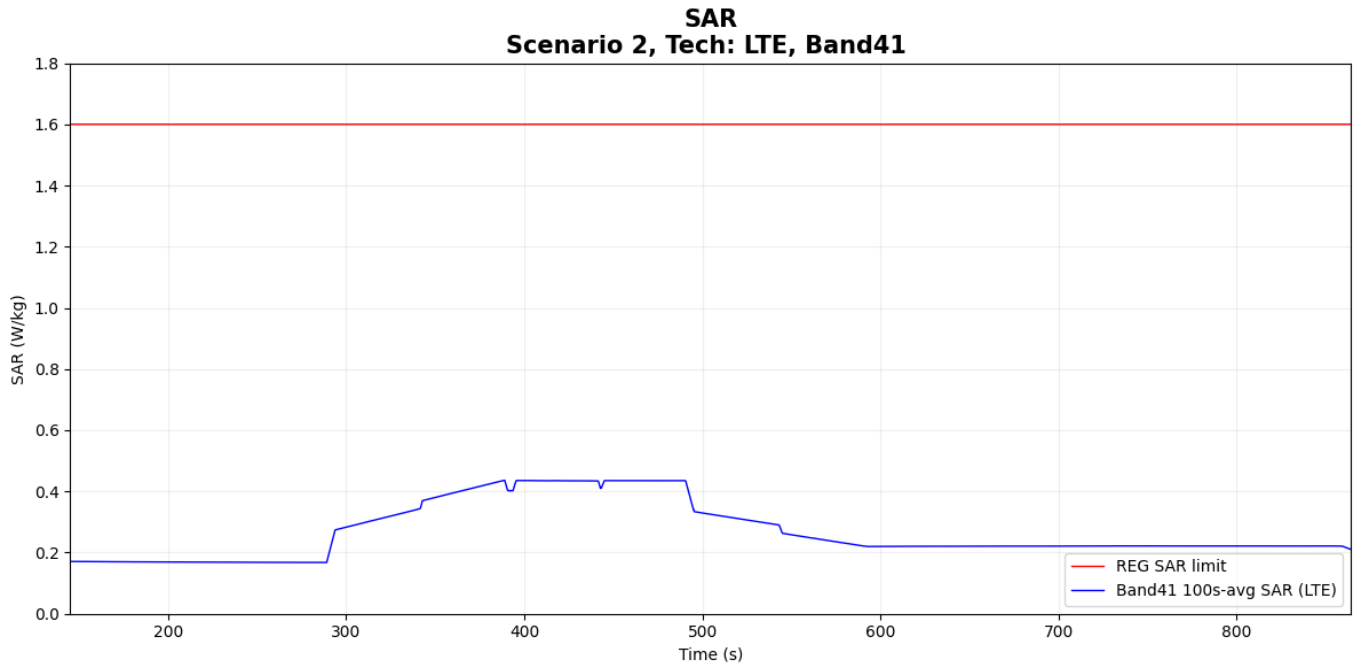


Figure 6-7 Time-averaged SAR for case 7 in table 6-1 (LTE B41)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.437 W/kg
Validation result:	pass

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■ Case 14 in table 6-1: LTE B25 result for test sequence 2

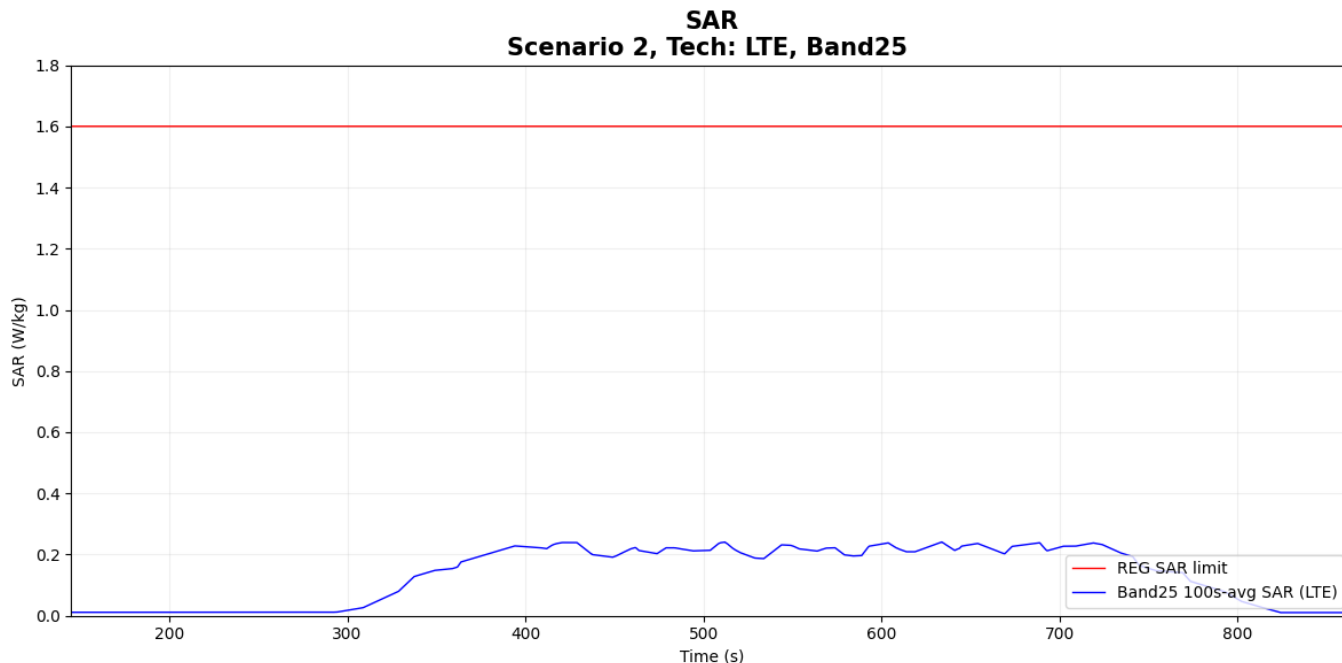


Figure 6-8 Time-averaged SAR for case 14 in table 6-1 (LTE B25)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.241 W/kg
Validation result:	pass

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■ Case 15 in table 6-1: LTE B41 result for test sequence 2

