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	Mobile Phone
Brand Name	OPPO
Model No.	CPH2783
Family Model No.	CPH2831
Model Difference	Refer to Section 1.2
Applicant	Guangdong OPPO Mobile Telecommunications Corp.,Ltd. NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City, Guangdong Province, P.R. China
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013
FCC ID	R9C-OP24361
Date of EUT Receipt	Dec. 08, 2025
Date of Test(s)	Dec. 10, 2025 ~ Dec. 21, 2025
Date of Issue	Jan. 08, 2026

Approved By / John Yeh

John Yeh

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

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2510000802EN	00	Initial creation of document	Jan. 08, 2026	Cindy Chou	

Note:

1. The mark " * " is the revised version of the report due to comments submitted by the certification.
2. Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received.
   And are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

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1 GENERAL INFORMATION

1.1 Test Facility

Laboratory	Test Site Address	Test Site Name	Test Engineer	Project Manager	FCC Designation number/ Registration Number	IC CAB identifier/ Company Number
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/ 150169	TW3702/ 23862
		SAR 6	**Chia-Hung Sun**	**Kiki Lin**		
		SAR 8	-	-		
	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan	SAR 1	-	-	TW0028/ 200037	TW3702/ 4620E
		SAR 4	-	-		
	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan	SAR 3	-	-	TW0027/ 891563	TW3702/ 4620A
		SAR 7	-	-		
Note: Test site name is remarked on a bolded mark as an indication where measurements occurred in specific test site and address.						

1.2 Model Difference

Model Name	Asia-Pacific Edition Model: CPH2783	Asia-Pacific Edition Model: CPH2831
Battery	BLPD79	BLPD65
Band	Initial	Same as Asia-Pacific Edition
Operate voltage	Maximum：4.48V Nominal：3.88 Minimum: 3.60V	Maximum ： 4.53V Nominal ： 3.92V Minimum: 3.60V
Adapter	15W,OP53CBEH ， OP53CBUH ， OP53CBYH,OP53CBAH,OP53CBTH	45W,VCB4HAEH,VCB4HAYH,VCB4 HAUH,VCB4HATH,VCB4HAAH,VCB 4JAEH,VCB4JAYH,VCB4JAUH,VCB4 J AAH,VCB4JATH
PCBA	1、45W and PD chips 2、3.5mm headphone components	1、80W and 15W charging 2、Type-C analog headphone switch components
Appearance (Camera Deco)	elliptic	quadrate
FM	Support	Not support

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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. 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. 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.

This document describes the test plan, test procedures, measurement setup, and measurement results for the verification of the proposed TA-SAR Gen2 algorithm being able to make RF exposure meet FCC requirement. The operating parameters for the algorithm validation are described in Chapter 3. The overview of the test proposal is given in Chapter 4. The test procedures for the conducted power measurements and SAR 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, while the near- field SAR measurement setup and the test results are included in Chapter 7. It is concluded in Chapter 8 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

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

Operating parameters	Description
P_{sub6_limit}	● Maximum time-averaged TX power limit (corresponding to *SAR_design_limit*, 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, SAR_design_limit 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 *Psub6_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.
$Level_num_{sub6_pwr}$	The number of backoff levels constraining sub6 instantaneous TX power.
$Algo_avg_window_{sub6}$	The time-averaged window used by TA-SAR Gen2 algorithm. The setting of the value should follow Table 3-3, which was recommended in TCBC workshop of Oct. 2018.
is_fbo_en	● If *is_fbo_en* 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 *is_fbo_en* 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 and FR2

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

Where sub6 device uncertainty =1.5 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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4 OVERVIEW OF TA-SAR 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 algorithmensures 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 5.2~5.9, and the description of the SAR test procedures is included in section 5.10. In each of the test scenarios, the test sequence, described in section 5.1, is applied.

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5 TA-SAR GEN2 TEST SCENARIOS AND TEST PROCEDURES

To demonstrate that the TA-SAR Gen2 algorithm performs as expected under various operating scenarios, Table 5-1 lists the test scenarios and the corresponding test sequences. The test sequences 0, 1, and 2 are defined in section 5.1. The details of each test procedure via conducted power and SAR measurements are described in section 5.2~5.9 and section 5.10, respectively.

Table 5-1 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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5.1 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} – 2.5dB 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 5-1, Figure 5-2, and Figure 5-3, respectively. Furthermore, the three test sequences are respectively tabulated in Table 5-2, Table 5-3, and Table 5-4.

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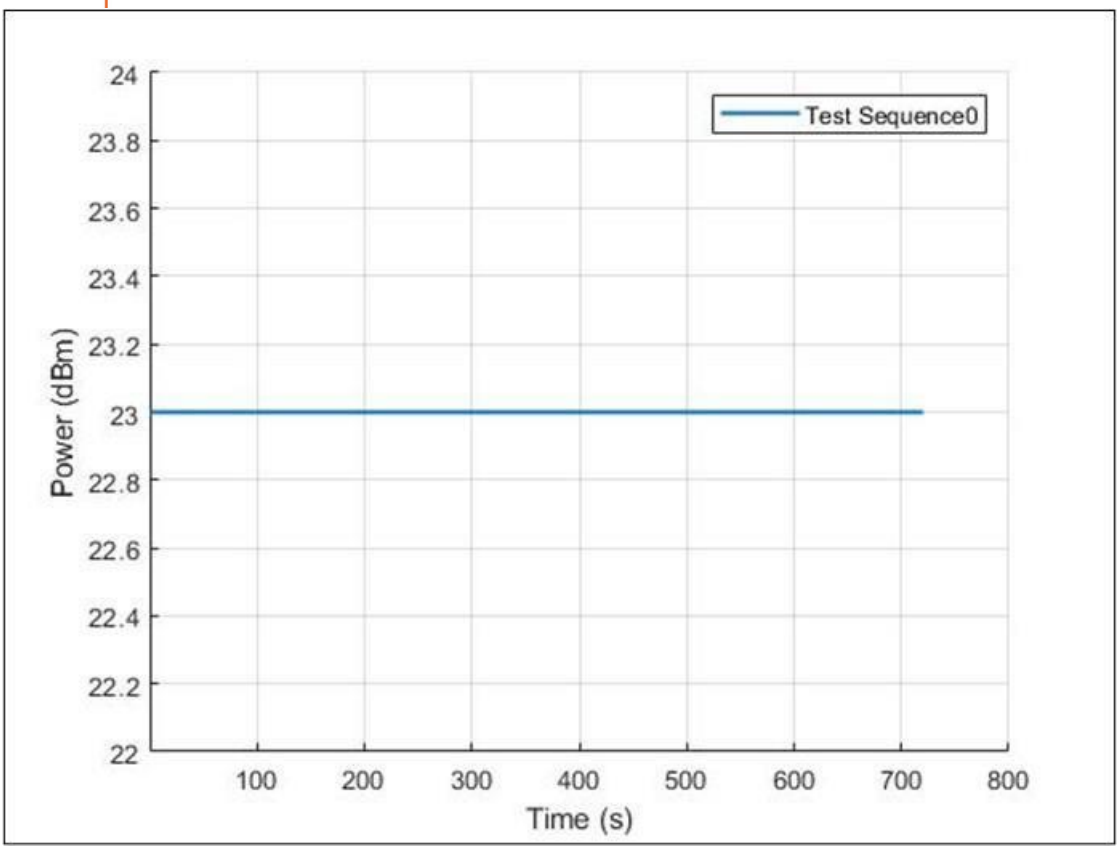

Figure 5-1 Test sequence 0

Table 5-2 Test sequence 0

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

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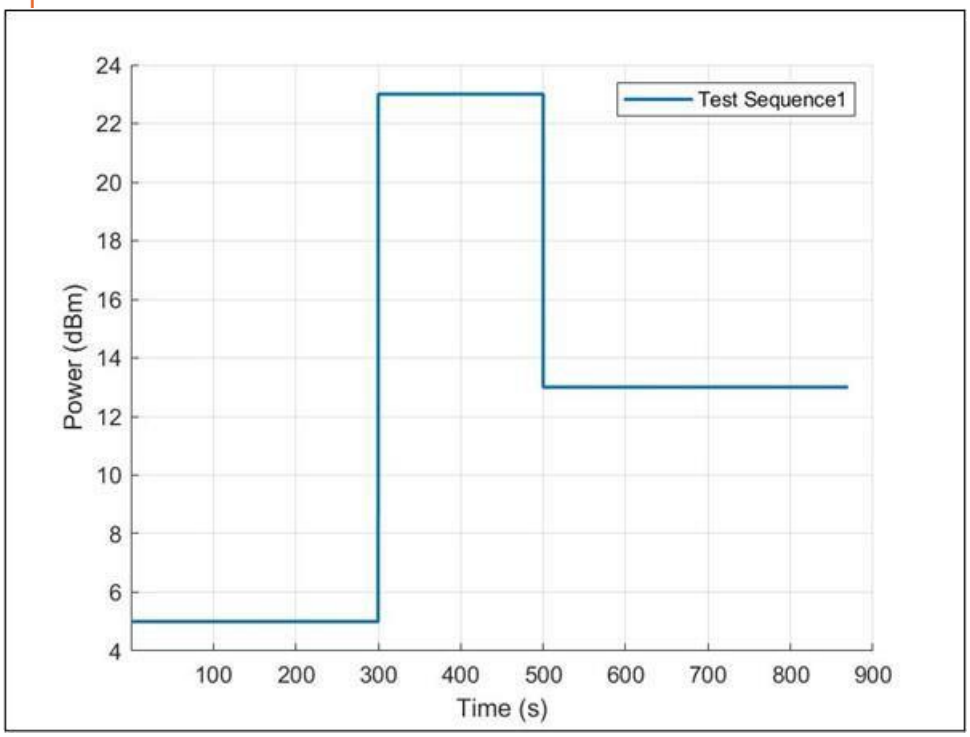

Figure 5-2 Test sequence 1

Table 5-3 Test sequence 1

Time	Duration	Power (dBm)	Note
300	300	5	< P_{subt_limit} – 0.5dB
500	200	23	P_{UE_max}
870	370	13	P_{subt_limit} – 2.5dB

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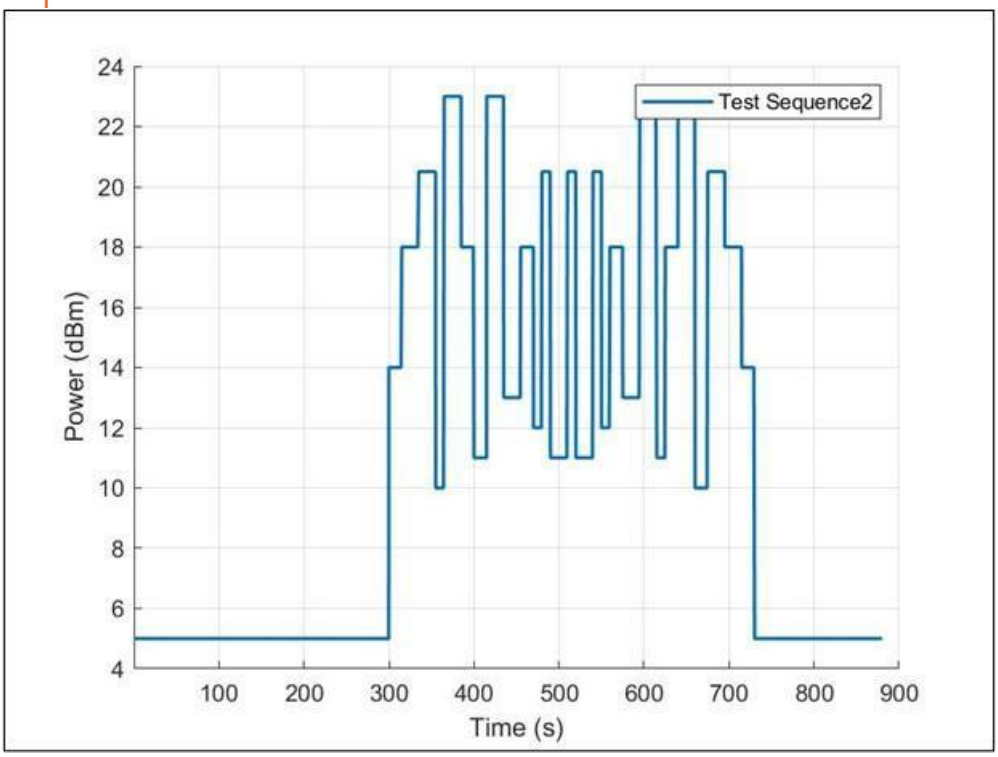

Figure 5-3 Test sequence 2

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Table 5-4 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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5.2 Test Configuration and Procedure for Scenario 1: Range of TA-SAR Gen2 Parameters via Conducted Power Measurements

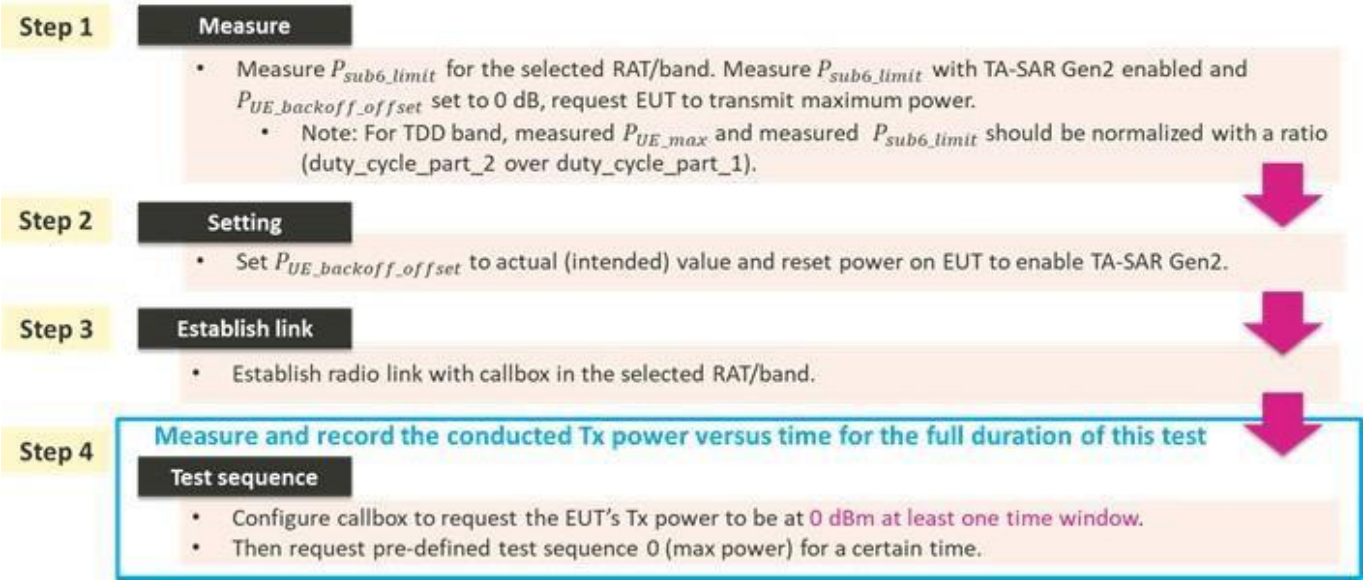
5.2.1 Configuration

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.

5.2.2 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



- 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.

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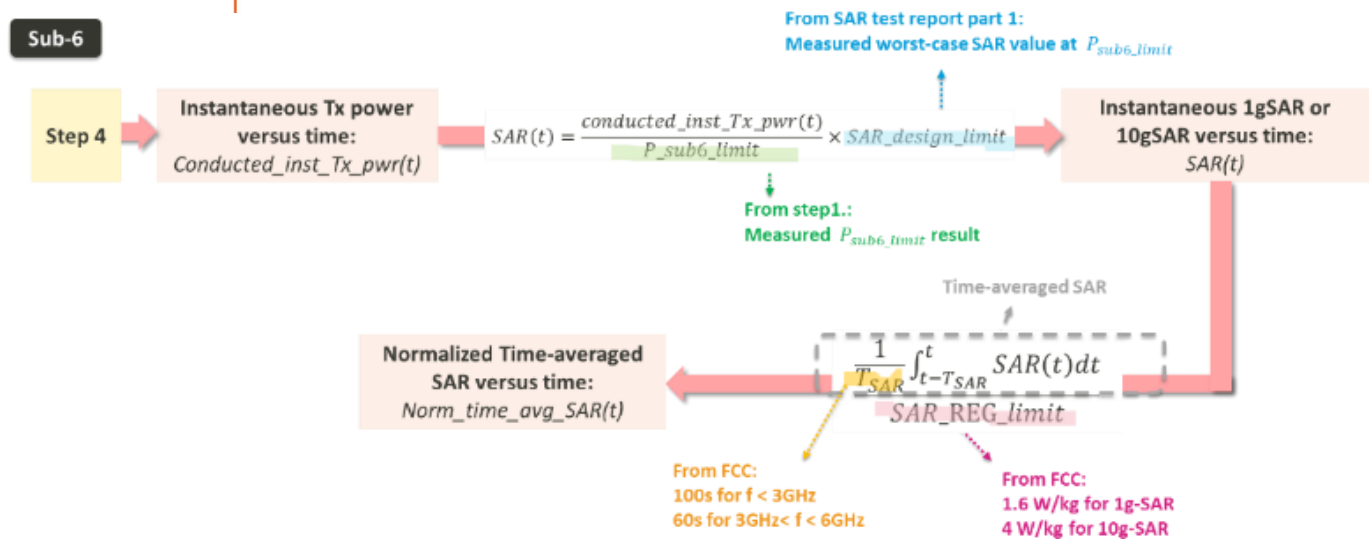
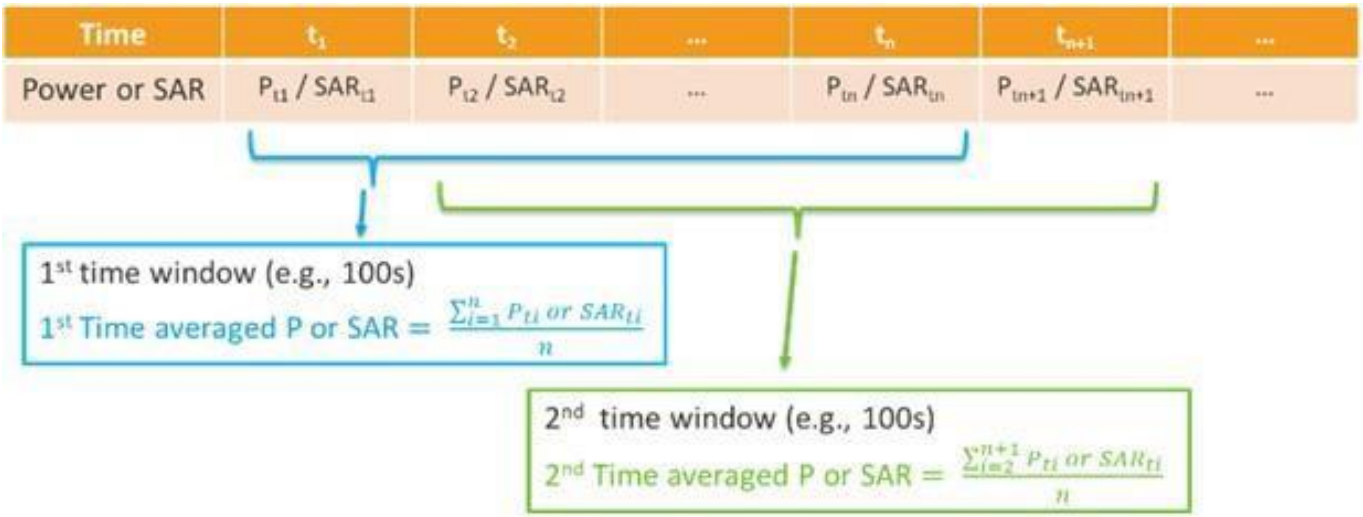


Specifically, the running time average is illustrated with the below figure.



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

5.3.1 Configuration

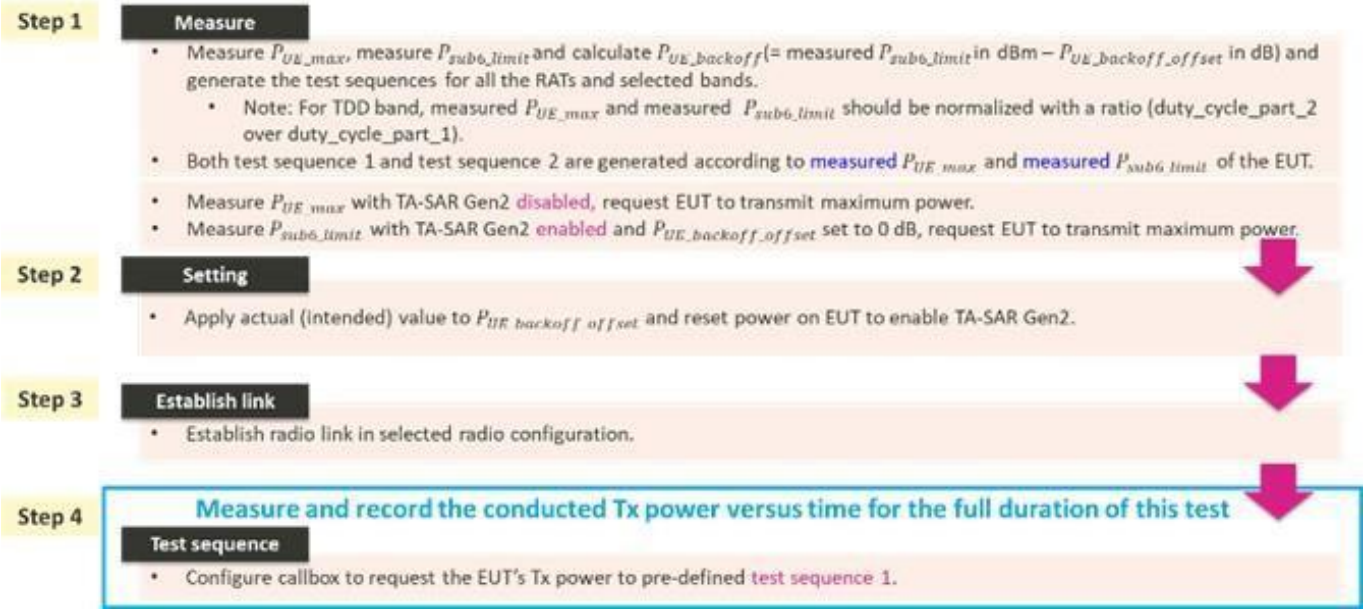
Since Mediatek's TA-SAR Gen2 algorithm operation is independent of bands and channels for a given RAT, selecting one channel per band/RAT is sufficient to validate this feature. Two bands per RAT are proposed for this test. The criteria for band selection for each RAT is based on the P_{sub6_limit} values (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.
  - Only one band needs to be tested if all the bands have same P_{sub6_limit}.
  - Only one band needs to be tested if only the band has P_{sub6_limit} below P_{UE_max}.
  - If the same least P_{sub6_limit} applies to multiple bands, select the band with the highest measured 1gSAR at P_{sub6_limit}.
  - 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.