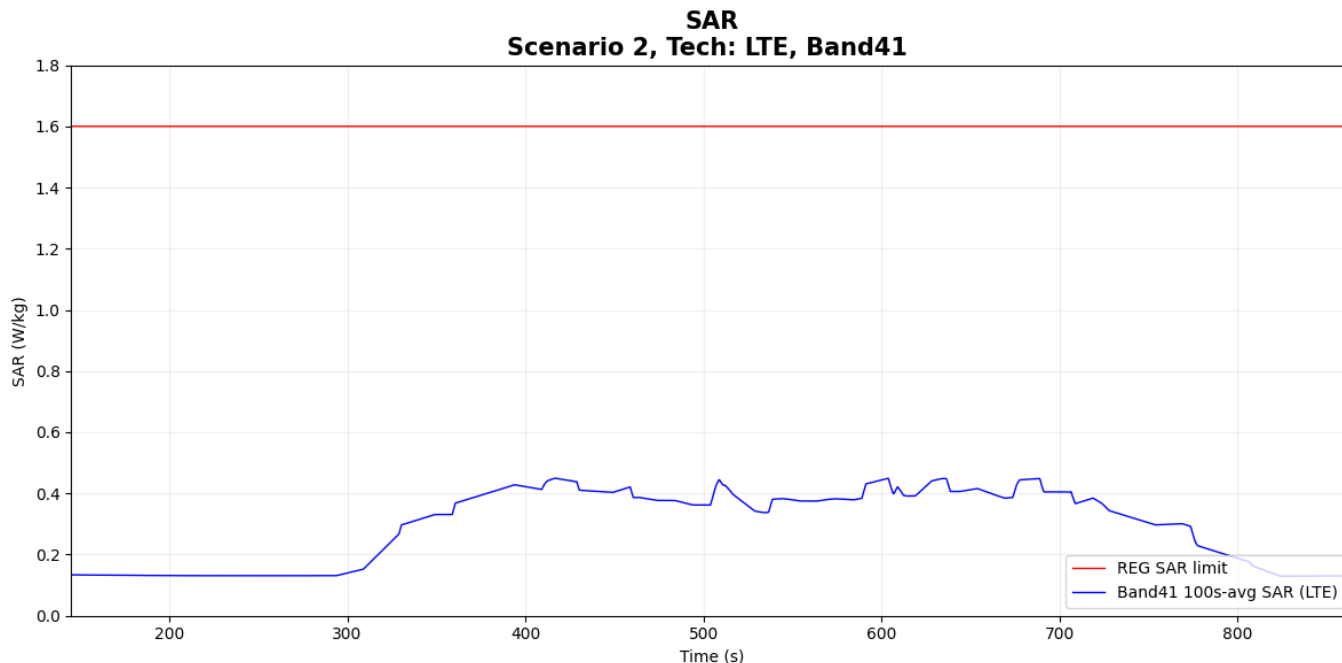


Figure 6-9 Time-averaged SAR for case 15 in table 6-1 (LTE B41)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.450 W/kg
Validation result:	pass

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6.2.3 SAR Measurement results for 3G WCDMA

- Case 4 in table 6-1: WCDMA B4 result for test sequence 1

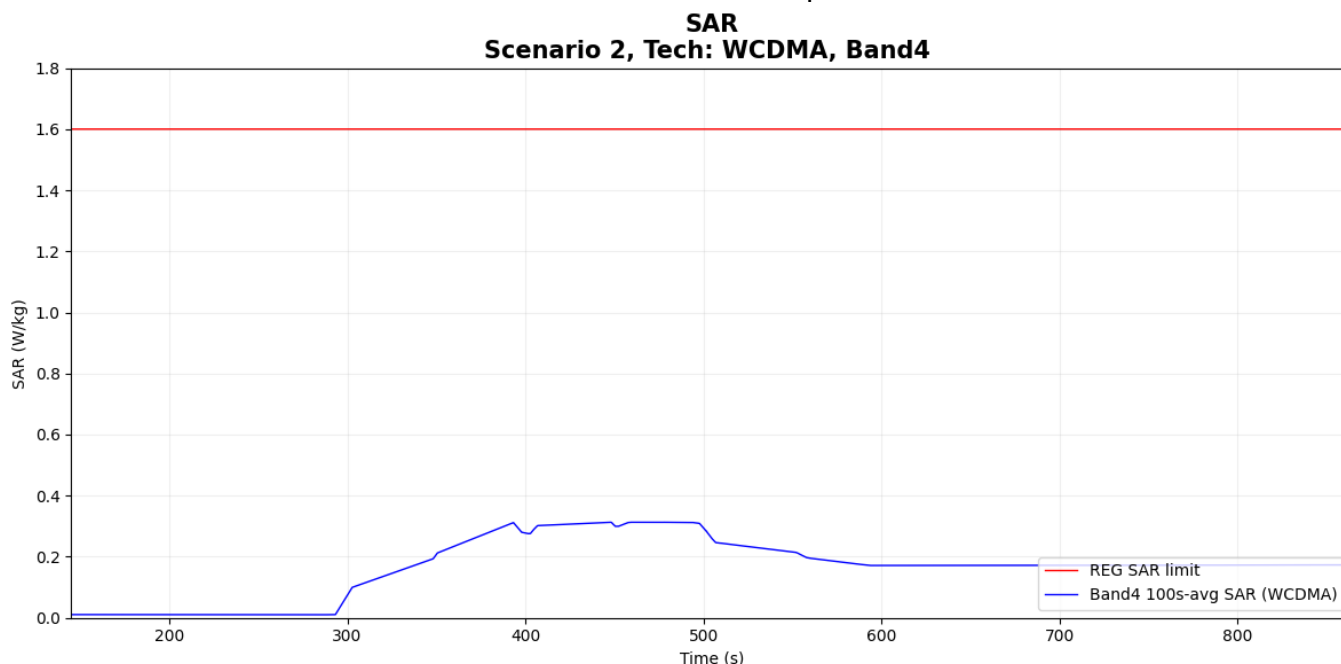


Figure 6-10 Time-averaged SAR for case 4 in table 6-1 (WCDMA B4)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.313 W/kg
Validation result: pass	

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■ Case 5 in table 6-1: WCDMA B2 result for test sequence 1

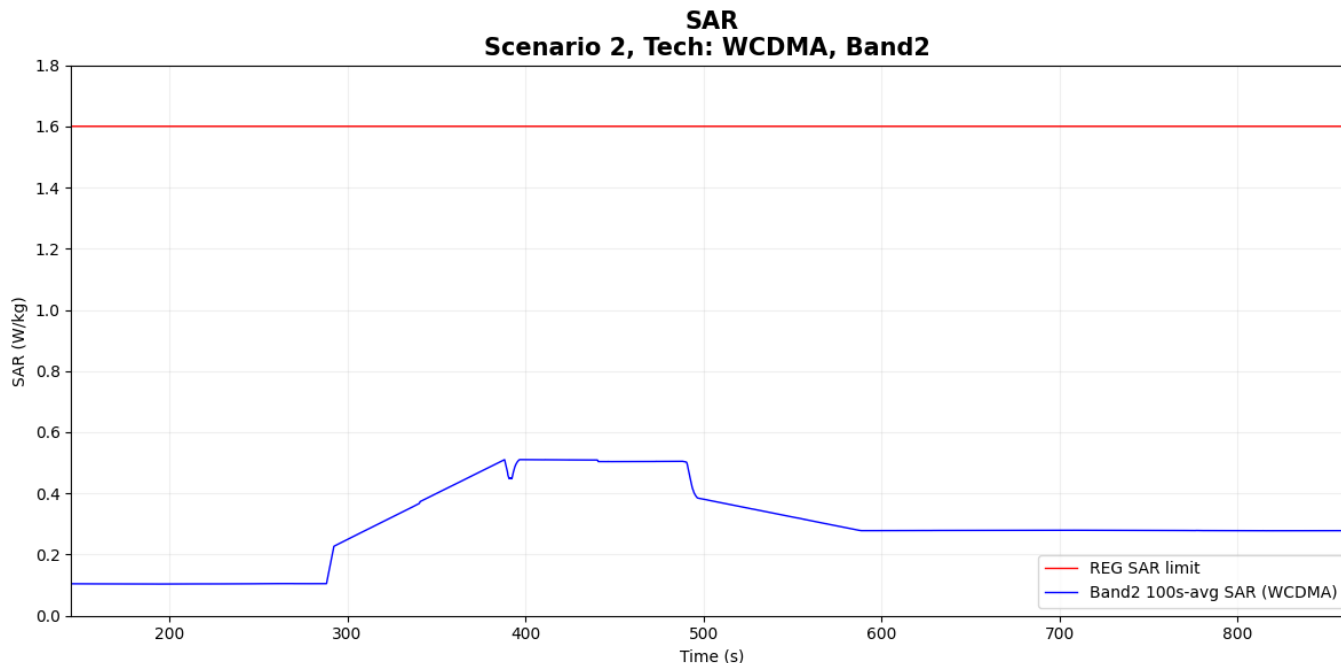


Figure 6-11 Time-averaged SAR for case 5 in table 6-1 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.511 W/kg
Validation result:	pass

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■ Case 12 in table 6-1: WCDMA B4 result for test sequence 2

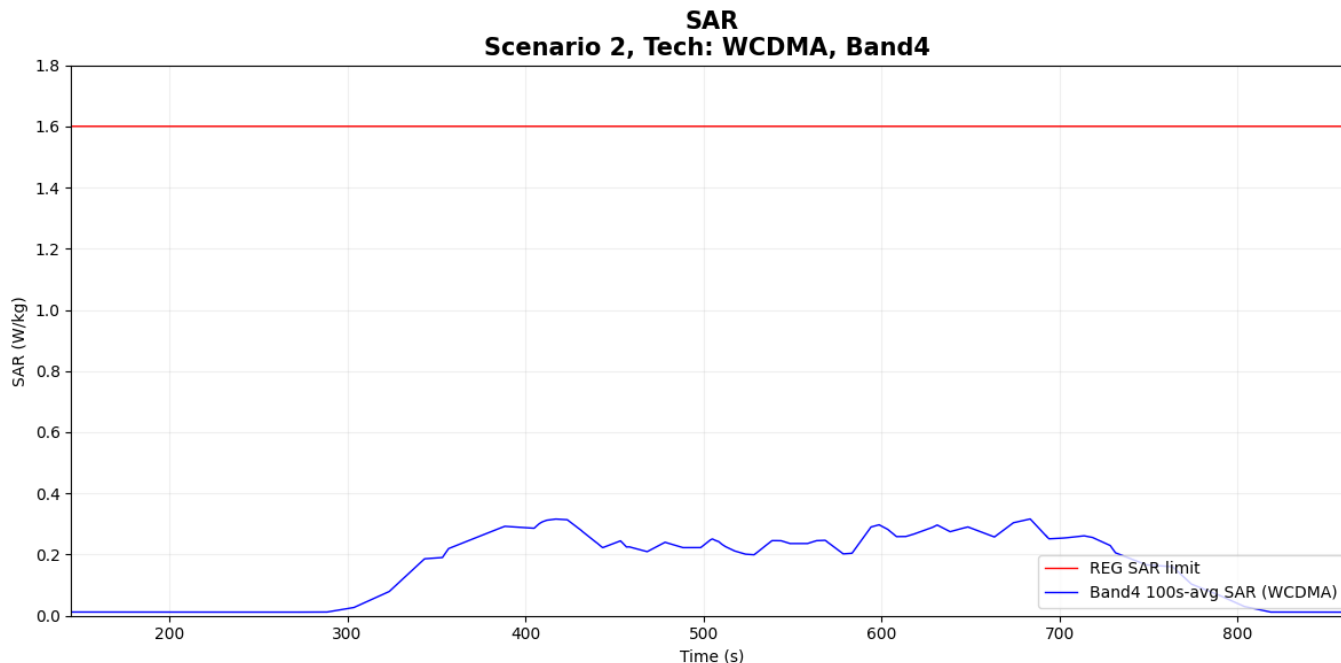


Figure 6-12 Time-averaged SAR for case 12 in table 6-1 (WCDMA B4)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.317 W/kg
Validation result:	pass

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■ Case 13 in table 6-1: WCDMA B2 result for test sequence 2

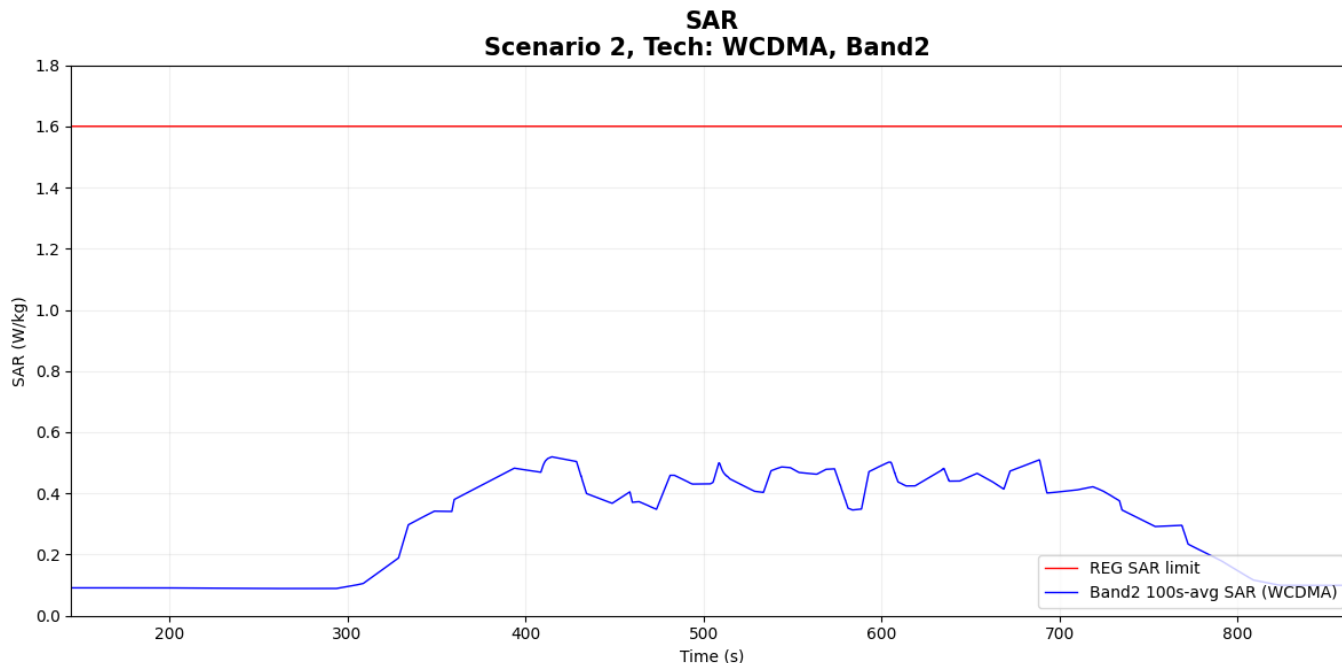


Figure 6-13 Time-averaged SAR for case 13 in table 6-1 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.520 W/kg
Validation result:	pass

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6.2.4 SAR Measurement results for 2G