5.3.2 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



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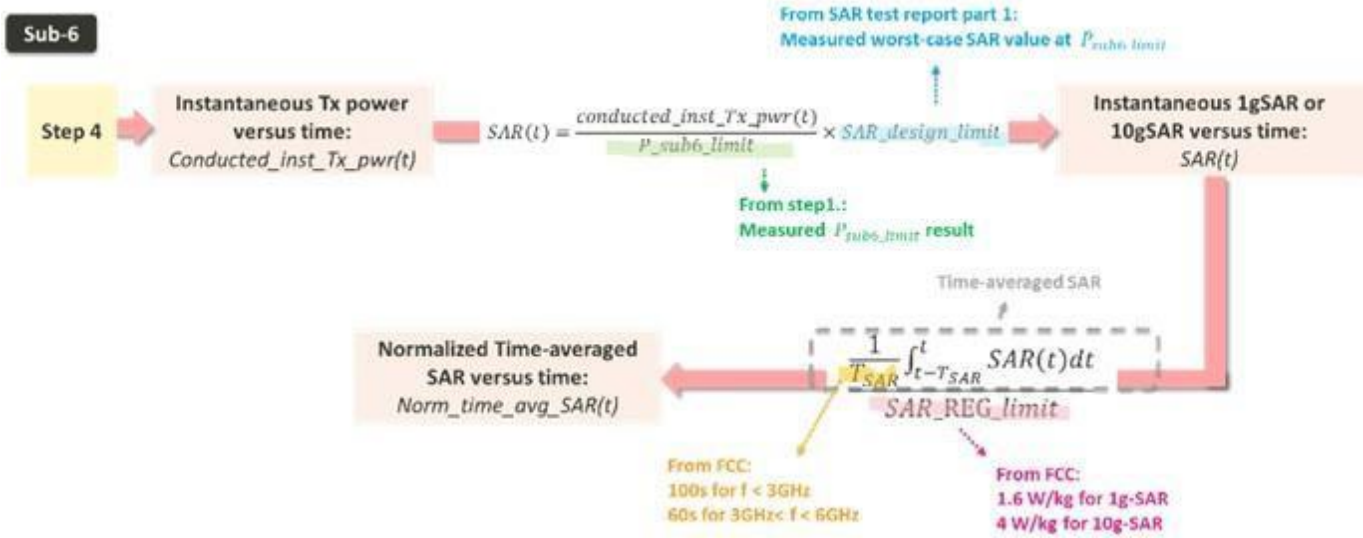
- Step 5: convert the measured conducted TX power into SAR

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 5.2.2 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)

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

5.4.1 Configuration

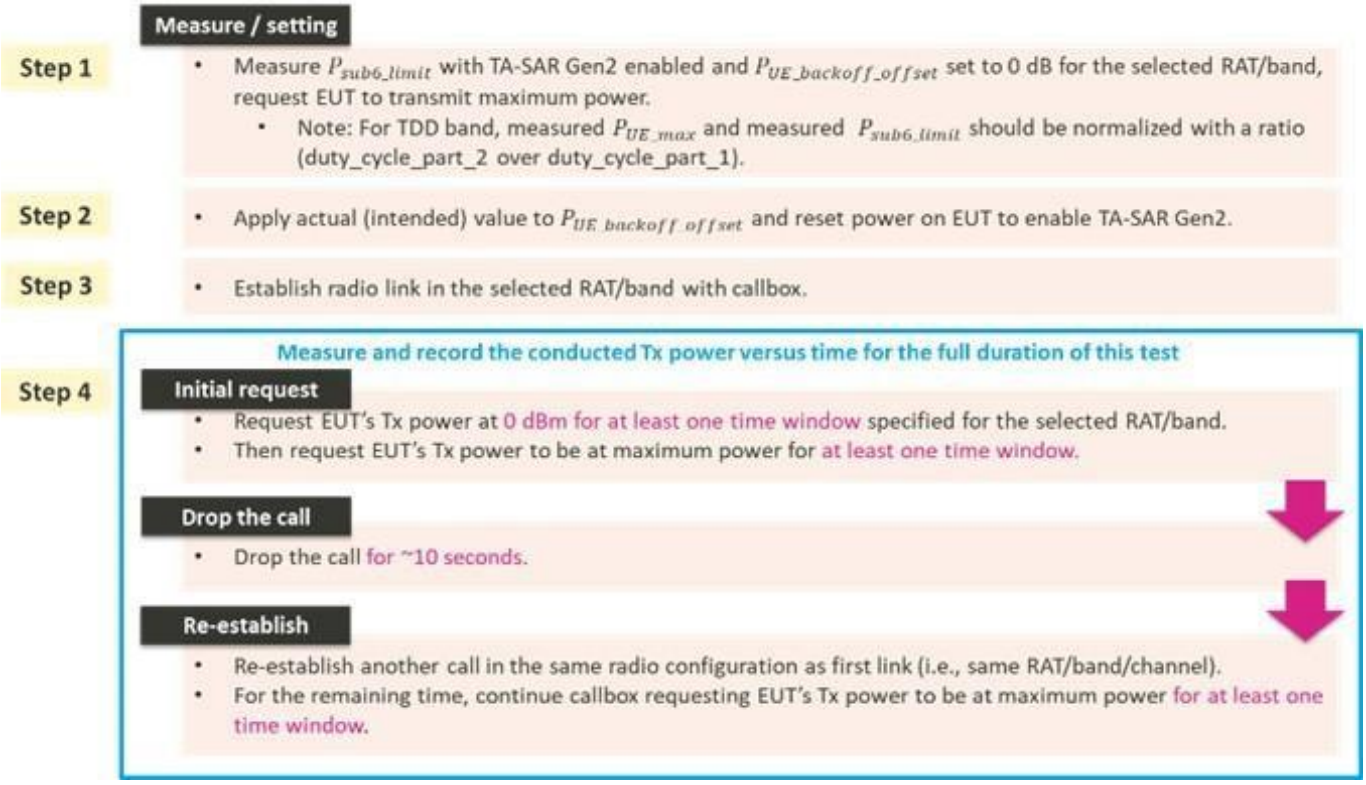
For the call disconnection measurement, the criteria of selecting the test configuration is:

- 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}.

5.4.2 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



- 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 5.2.2 for the illustration of the running time average operation).

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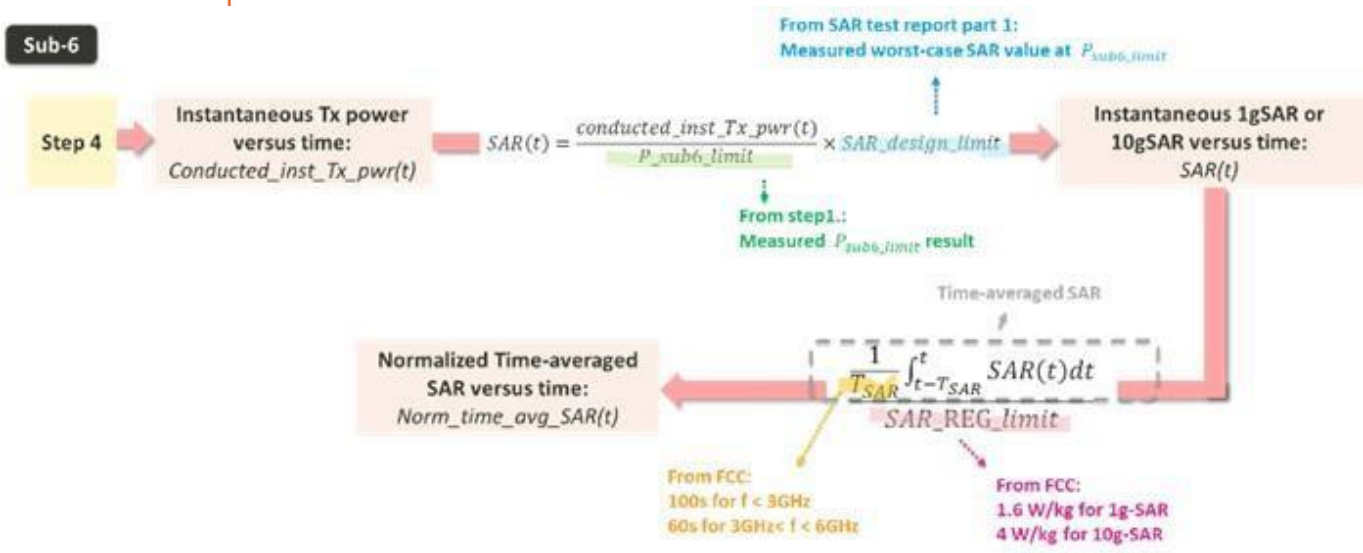

- Step 6: plot results
  A. Make one TX power related plot containing
     1. Instantaneous TX power
     2. Calculated time-averaged power
     3. Calculated time-averaged power limits
  B. Make one SAR related plot containing
     1. Calculated time-averaged 1gSAR or 10gSAR
     2. FCC limit of 1.6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

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

5.5.1 Configuration

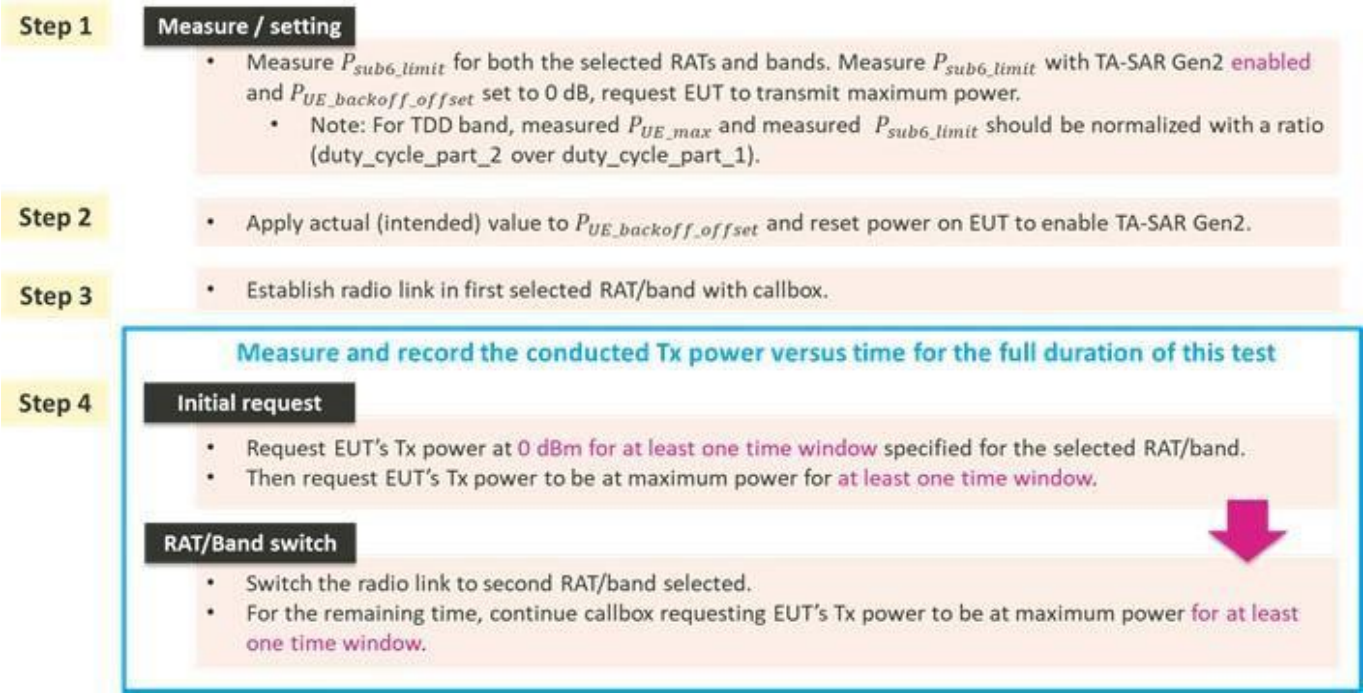
For a given TX antenna, select a RAT/band with the lowest P_{sub6_limit} and the other RAT/band with the highest P_{sub6_limit}. Both of them have P_{sub6_limit} values less than P_{UE_max} if possible.

- 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}.

5.5.2 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



- 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 5.2.2 for the illustration of the running time average operation).