- Case 2 in table 6-1: 2G GPRS 850 result for test sequence 1

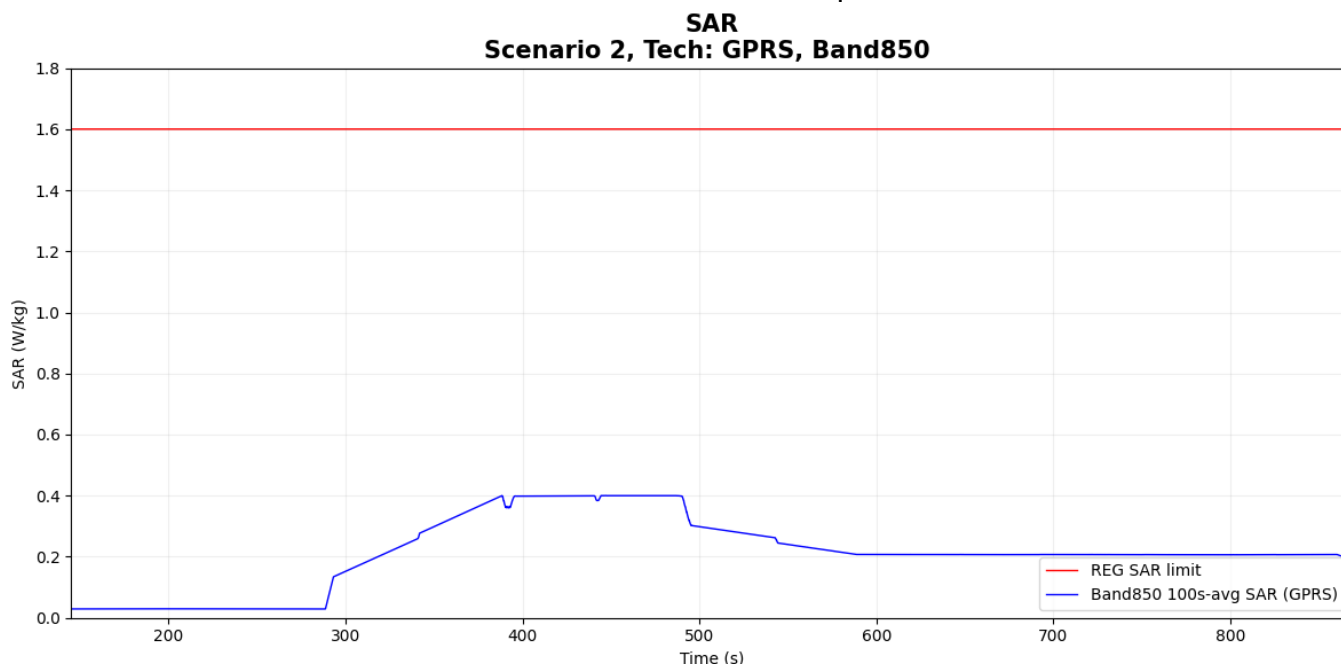


Figure 6-14 Time-averaged SAR for case 2 in table 6-1 (2G GPRS 850)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.400 W/kg
Validation result:	pass

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■ Case 3 in table 6-1: 2G GPRS 1900 result for test sequence 1

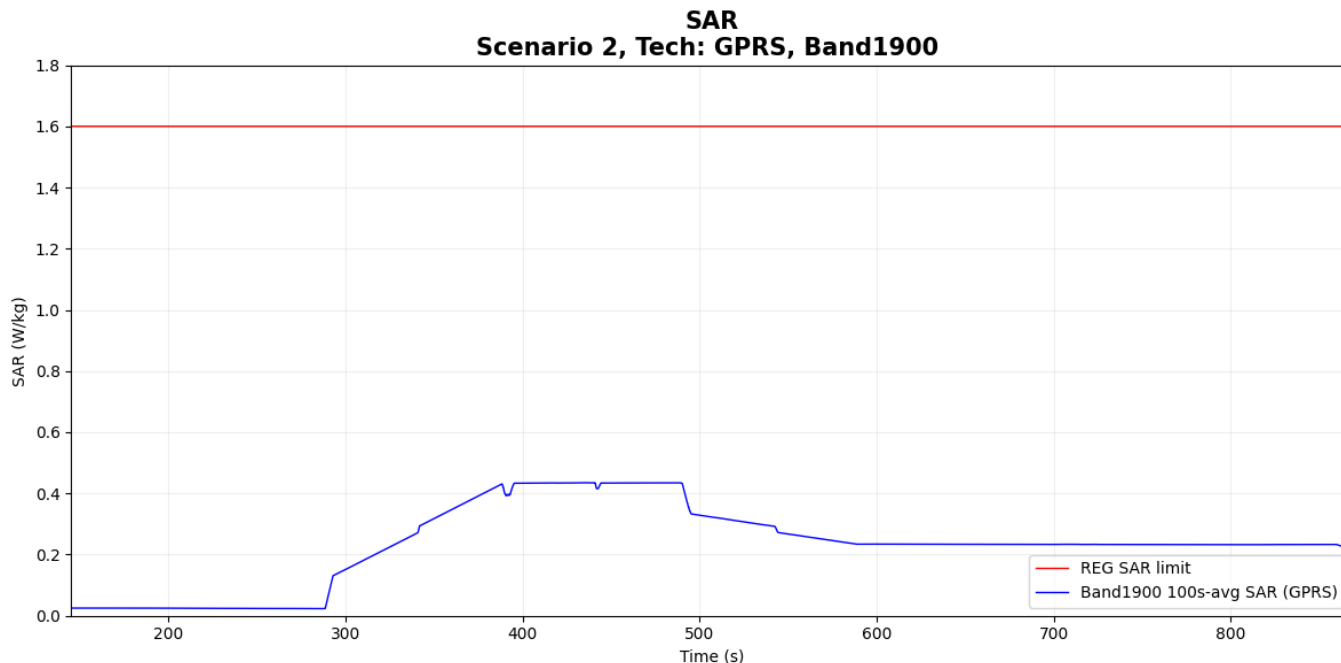


Figure 6-15 Time-averaged SAR for case 3 in table 6-1 (2G GPRS 1900)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.435 W/kg
Validation result:	pass

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■ Case 10 in table 6-1: 2G GPRS 850 result for test sequence 2

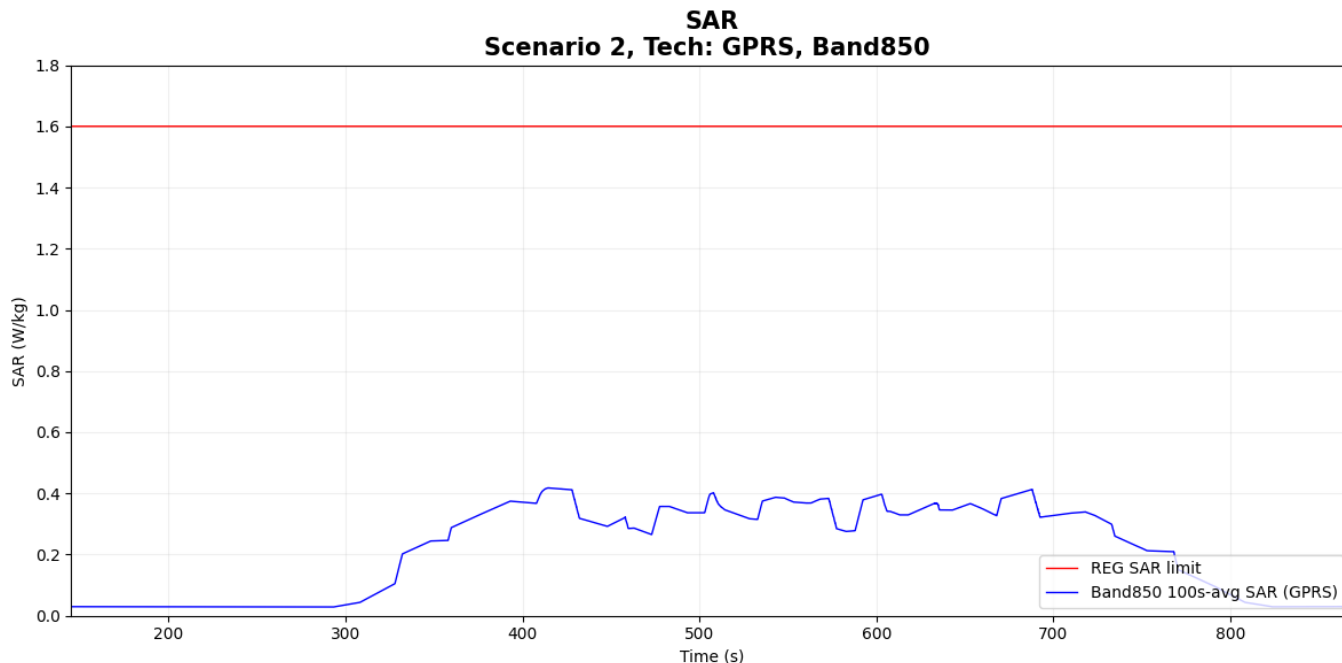


Figure 6-16 Time-averaged SAR for case 10 in table 6-1 (2G GPRS 850)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.418 W/kg
Validation result:	pass