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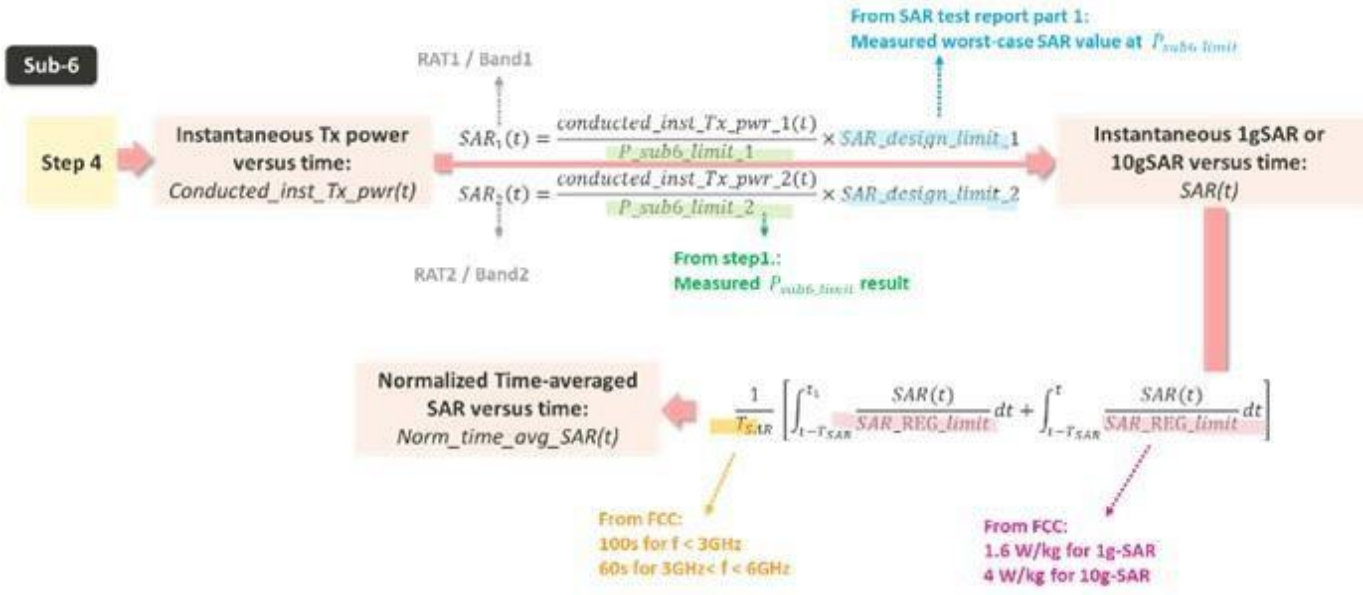

- Step 6: plot results
  - A. Make one TX power related plot containing
    1. Instantaneous TX power
    2. Calculated time-averaged power
    3. Calculated time-averaged power limits
  - B. Make one SAR related plot containing
    1. Calculated time-averaged 1gSAR or 10gSAR
    2. FCC limit of 1.6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

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

5.6.1 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}.

5.6.2 Procedure

The test procedure is identical to section 5.5.2 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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5.7 Test Configuration and Procedure for Scenario 6: Antenna Switching via Conducted Power Measurements

5.7.1 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}).

5.7.2 Procedure

The test procedure is identical to section 5.5.2 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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5.8 Test Configuration and Procedure for Scenario 7: Time Window Switching via Conducted Power Measurements

5.8.1 Configuration

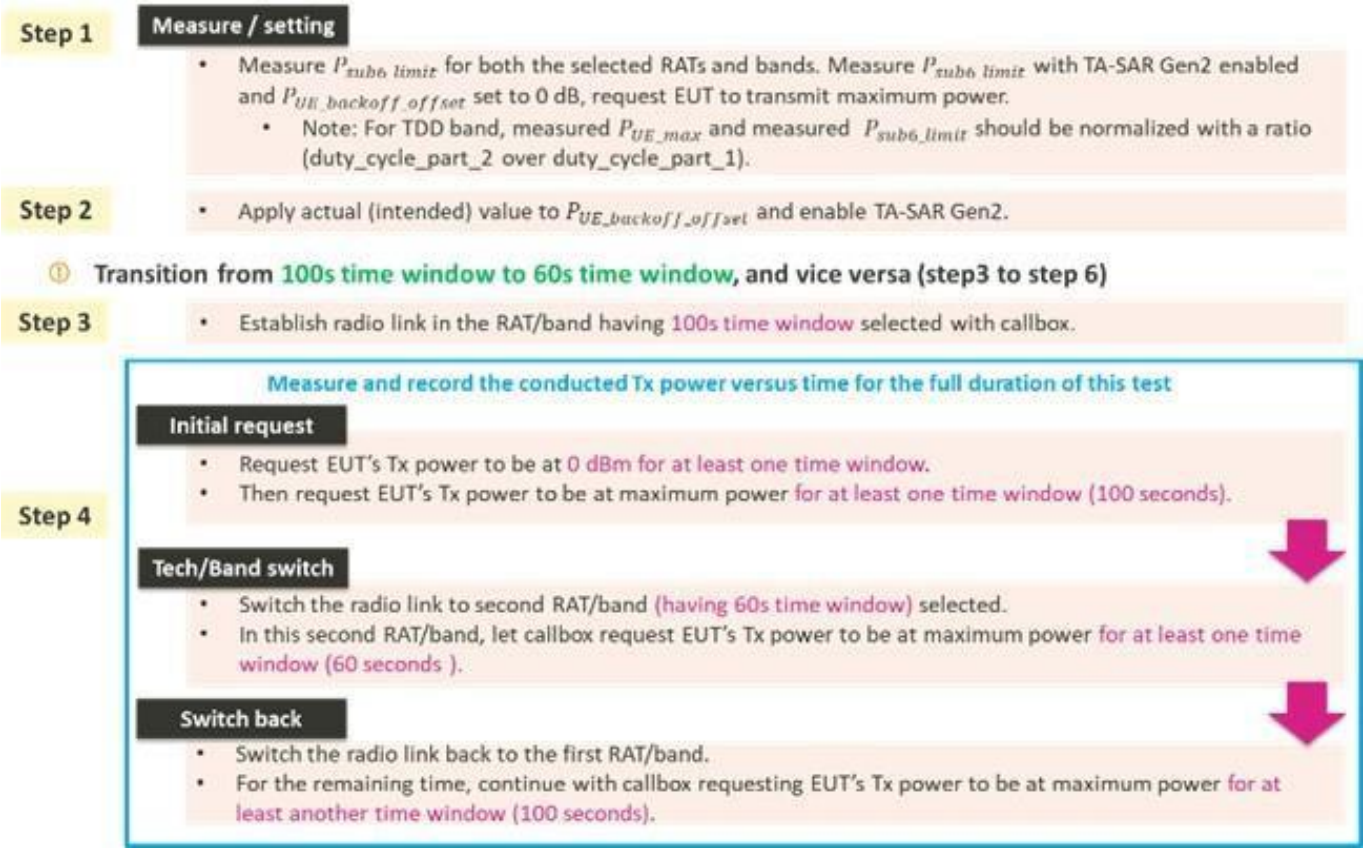
Select one RAT/band with 60-second time averaging window, and the other RAT/band with 100-second time averaging window. Both of them have P_{sub6_limit} values less than P_{UE_max} if possible.

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

5.8.2 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



- 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 5.2.2 for the illustration of the running time average operation).

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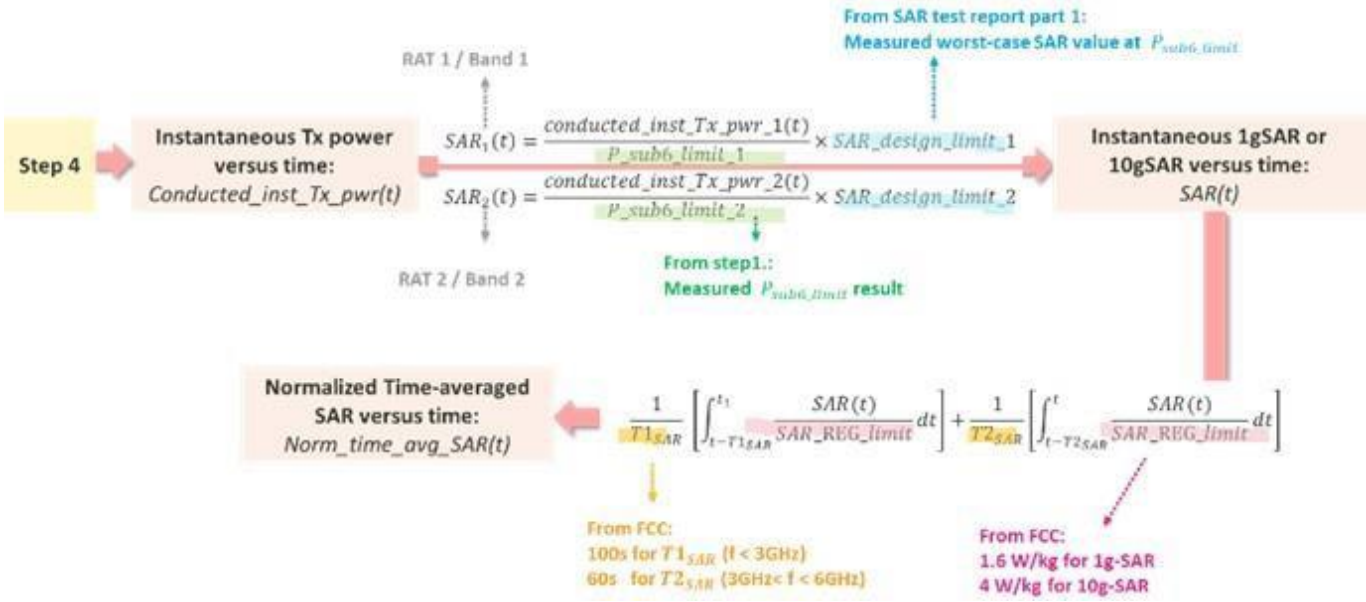

- Step 6: plot results
  - A. Make one TX power related plot containing
    1. Instantaneous TX power
    2. Calculated time-averaged power
    3. Calculated time-averaged power limits
  - B. Make one SAR related plot containing
    1. Calculated time-averaged 1gSAR or 10gSAR
    2. FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)
    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 7

- Establish radio link with callbox in the RAT/band having 60s time window selected.

Step 8

Measure and record the conducted Tx power versus time for the full duration of this test

Initial request

- Request EUT's Tx power to be at 0 dBm for at least one time window.
- Then request EUT's Tx power to be at maximum power for at least one time window (60 seconds).

Tech/Band switch

- Switch the radio link to second RAT/band (having 100s time window) selected.
- In this second RAT/band, let callbox request EUT's Tx power to be at maximum power for at least one time window (100 seconds).

Switch back

- Switch the radio link back to the first RAT/band.
- For the remaining time, continue with callbox requesting EUT's Tx power to be at maximum power for at least another time window (60 seconds).

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

5.9.1 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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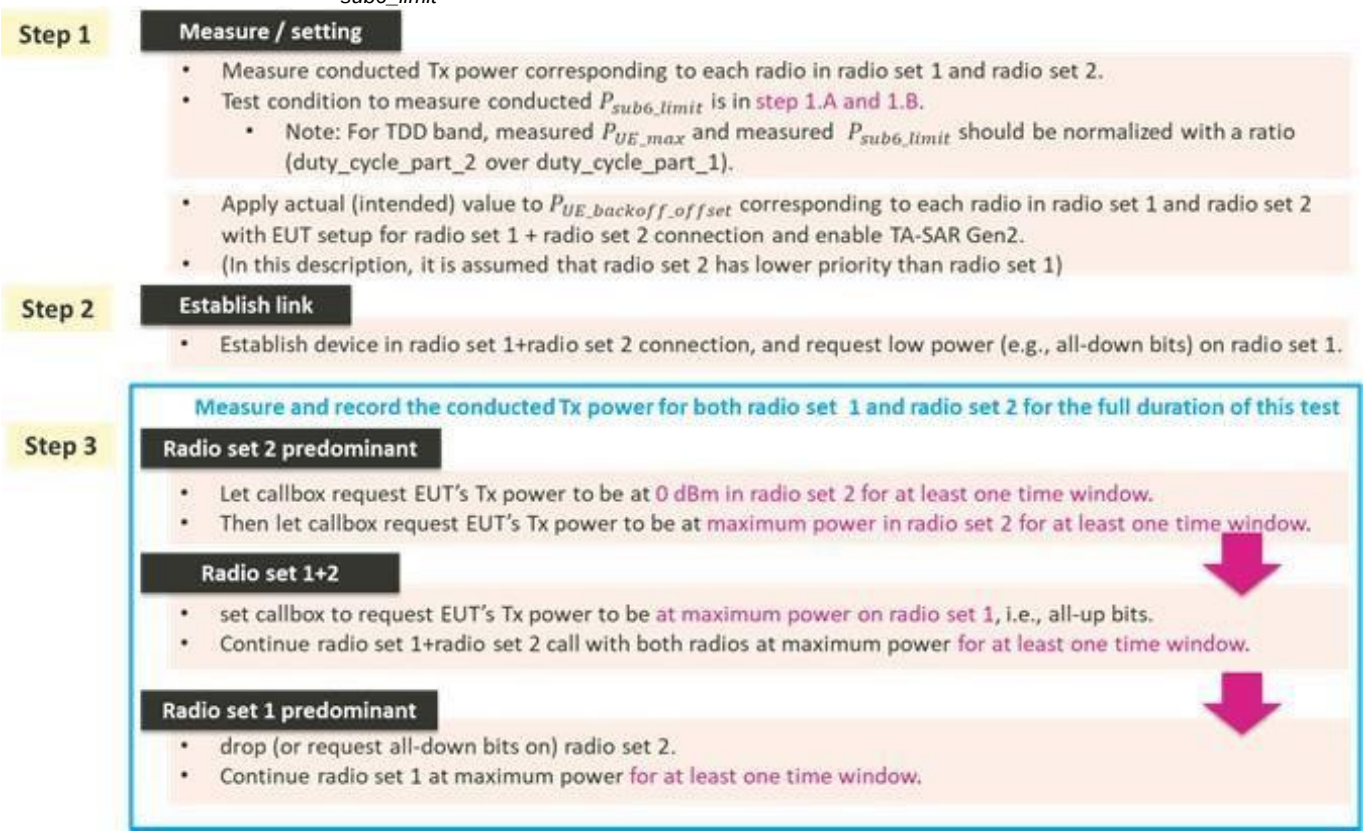
5.9.2 Procedure

- Step 1~3: measure and record TX power versus time for test scenario 9

  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 1 (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}.

  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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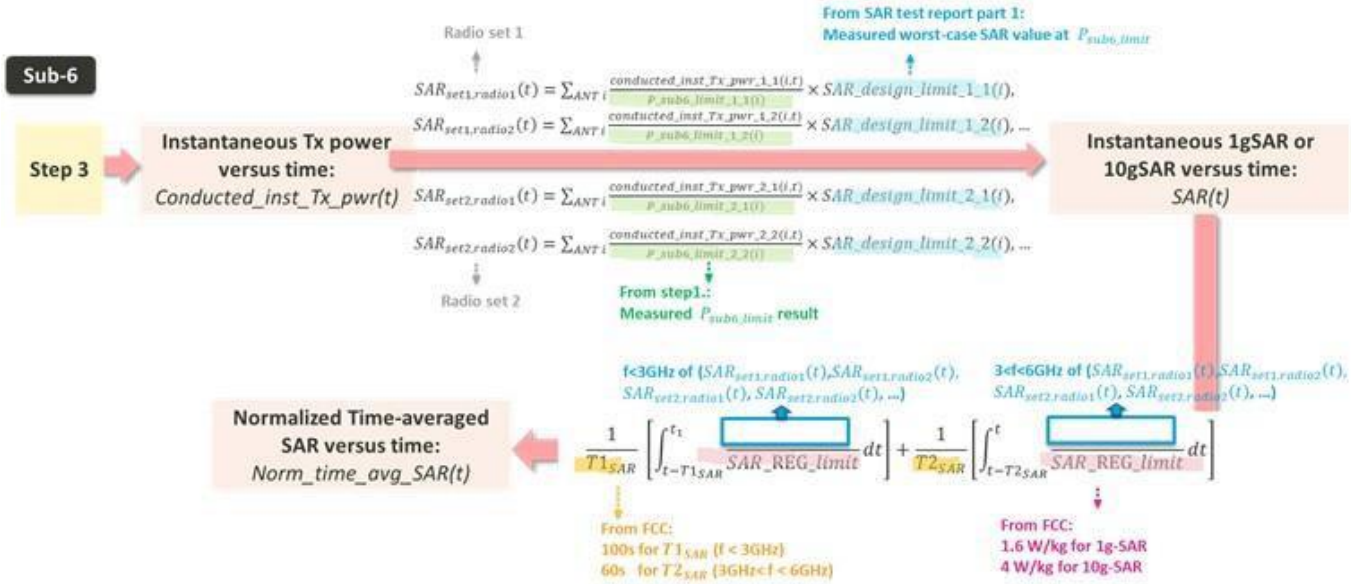
- Step 4: convert the measured conducted TX power into SAR

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 5.2.2 for the illustration of the running time average operation).



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

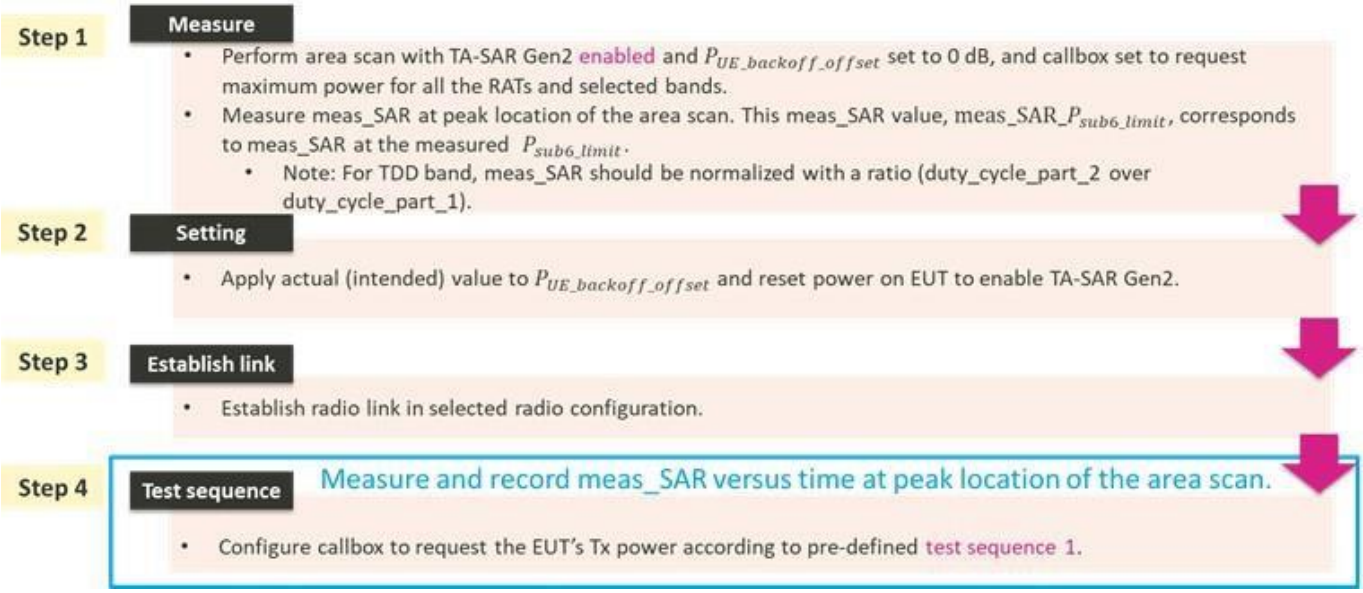
5.10.1 Configuration

Sections 5.2 to 5.9 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 5.3. Hence, this section follows the test configuration of section 5.3, and uses test sequences 1 and 2 defined in section 5.1.

5.10.2 Procedure

SAR is measured and recorded by the following steps:

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



- 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.

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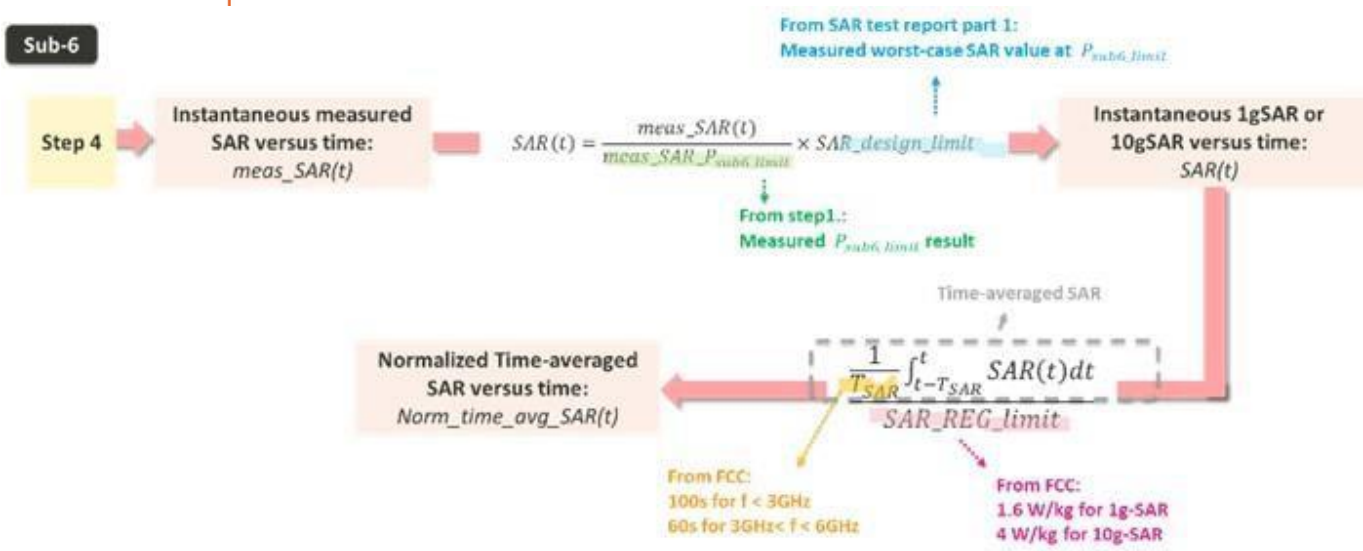

- Step 6: plot results
  A. Calculated time-averaged 1gSAR or 10gSAR
  B. FCC limit of 1.6 W/kg (1gSAR) or 4.0 W/kg (10gSAR)

- 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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6 TA-SAR GEN2 VALIDATION VIA CONDUCTED POWER MEASUREMENTS

This chapter shows the conducted power measurement setup results.

6.1 Measurement Setup

6.1.1 Test Bench Introduction

The call boxes Keysight UXM (supporting sub6 NR and LTE) and Rohde & Schwarz CMW500 (supporting LTE, WCDMA and 2G) are used to validate the proposed TA-SAR Gen2 algorithm. Figure 6-1 shows the block diagram of the measurement bench, which supports the following test scenarios.

- Test scenario 1: range of TA-SAR Gen2 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 through a directional coupler, whose specification is as below Table 6-1, 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.