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■ Case 11 in table 6-1: 2G GPRS 1900 result for test sequence 2

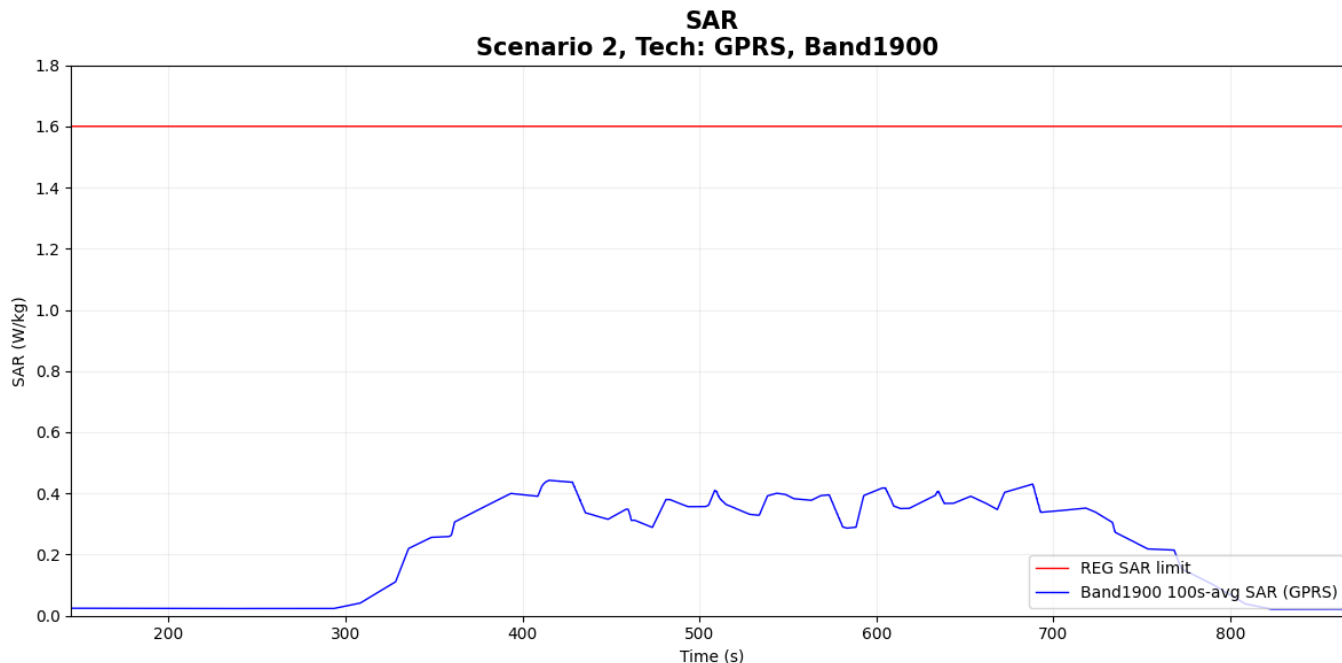


Figure 6-17 Time-averaged SAR for case 11 in table 6-1 (2G GPRS 1900)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.443 W/kg
Validation result:	pass

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7 CONCLUSIONS

This document proposes TA-SAR Gen2 test scenarios and procedures, and further proves Mediatek's TA-SAR Gen2 algorithms can meet the FCC SAR regulations with the proposed test scenarios and procedures. As shown in Chapters 6, Mediatek's TA-SAR Gen2 algorithms are able to maintain SAR over time below the FCC regulatory limits (based on the agreed TX-power-to-SAR translation). Furthermore, the near-field measurements are also done in an FCC certified lab to further validate the proposed test methodologies, and the results shown demonstrate that Mediatek's TA-SAR Gen2 algorithms really can maintain SAR over time below the FCC regulatory limits under the proposed test procedures. Based on the provided measurement evidences, it is concluded that Mediatek's TA-SAR Gen2 algorithms can be tested by using the proposed test methodology for FCC compliance.

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APPENDIX A. CDASY6 SYSTEM VERIFICATION

EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)		
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 835/1750/1900/2600/3900 MHz Additional CF for other liquids and frequencies upon request		
Frequency	10 MHz to > 6 GHz		
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)		
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)		
Dimensions	Tip diameter: 2.5 mm		
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.		

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Phantom

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.	
Shell Thickness	2 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Height: 850 mm; Length: 1000 mm; Width: 500 mm	

DEVICE HOLDER

Construction	In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).	 Device Holder
--------------	--	--

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APPENDIX B. INSTRUMENTS LIST

Equipment List					
Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
SPEAG	Data acquisition Electronics	DAE4	1336	Aug/15/2024	Aug/14/2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7466	Jan/28/2025	Jan/27/2026
SPEAG	System Validation Dipole	D835V2	4d063	Sep/16/2024	Sep/15/2025
SPEAG	System Validation Dipole	D1750V2	1008	Sep/27/2024	Sep/26/2025
SPEAG	System Validation Dipole	D1900V2	5d173	Apr/16/2025	Apr/15/2026
SPEAG	System Validation Dipole	D2600V2	1005	Jan/14/2025	Jan/13/2026
SPEAG	System Validation Dipole	D3900V2	1032	Nov/22/2024	Nov/21/2025
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb/17/2025	Feb/16/2026
R&S	MXG Analog Signal Generator	SMB100A03	182996	Apr/19/2025	Apr/18/2026
Agilent	Dual-directional coupler	772D	MY52180142	Oct/30/2024	Oct/29/2025
Agilent	Dual-directional coupler	778D	MY52180302	Nov/06/2024	Nov/05/2025
Narda	High Power Directional Coupler	4216-10	2672	Nov/15/2024	Nov/14/2025
Narda	High Power Directional Coupler	4216-10	2673	Oct/30/2024	Oct/29/2025
EMCI	Amplifier	EMC 074225P	980155	Calibration not required	Calibration not required
EMCI	Amplifier	EMC 2830P	980156	Calibration not required	Calibration not required
Keysight	Power meter	E4417A	MY51410006	Apr/21/2025	Apr/20/2026
R&S	Power Sensor	NRP18S	101973	Feb/21/2025	Feb/20/2026
R&S	Power Sensor	NRP18S	109065	Aug/28/2024	Aug/27/2025
SPEAG	Software	DASY 6 V16.0.2.136	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
R&S	Radio Communication Test	CMW 500	125470	May/15/2025	May/14/2026
Keysight	UXM 5G Wireless Test Platform	E7515B	MY60101215	Apr/16/2025	Apr/15/2026
TECEP	Digital thermometer	HTC-1	EC23010603	Oct/14/2024	Oct/13/2025

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APPENDIX C. SAR SYSTEM VERIFICATION

Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with homogeneous tissue simulating liquid. For head SAR testing, the liquid height from the ear rint (ERP) of the phantom to the liquid top surface is larger than 15cm. For body SAR testing, the liquid height from reference point to the center of the flat phantom to the liquid top surface is larger than 15cm.

Tissue Simulant Liquid measurement

The dielectric properties for this Head-simulant fluid were measured by using the SPEAG Dielectric Assessment Kit (DAK-3.5)

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within $\pm 5\%$ of the target values.