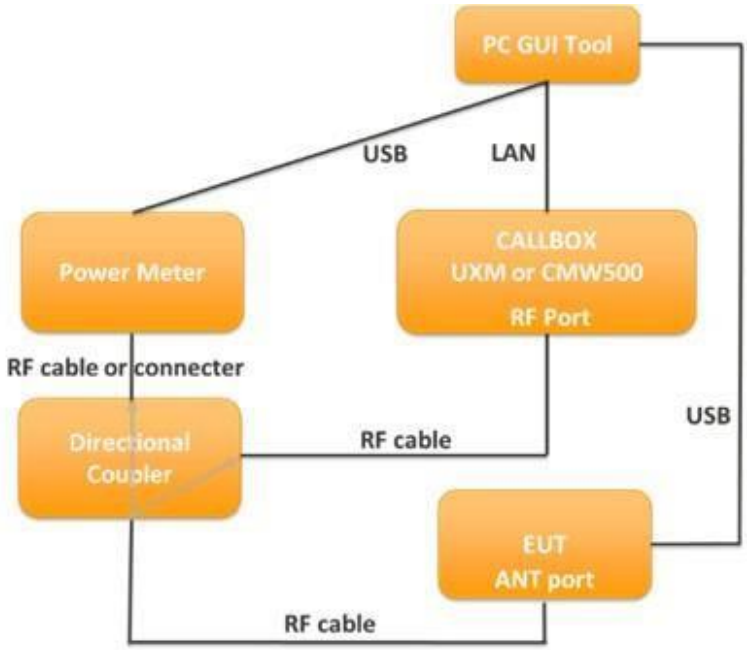

Figure 6-1 TA-SAR Gen2 conductive power test setup block diagram for scenarios 1/2/3/5

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

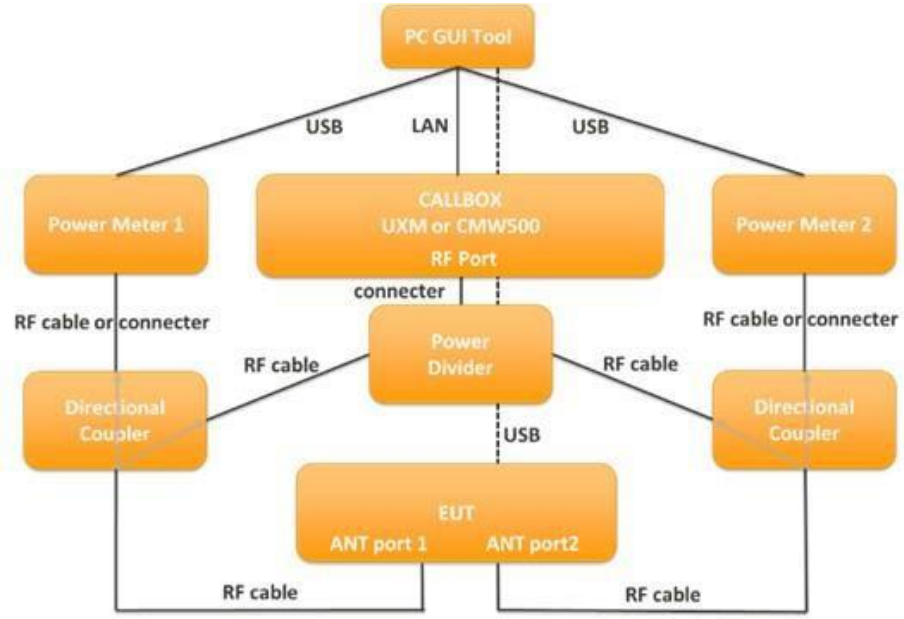

Figure 6-2 TA-SAR Gen2 conductive power test setup block diagram for scenarios 6/7

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Figure 6-3 shows the setup for test scenario 4 (band handover) with different RATs and test scenario 8 (SAR exposure switching). Since two RATs/bands need to be controlled in these two scenarios, RF port of RAT/band #1 and RF port of RAT/band #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/bands individually transmit signals though one antenna port.

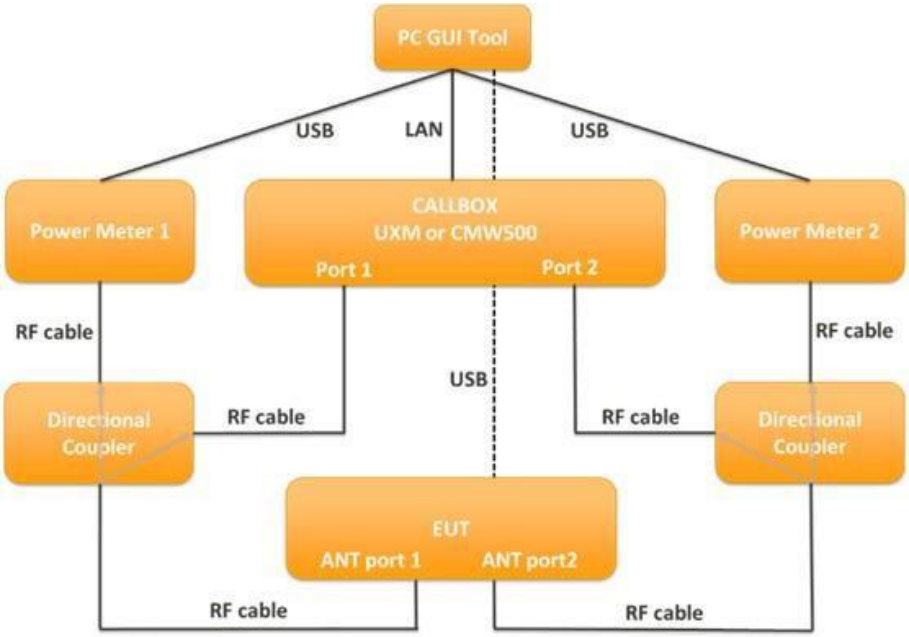

Figure 6-3 TA-SAR Gen2 conductive power test setup block diagram for scenarios 4/8

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Figure 6-4 shows the setup for test scenario 8 (SAR exposure switching) with three antennas transmitting at the same time. Since three bands (or two bands) need to be controlled individually in this scenario, the three RF ports of the call box are individually connected to the three antenna ports of the EUT through three directional couplers. The EUT can transmit signals of a specific band via each connected port.

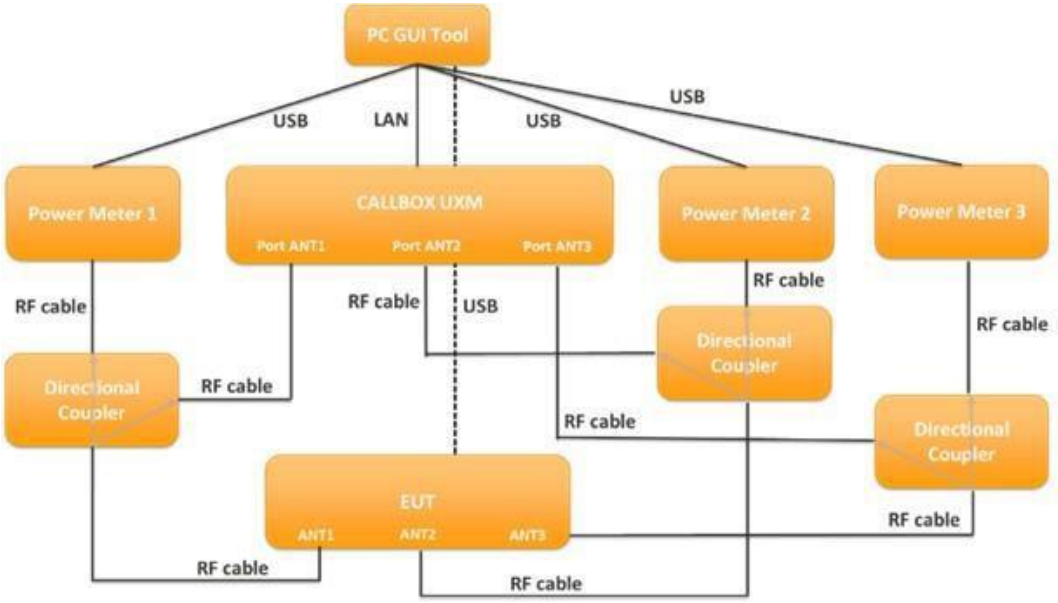

Figure 6-4 TA-SAR Gen2 conductive power test setup block diagram for scenarios 8, 3TX

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

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 6-1. The *SAR_design_limit* is determined by taking 1.5 -dB device uncertainty into consideration (but the exact value depends on the OEM's device design). 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, and the frame-averaged power level which accounts for TX duty cycle.

Table 6-1 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_limt_setting 1g (W/kg) / 10g (W/kg)		Uncertainty
							Group	ECI5 (Head)	ECI3 (Body-worn/Hotspot /Handheld)		ECI5 (Head)	ECI3 (Body-worn/Hotspot/ Handheld)		ECI5 (Head)	ECI3 (Body-worn/Hotspot/ Handheld)	
2G	GPRS 850 2TS	TDD	25.0%	128	824.2	#0	0	25.00	25.00	25.00	31.00	31.00	31.00	1.20	1.2 / 3	1.20
	GPRS 850 2TS	TDD	25.0%	128	824.2	#1	0	22.50	25.00	25.00	28.50	31.00	31.00	1.20	1.2 / 3	1.20
	GPRS 1900 3TS	TDD	37.5%	512	1850.2	#2	0	21.20	18.70	21.20	25.50	23.00	25.50	1.20	1.2 / 3	1.20
	GPRS 1900 3TS	TDD	37.5%	512	1850.2	#1	0	17.70	19.70	21.20	22.00	24.00	25.50	1.20	1.2 / 3	1.20
3G WCDMA	B2	FDD	100.0%	9538	1907.6	#2	0	24.20	17.20	24.20	24.20	17.20	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	9538	1907.6	#1	0	15.70	17.20	23.70	15.70	17.20	23.70	1.20	1.2 / 3	1.20
	B4	FDD	100.0%	1513	1752.6	#2	0	24.20	19.70	24.20	24.20	19.70	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	1513	1752.6	#1	0	16.20	19.20	23.70	16.20	19.20	23.70	1.20	1.2 / 3	1.20
	B5	FDD	100.0%	4132	826.4	#0	0	24.20	22.20	24.20	24.20	22.20	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	4132	826.4	#1	0	20.70	23.70	23.70	20.70	23.70	23.70	1.20	1.2 / 3	1.20
4G LTE	LTE_B2	FDD	100.0%	18900	1880	#2	0	23.20	16.70	23.20	23.20	16.70	23.20	1.20	1.2 / 3	1.20
		FDD	100.0%	18900	1880	#1	0	15.70	17.70	22.70	15.70	17.70	22.70	1.20	1.2 / 3	1.20
	LTE_B4	FDD	100.0%	20175	1732.5	#2	0	24.50	19.50	24.50	24.50	19.50	24.50	1.20	1.2 / 3	1.20
		FDD	100.0%	20175	1732.5	#1	0	15.00	17.50	24.00	15.00	17.50	24.00	1.20	1.2 / 3	1.20
		FDD	100.0%	20175	1732.5	#4	0	23.50	23.50	23.50	23.50	23.50	23.50	1.20	1.2 / 3	1.20
	LTE_B5	FDD	100.0%	20525	836.5	#0	0	24.70	23.70	24.70	24.70	23.70	24.70	1.20	1.2 / 3	1.20
		FDD	100.0%	20525	836.5	#1	0	21.50	24.00	24.00	21.50	24.00	24.00	1.20	1.2 / 3	1.20
	LTE_B7	FDD	100.0%	21100	2535	#2	0	24.20	17.70	24.20	24.20	17.70	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	21100	2535	#1	0	14.20	15.20	23.70	14.20	15.20	23.70	1.20	1.2 / 3	1.20
		FDD	100.0%	21100	2535	#4	0	23.50	22.00	23.50	23.50	22.00	23.50	1.20	1.2 / 3	1.20
	LTE_B12(17)	FDD	100.0%	23095	707.5	#0	0	24.20	23.20	24.20	24.20	23.20	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	23095	707.5	#1	0	22.70	23.70	23.70	22.70	23.70	23.70	1.20	1.2 / 3	1.20
	LTE_B13	FDD	100.0%	23230	782	#0	0	24.20	23.70	24.20	24.20	23.70	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	23230	782	#1	0	22.20	23.70	23.70	22.20	23.70	23.70	1.20	1.2 / 3	1.20
	LTE_B26	FDD	100.0%	26865	831.5	#0	0	24.20	23.70	24.20	24.20	23.70	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	26865	831.5	#1	0	21.70	23.70	23.70	21.70	23.70	23.70	1.20	1.2 / 3	1.20
	LTE_B66	FDD	100.0%	132322	1745	#2	0	24.20	18.70	24.20	24.20	18.70	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	132322	1745	#1	0	14.70	17.70	23.70	14.70	17.70	23.70	1.20	1.2 / 3	1.20
		FDD	100.0%	132322	1745	#4	0	23.50	23.50	23.50	23.50	23.50	23.50	1.20	1.2 / 3	1.20
	LTE_B71	FDD	100.0%	133297	680.5	#0	0	24.20	22.70	24.20	24.20	22.70	24.20	1.20	1.2 / 3	1.20
		FDD	100.0%	133297	680.5	#1	0	22.20	23.70	23.70	22.20	23.70	23.70	1.20	1.2 / 3	1.20
	LTE_B38	TDD	63.3%	38000	2595	#2	0	22.20	18.70	22.20	24.20	20.70	24.20	1.20	1.2 / 3	1.20
		TDD	63.3%	38000	2595	#1	0	13.70	14.70	21.70	15.70	16.70	23.70	1.20	1.2 / 3	1.20
		TDD	63.3%	38000	2595	#4	0	21.50	21.50	21.50	23.50	23.50	23.50	1.20	1.2 / 3	1.20
	LTE_B41_PC3	TDD	63.3%	40620	2593	#2	0	22.20	18.70	22.20	24.20	20.70	24.20	1.20	1.2 / 3	1.20
		TDD	63.3%	40620	2593	#1	0	12.20	13.20	21.70	14.20	15.20	23.70	1.20	1.2 / 3	1.20
		TDD	63.3%	40620	2593	#4	0	21.50	21.50	21.50	23.50	23.50	23.50	1.20	1.2 / 3	1.20
	LTE_B48	TDD	63.3%	55990	3625	#6	0	16.20	17.70	22.20	18.20	19.70	24.20	1.20	1.2 / 3	1.20
		TDD	63.3%	55990	3625	#8	0	19.50	19.00	21.50	21.50	21.00	23.50	1.20	1.2 / 3	1.20
		TDD	63.3%	55990	3625	#3	0	16.50	15.50	21.50	18.50	17.50	23.50	1.20	1.2 / 3	1.20
		TDD	63.3%	55990	3625	#5	0	21.70	17.20	21.70	23.70	19.20	23.70	1.20	1.2 / 3	1.20

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5G FR1 NR SA	NR5G_N2	FDD	100.0%	376000	1880	#2	0	24.00	16.50	24.00	24.00	16.50	24.00	1.20	1.2 / 3	1.20
		FDD	100.0%	376000	1880	#1	0	15.50	17.00	23.50	15.50	17.00	23.50	1.20	1.2 / 3	1.20
	NR5G_N7	FDD	100.0%	507000	2535	#2	0	23.60	18.10	23.60	23.60	18.10	23.60	1.20	1.2 / 3	1.20
		FDD	100.0%	507000	2535	#1	0	14.10	13.60	23.10	14.10	13.60	23.10	1.20	1.2 / 3	1.20
		FDD	100.0%	507000	2535	#4	0	23.10	22.10	23.10	23.10	22.10	23.10	1.20	1.2 / 3	1.20
	NR5G_N12	FDD	100.0%	141500	707.5	#0	0	24.00	22.50	24.00	24.00	22.50	24.00	1.20	1.2 / 3	1.20
		FDD	100.0%	141500	707.5	#1	0	22.50	23.50	23.50	22.50	23.50	23.50	1.20	1.2 / 3	1.20
	NR5G_N26(5)	FDD	100.0%	166300	831.5	#0	0	24.00	23.00	24.00	24.00	23.00	24.00	1.20	1.2 / 3	1.20
		FDD	100.0%	166300	831.5	#1	0	21.00	23.50	23.50	21.00	23.50	23.50	1.20	1.2 / 3	1.20
	NR5G_N66	FDD	100.0%	349000	1745	#2	0	24.00	18.00	24.00	24.00	18.00	24.00	1.20	1.2 / 3	1.20
		FDD	100.0%	349000	1745	#1	0	17.00	18.50	23.50	17.00	18.50	23.50	1.20	1.2 / 3	1.20
		FDD	100.0%	349000	1745	#4	0	23.50	23.50	23.50	23.50	23.50	23.50	1.20	1.2 / 3	1.20
	NR5G_N71	FDD	100.0%	136100	680.5	#0	0	24.00	23.50	24.00	24.00	23.50	24.00	1.20	1.2 / 3	1.20
		FDD	100.0%	136100	680.5	#1	0	22.00	23.50	23.50	22.00	23.50	23.50	1.20	1.2 / 3	1.20
	NR5G_N38	TDD	100.0%	519000	2595	#2	0	23.60	18.60	23.60	23.60	18.60	23.60	1.20	1.2 / 3	1.20
		TDD	100.0%	519000	2595	#1	0	13.60	12.60	23.10	13.60	12.60	23.10	1.20	1.2 / 3	1.20
		TDD	100.0%	519000	2595	#4	0	23.10	19.60	23.10	23.10	19.60	23.10	1.20	1.2 / 3	1.20
	NR5G_N41_PC3	TDD	100.0%	518598	2593	#2	0	23.60	17.60	23.60	23.60	17.60	23.60	1.20	1.2 / 3	1.20
		TDD	100.0%	518598	2593	#1	0	13.60	13.10	23.10	13.60	13.10	23.10	1.20	1.2 / 3	1.20
		TDD	100.0%	518598	2593	#4	0	23.10	19.10	23.10	23.10	19.10	23.10	1.20	1.2 / 3	1.20
	NR5G_N48	TDD	100.0%	641668	3625	#6	0	14.60	16.60	23.60	14.60	16.60	23.60	1.20	1.2 / 3	1.20
		TDD	100.0%	641668	3625	#8	0	18.10	18.10	23.10	18.10	18.10	23.10	1.20	1.2 / 3	1.20
		TDD	100.0%	641668	3625	#3	0	15.30	13.80	22.80	15.30	13.80	22.80	1.20	1.2 / 3	1.20
		TDD	100.0%	641668	3625	#5	0	20.30	15.80	22.80	20.30	15.80	22.80	1.20	1.2 / 3	1.20

Note1: Antennas 1/4/5/7/9/10/11 belong to SPLSR group 0, antennas 0/6 belong to SPLSR group 1. If the test scenario is independent of SPLSR groups, one SPLSR is selected to validate the test scenario.

Note2: 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 6-2 summarizes the test configurations of all RATs, and the corresponding worst-case measured SAR for each RAT under the power limit.

Table 6-2 Test configurations of radio access technologies and worst-case measured SAR

Test Case	Test Scenario	Test Tech	Test band	Test Sequence	Level_num	BW (MHz)	Modulation	duty cycle	RB size	RB offset	Test Position	Gap (mm)	ANT	ANT index	ANT state (TX/RX)	ECI	SPLSR Group	UL Channel	UL Freq (MHz)	DL Channel	DL Freq (MHz)	Part 1, SAR@Pimit 1-g or 10-g SAR (W/kg)	SAR reg.	Pimit, frame-averaged	Pmax, frame-averaged	Pimit, frame-averaged	Pmax, frame-averaged	min power duration	duration 1	drop call	duration 2	duration 3	Wanted Power Offset	P_N_Thr eah
0	1. Range of TA-SAR parameters	LTE	B41_PC3	0	4	20	QPSK	63.30%	50	0	N/A	0	#1	1	1/1	5	0	40620	2593	40620	2593	0.659	1.6	11.02	20.45	12.20	21.70	300	570				0	13.5
1	2. Time-varying TX power	2G	GPRS 850 2TS	1	4	N/A	GMSK	25.00%	N/A	N/A	Right cheek	0	#1	1	1/1	5	0	190	836.6	190	881.6	0.426	1.6	21.58	22.71	22.50	25.00	150	720				0	25.5
2		2G	GPRS 1900 3TS	1	4	N/A	GMSK	37.50%	N/A	N/A	Right tilted	0	#1	1	1/1	5	0	661	1880	661	1960	0.729	1.6	16.34	20.38	17.70	21.20	150	720				0	20
3		WCDMA	B5	1	4	N/A	RMC	100.00%	N/A	N/A	Left Side	10	#0	0	0/0	3	0	4182	836.4	4407	881.4	0.681	1.6	21.79	24.03	22.20	24.20	150	720				0	22
4		WCDMA	B2	1	4	N/A	RMC	100.00%	N/A	N/A	Right tilted	0	#1	1	1/1	5	0	9400	1880	9800	1960	0.758	1.6	15.31	23.66	15.70	23.70	150	720				0	16
5		LTE	B5	1	4	10	QPSK	100.00%	1	0	Left Side	10	#0	0	0/0	3	0	20525	836.5	2525	881.5	0.799	1.6	23.64	24.63	23.70	24.70	150	720				0	22
6		LTE	B41_PC3	1	4	20	QPSK	63.30%	50	0	Right tilted	0	#1	1	1/1	5	0	40620	2593	40620	2593	0.659	1.6	11.02	20.45	12.20	21.70	150	720				0	13.5
7		FR1	n71	1	4	20	QPSK(DFT-s-OFDM)	100.00%	1	1	Left Side	10	#0	0	0/0	3	0	136100	680.5	126900	634.5	0.604	1.6	22.59	22.71	23.50	24.00	150	720				0	22.5
8		FR1	n38	1	4	40	QPSK(DFT-s-OFDM)	100.00%	1	1	Top Side	10	#1	1	1/1	3	0	519000	2595	519000	2595	0.384	1.6	10.71	18.22	12.60	23.10	150	720				0	12.5
9		2G	GPRS 850 2TS	2	4	N/A	GMSK	25.00%	N/A	N/A	Right cheek	0	#1	1	1/1	5	0	190	836.6	190	881.6	0.426	1.6	21.58	22.71	22.50	25.00	150	720				0	25.5
10		2G	GPRS 1900 3TS	2	4	N/A	GMSK	37.50%	N/A	N/A	Right tilted	0	#1	1	1/1	5	0	661	1880	661	1960	0.729	1.6	16.34	20.38	17.70	21.20	150	720				0	20
11		WCDMA	B5	2	4	N/A	RMC	100.00%	N/A	N/A	Left Side	10	#0	0	0/0	3	0	4182	836.4	4407	881.4	0.681	1.6	21.79	24.03	22.20	24.20	150	720				0	22
12		WCDMA	B2	2	4	N/A	RMC	100.00%	N/A	N/A	Right tilted	0	#1	1	1/1	5	0	9400	1880	9800	1960	0.758	1.6	15.31	23.66	15.70	23.70	150	720				0	16
13		LTE	B5	2	4	10	QPSK	100.00%	1	0	Left Side	10	#0	0	0/0	3	0	20525	836.5	2525	881.5	0.799	1.6	23.64	24.63	23.70	24.70	150	720				0	22
14		LTE	B41_PC3	2	4	20	QPSK	63.30%	50	0	Right tilted	0	#1	1	1/1	5	0	40620	2593	40620	2593	0.659	1.6	11.02	20.45	12.20	21.70	150	720				0	13.5
15		FR1	n71	2	4	20	QPSK(DFT-s-OFDM)	100.00%	1	1	Left Side	10	#0	0	0/0	3	0	136100	680.5	126900	634.5	0.604	1.6	22.59	22.71	23.50	24.00	150	720				0	22.5
16		FR1	n38	2	4	40	QPSK(DFT-s-OFDM)	100.00%	1	1	Top Side	10	#1	1	1/1	3	0	519000	2595	519000	2595	0.384	1.6	10.71	18.22	12.60	23.10	150	720				0	12.5
17	3. Call disconnection and re-establishment	LTE	B41_PC3	0	4	20	QPSK	63.30%	50	0	N/A	0	#1	1	1/1	5	0	40620	2593	40620	2593	0.659	1.6	10.34	19.91	12.20	21.70	300	200	10	200		0	13.5
18	4. band handover	LTE	B41_PC3	0	4	20	QPSK	63.30%	50	0	N/A	0	#1	1	1/1	5	0	40620	2593	40620	2593	0.659	1.6	10.34	19.91	12.20	21.70	300	200		200		0	13.5
		WCDMA	B5		4	N/A	RMC	100.00%	N/A	N/A			#1	1	1/1		0	4182	836.4	4407	881.4	0.456		20.54	23.54	20.70	23.70						0	21
19	5. Change in operating state	LTE	B41_PC3	0	4	20	QPSK	63.30%	50	0	N/A	0	#1	1	1/1	5	0	40620	2593	40620	2593	0.659	1.6	10.34	19.91	12.20	21.70	300	200		200	200	0	13.5
					4						N/A	10				3	0	40620	2593	40620	2593	0.577		11.37		13.20							0	14.5
20	6. Antenna switching	LTE	B41_PC3	0	4	20	QPSK	63.30%	1	0	N/A	10	#2	2	0/0	3	0	40620	2593	40620	2593	0.257	1.6	18.27	21.63	18.70	22.20	300	200		200	200	0	19.5
													#1	1	1/1		0					0.577		11.73		13.20	21.70						0	14.5
21	7. Time window switching	LTE	B48	0	4	20	QPSK	63.30%	50	0	N/A	10	#3	3	3/3	3	0	55990	3625	55990	3625	0.343	1.6	14.99	21.02	15.50	21.50	300	120		200	120	0	17
		LTE	B41_PC3		4	20	QPSK	63.30%	1	0			#1	1	1/1		0	40620	2593	40620	2593	0.577		11.73	20.20	13.20	21.70						0	14.5
22		LTE	B41_PC3	0	4	20	QPSK	63.30%	1	0	N/A	10	#1	1	1/1	3	0	40620	2593	40620	2593	0.577	1.6	11.73	20.20	13.20	21.70	300	200		120	200	0	14.5
		LTE	B48		4	20	QPSK	63.30%	50	0			#3	3	3/3		0	55990	3625	55990	3625	0.343		14.99	21.02	15.50	21.50						0	17
23	8. SAR exposure switching (ENDC)	LTE	B2	0	4	20	QPSK	100.00%	50	0	N/A	10	#2	2	0/0	3	0	18900	1880	900	1960	0.422	1.6	16.51	23.01	16.70	23.20	300	200		200	200	0	16.5
		FR1	n7			40	QPSK(DFT-s-OFDM)	100.00%	1	1			#1	1	0/0		0	507000	2535	531000	2655	0.462		12.51	22.03	13.60	23.10						0	13.5