Measurement results of Tissue Simulant Liquid

Measured Frequency (MHz)	Target Dielectric Constant, ϵ_r	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ_r	Measured Conductivity, σ (S/m)	% dev ϵ_r	% dev σ	Limit	Measurement Date
835	41.500	0.900	42.865	0.931	3.29%	3.44%	$\pm 5\%$	Jul. 17, 2025
848.8	41.500	0.915	42.814	0.944	3.17%	3.19%	$\pm 5\%$	Jul. 17, 2025
1745	40.079	1.369	40.370	1.366	0.73%	-0.19%	$\pm 5\%$	Jul. 17, 2025
1750	40.071	1.371	40.365	1.372	0.73%	0.04%	$\pm 5\%$	Jul. 17, 2025
1752.6	40.068	1.373	40.359	1.375	0.73%	0.15%	$\pm 5\%$	Jul. 17, 2025
1850.2	40.000	1.400	40.818	1.403	2.04%	0.21%	$\pm 5\%$	Jul. 17, 2025
1860	40.000	1.400	40.805	1.428	2.01%	2.00%	$\pm 5\%$	Jul. 17, 2025
1900	40.000	1.400	40.771	1.438	1.93%	2.71%	$\pm 5\%$	Jul. 17, 2025
1860	40.000	1.400	40.785	1.421	1.96%	1.50%	$\pm 5\%$	Jul. 21, 2025
1900	40.000	1.400	40.768	1.439	1.92%	2.79%	$\pm 5\%$	Jul. 21, 2025
1907.6	40.000	1.400	40.759	1.441	1.90%	2.93%	$\pm 5\%$	Jul. 17, 2025
2506	39.125	1.860	38.935	1.884	-0.49%	1.30%	$\pm 5\%$	Jul. 18, 2025
2600	39.000	1.960	38.801	1.983	-0.51%	1.17%	$\pm 5\%$	Jul. 18, 2025
3900	37.500	3.326	37.862	3.261	0.97%	-1.95%	$\pm 5\%$	Jul. 21, 2025
3930	37.470	3.357	37.831	3.292	0.96%	-1.94%	$\pm 5\%$	Jul. 21, 2025

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The composition of the tissue simulating liquid:

Simulating Liquids for 600 MHz -10 GHz, Manufactured by SPEAG:

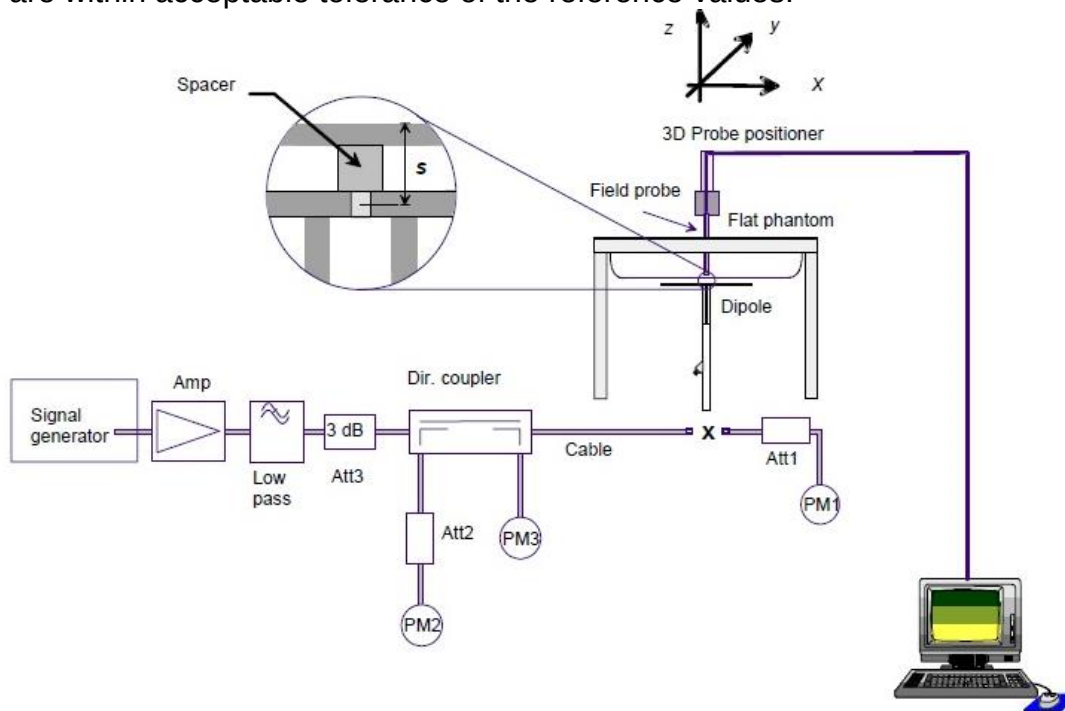
Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

System check

The microwave circuit arrangement for system check is sketched in below. The daily system accuracy verification occurs within the flat section of the SAM phantom and ELI phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values.

The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed with SAR values normalized to 1W forward power delivered to the dipole.

During the tests, the liquid depth from the center of the flat phantom to the liquid top surface was 15 cm above in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



The block diagram of system check

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System check results

Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=250mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D835V2	4d063	835	9.4	2.41	9.64	2.55	± 10%	Jul.17,2025
D1750V2	1008	1750	36.3	9.21	36.84	1.49	± 10%	Jul.17,2025
D1900V2	5d173	1900	39.8	9.62	38.48	-3.32	± 10%	Jul.17,2025
D1900V2	5d173	1900	39.8	9.57	38.28	-3.82	± 10%	Jul.21,2025
D2600V2	1005	2600	55.3	13.1	52.4	-5.24	± 10%	Jul.18,2025
Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=100mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D3900V2	1032	3900	66.9	6.52	65.2	-2.54	± 10%	Jul.21,2025

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APPENDIX D. UNCERTAINTY BUDGET

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	$\sqrt{3}$	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	$\sqrt{3}$	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	$\sqrt{3}$	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	$\sqrt{3}$	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	$\sqrt{3}$	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	$\sqrt{3}$	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	$\sqrt{3}$	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	$\sqrt{3}$	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	$\sqrt{3}$	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	$\sqrt{3}$	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	$\sqrt{3}$	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	$\sqrt{3}$	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	$\sqrt{3}$	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	3.29%	N	1	1	0.64	0.43	2.11%	1.41%	M
Liquid Conductivity (mea.)	3.44%	N	1	1	0.6	0.49	2.06%	1.69%	M
Combined standard uncertainty		RSS					11.79%	11.62%	
Expant uncertainty (95% confidence interval), K=2							23.58%	23.24%	

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8 SAR SYSTEM CHECK RESULTS

Report No. : TESA2507000530EN

Measurement Report

Dipole_D835-SN:4d063

Ambient temperature: 22.4°C; Liquid temperature: 21.9°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat,HSL	FRONT, 15.00	9.84	0.931	42.865

Hardware Setup

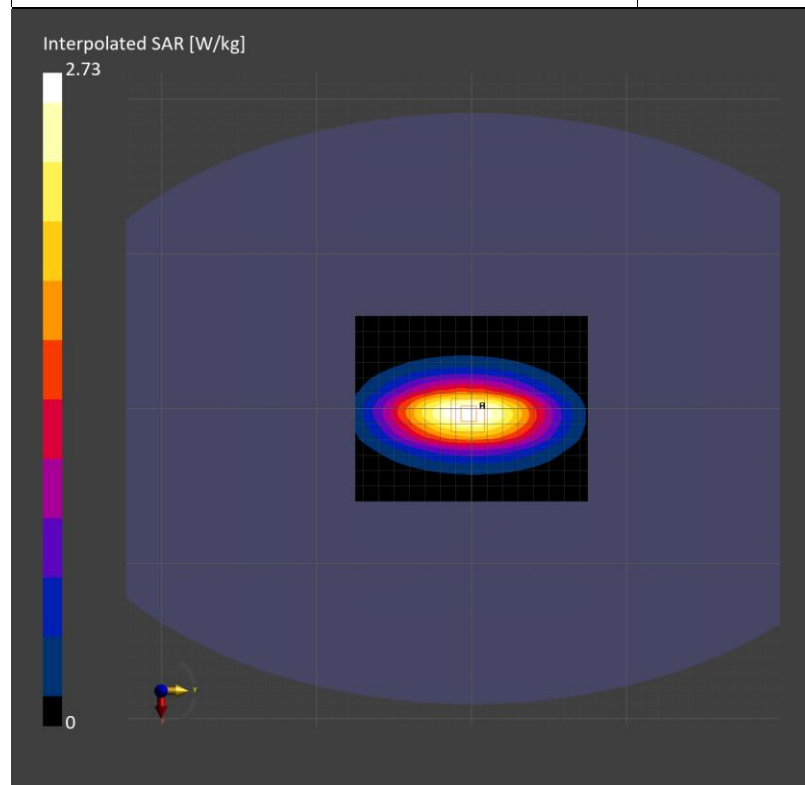
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7466, 2025-01-28	DAE4 Sn1336, 2024-08-15

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	105.0 x 150.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2025-07-17	2025-07-17
psSAR1g [W/kg]	2.33	2.41
psSAR8g [W/kg]	1.62	1.71
psSAR10g [W/kg]	1.52	1.59
Power Drift [dB]	-0.01	-0.09
M2/M1 [%]		68.2
Dist 3dB Peak [mm]		16.3



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Report No. :TESA2507000530EN

Measurement Report

Dipole_D1750-SN:1008

Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat,HSL	FRONT, 10.00	8.36	1.372	40.365

Hardware Setup

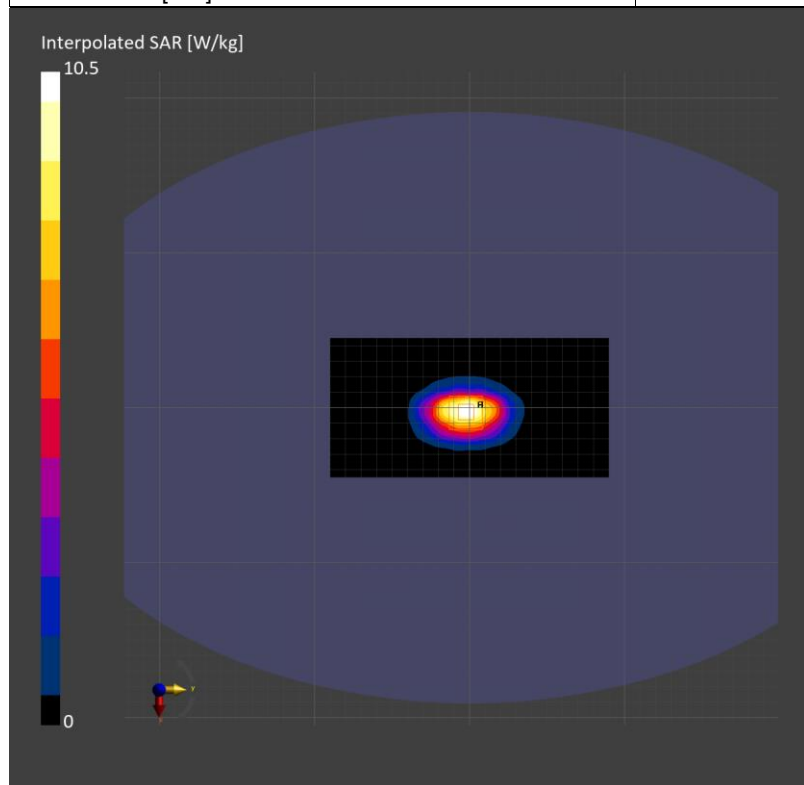
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7466, 2025-01-28	DAE4 Sn1336, 2024-08-15

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 165.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2025-07-17	2025-07-17
psSAR1g [W/kg]	8.61	9.21
psSAR8g [W/kg]	5.12	5.36
psSAR10g [W/kg]	4.67	5.02
Power Drift [dB]	0.10	0.08
M2/M1 [%]		59.1
Dist 3dB Peak [mm]		10.2



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Report No. :TESA2507000530EN

Measurement Report

Dipole_D1900-SN:5d173

Ambient temperature: 22.2°C; Liquid temperature: 21.6°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat,HSL	FRONT, 10.00	8.09	1.438	40.771

Hardware Setup

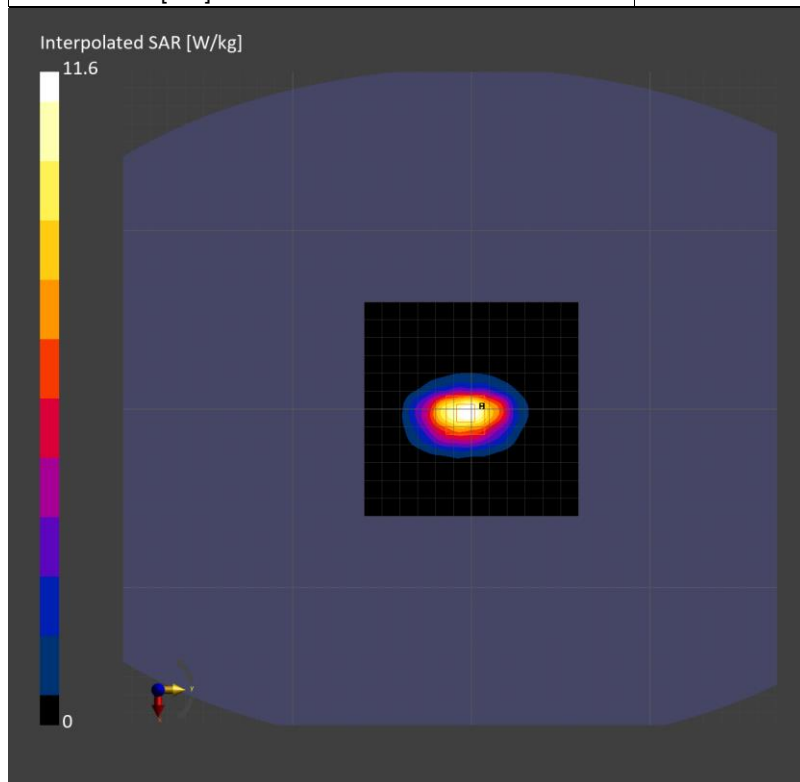
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7466, 2025-01-28	DAE4 Sn1336, 2024-08-15

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	105.0 x 105.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2025-07-17	2025-07-17
psSAR1g [W/kg]	8.84	9.62
psSAR8g [W/kg]	5.12	5.63
psSAR10g [W/kg]	4.88	5.16
Power Drift [dB]	-0.01	-0.07
M2/M1 [%]		58.3
Dist 3dB Peak [mm]		10.2



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Report No. :TESA2507000530EN

Measurement Report

Dipole_D1900-SN:5d173

Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat,HSL	FRONT, 10.00	8.09	1.439	40.768

Hardware Setup

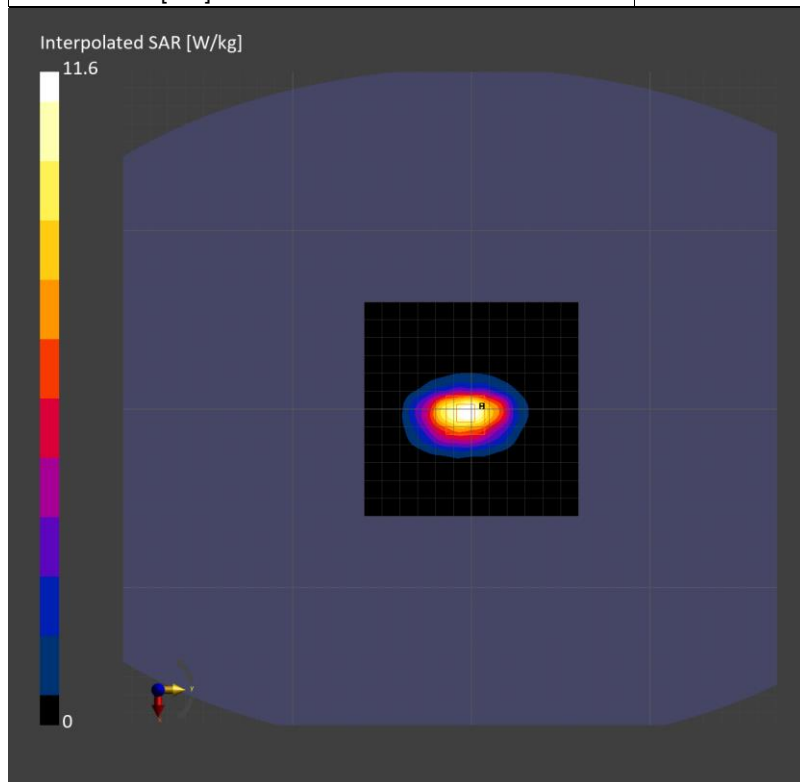
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7466, 2025-01-28	DAE4 Sn1336, 2024-08-15

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	105.0 x 105.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2025-07-21	2025-07-21
psSAR1g [W/kg]	8.82	9.57
psSAR8g [W/kg]	5.31	5.68
psSAR10g [W/kg]	4.92	5.23
Power Drift [dB]	-0.02	-0.06
M2/M1 [%]		58.8
Dist 3dB Peak [mm]		10.4



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Report No. :TESA2507000530EN

Measurement Report

Dipole_D2600-SN:1005

Ambient temperature: 21.9°C; Liquid temperature: 21.4°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat,HSL	FRONT, 10.00	7.22	1.983	38.801

Hardware Setup

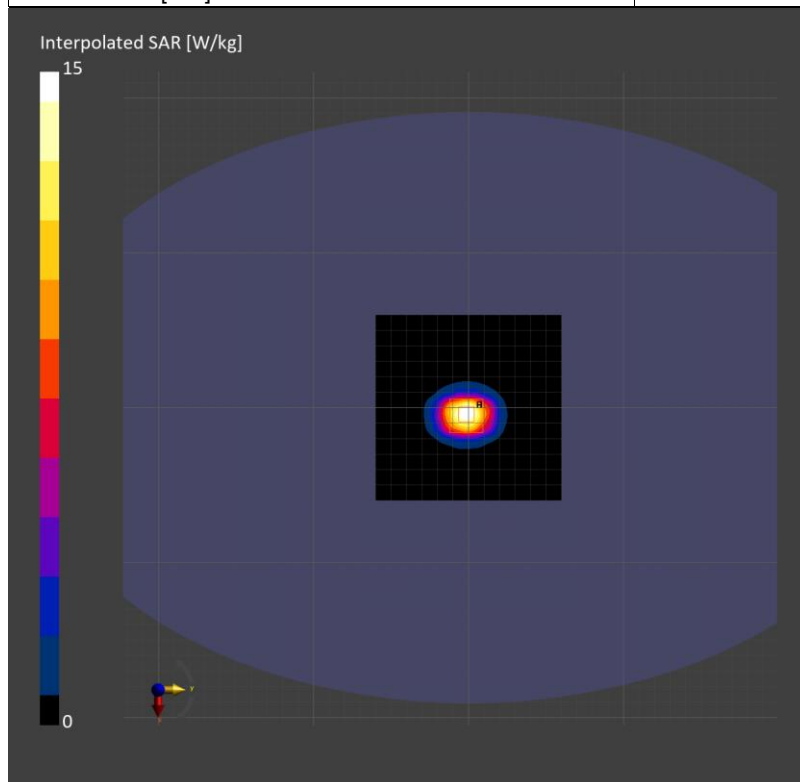
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7466, 2025-01-28	DAE4 Sn1336, 2024-08-15

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2025-07-18	2025-07-18
psSAR1g [W/kg]	11.8	13.1
psSAR8g [W/kg]	6.28	6.50
psSAR10g [W/kg]	5.64	5.92
Power Drift [dB]	-0.01	-0.03
M2/M1 [%]		50.1
Dist 3dB Peak [mm]		9.3



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Report No. :TESA2507000530EN

Measurement Report

Dipole_D3900-SN:1032

Ambient temperature: 21.8°C; Liquid temperature: 21.4°C

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat,HSL	FRONT, 10.00	6.68	3.261	37.862

Hardware Setup

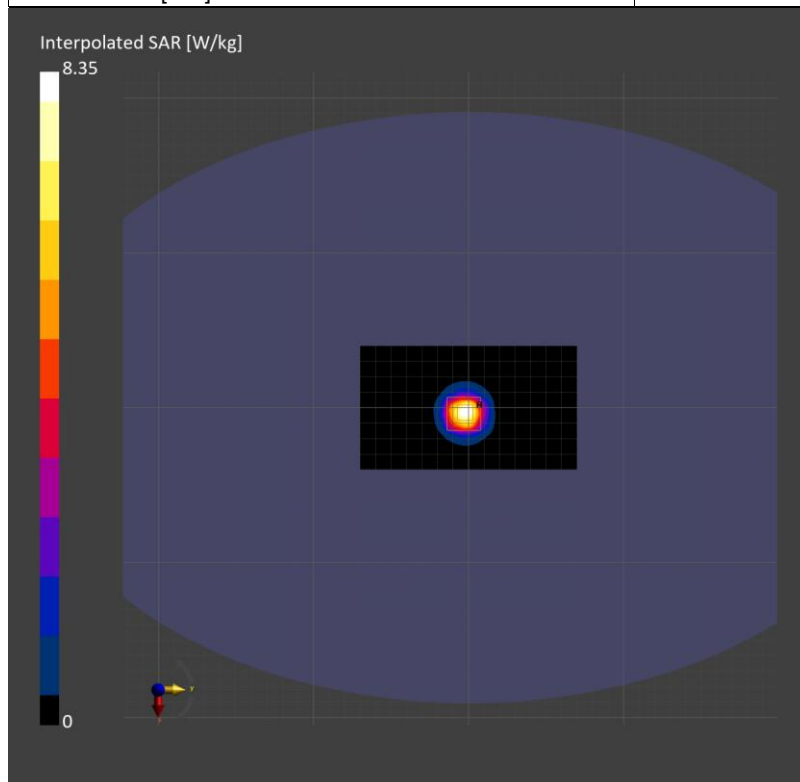
Phantom	Probe, Calibration Date	DAE, Calibration Date
ELI	EX3DV4 - SN7466, 2025-01-28	DAE4 Sn1336, 2024-08-15

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 140.0	24.0 x 24.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2025-07-21	2025-07-21
psSAR1g [W/kg]	6.09	6.52
psSAR8g [W/kg]	2.57	2.67
psSAR10g [W/kg]	2.24	2.34
Power Drift [dB]	0.06	-0.03
M2/M1 [%]		74.2
Dist 3dB Peak [mm]		8.4



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9 APPENDIXES

Refer to separated files for the following appendixes.

9.1 SAR_Appendix E Photographs

9.2 SAR_Appendix F DAE & Probe Cal. Certificate

9.3 SAR_Appendix G Phantom Description & Dipole Cal. Certificate

- End of report -

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