Note1: If $P_{sub6_limit} > P_{UE_max}$, the measured P_{sub6_limit} will be bounded by Pmax (P_{UE_max}), and the SAR calculation, when converting conducted power into SAR, will use the real measured P_{sub6_limit}.
Note2: All the test cases above are setting is_ƒbo_en = 0

NOTE: If UE supports three simultaneous active antennas, execute test cases #sar8.1 and #sar8.3. One of the two cases should use the operating bands which have different moving average time windows. The other one should use the operating bands which have the same moving average time window. If UE simply supports two simultaneous active antennas, execute test cases #sar8.1 and #sar8.2. One of the two cases should use the operating bands which have different moving average time windows. The other one should use the operating bands which have the same moving average time window.

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

In this scenario, two parameter sets are swept to validate Mediatek's TA-SAR Gen2 algorithm. The parameter sets are summarized in Table 6-3, and the test procedure follows section 5.2.2. The measurement setup is shown in Figure 6-1. 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 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 6-3 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)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
0	LTE	B41_PC3	0	5	4	100s	23.70	14.20	12.20	23.70	Pass

These test cases are for LTE are conducted under LTE band 41_PC3 with ECI = 5. The corresponding detailed test procedure is described in 5.2.2.
For each case, TX time-averaged power is converted into time-averaged SAR by using the equation listed in section 5.2.2. The figure illustrates the corresponding time-averaged SAR. For all test cases, the time-averaged SAR is below the compliance limit.

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- Case 0 in Table 6-3

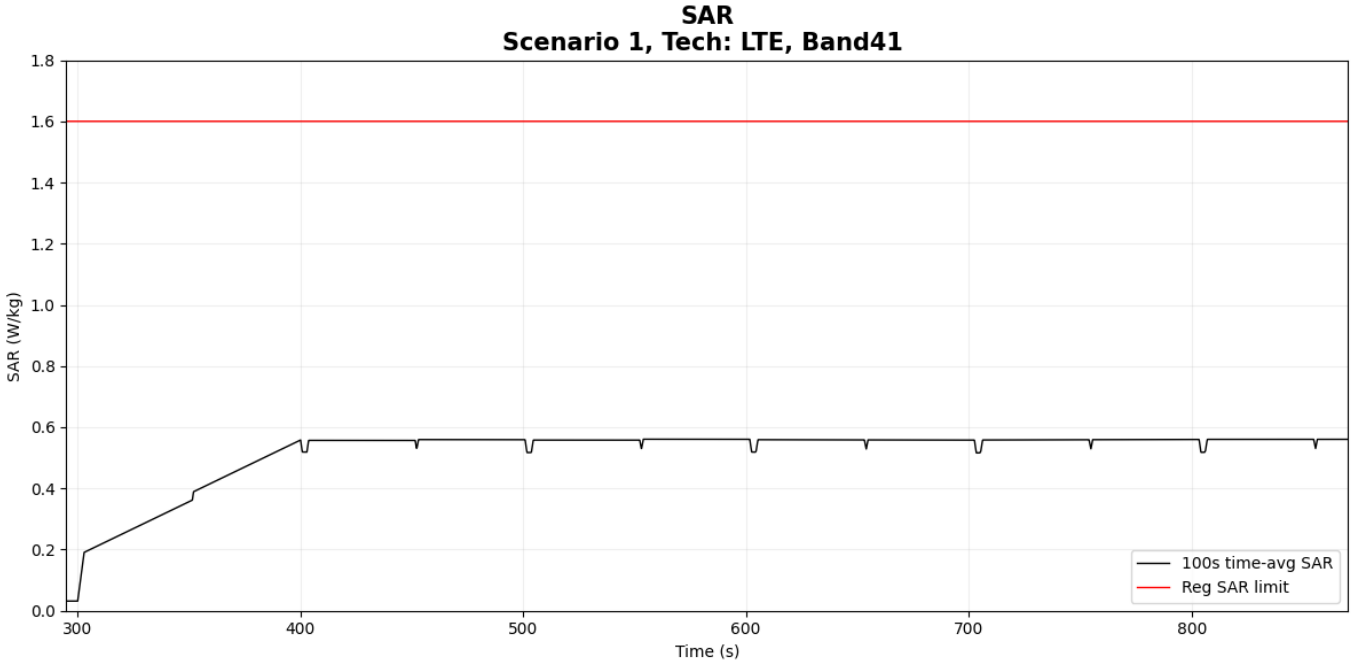

Figure 6-5 Time-averaged SAR for case 0 (Sub6 NR n48)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.561 W/kg
Validation result: pass	

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6.3 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. Test sequence #1 is shown in section 5.1 and test sequence #2 is tabulated in Table 5-4. All of the test cases for this scenario are relegated in Table 6-4, and the test procedure follows section 5.3.2. The measurement setup is shown in Figure 6-1. 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 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 6-4 TA-SAR Gen2 parameters setting for scenario 2

Test case	RAT	Test band	Test seq.	ECI	Level_ num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
1	2G	GPRS 850 2TS	1	5	4	31.00	28.50	27.25	26.50	Pass
2	2G	GPRS 1900 3TS	1	5	4	25.50	22.00	20.75	20.00	Pass
3	WCDMA	B5	1	3	4	24.20	22.20	20.20	24.20	Pass
4	WCDMA	B2	1	5	4	23.70	15.70	13.70	23.70	Pass
5	LTE	B5	1	3	4	24.70	23.70	21.70	24.70	Pass
6	LTE	B41_PC3	1	5	4	23.70	14.20	12.20	23.70	Pass
7	FR1	n71	1	3	4	24.00	23.50	21.50	24.00	Pass
8	FR1	N38	1	3	4	23.10	12.60	10.60	22.60	Pass
9	2G	GPRS 850 2TS	2	5	4	31.00	28.50	27.25	26.50	Pass
10	2G	GPRS 1900 3TS	2	5	4	25.50	22.00	20.75	20.00	Pass
11	WCDMA	B5	2	3	4	24.20	22.20	20.20	24.20	Pass
12	WCDMA	B2	2	5	4	23.70	15.70	13.70	23.70	Pass
13	LTE	B5	2	3	4	24.70	23.70	21.70	24.70	Pass
14	LTE	B41_PC3	2	5	4	23.70	14.20	12.20	23.70	Pass
15	FR1	n71	2	3	4	24.00	23.50	21.50	24.00	Pass
16	FR1	N38	2	3	4	23.10	12.60	10.60	22.60	Pass

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6.3.1 Measurement results for NR

These test cases are for sub6 NR and are conducted under NR bands n71 and n38 with ECI = 3. The corresponding detailed test procedure is described in 5.3.2.

For each case, TX time-averaged power is converted into time-averaged SAR by using the equation listed in section 5.3.2. The figure illustrates the corresponding time-averaged SAR. For all test cases, the time-averaged SAR is below the compliance limit.

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- Case 7 in Table 6-4: NR n71 result for test sequence 1

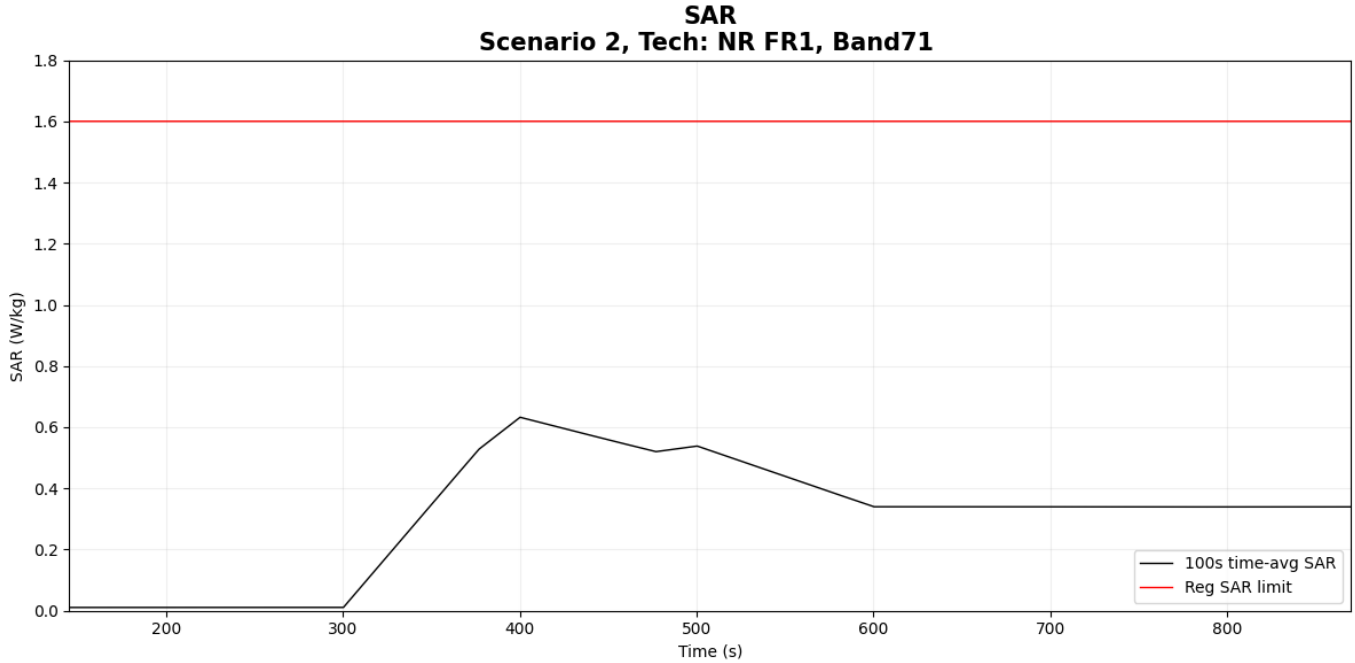

Figure 6-6 Time-averaged SAR for case 7 (sub6 NR n71)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.633 W/kg
Validation result: pass	

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- Case 8 in Table 6-4: NR n38 result for test sequence 1

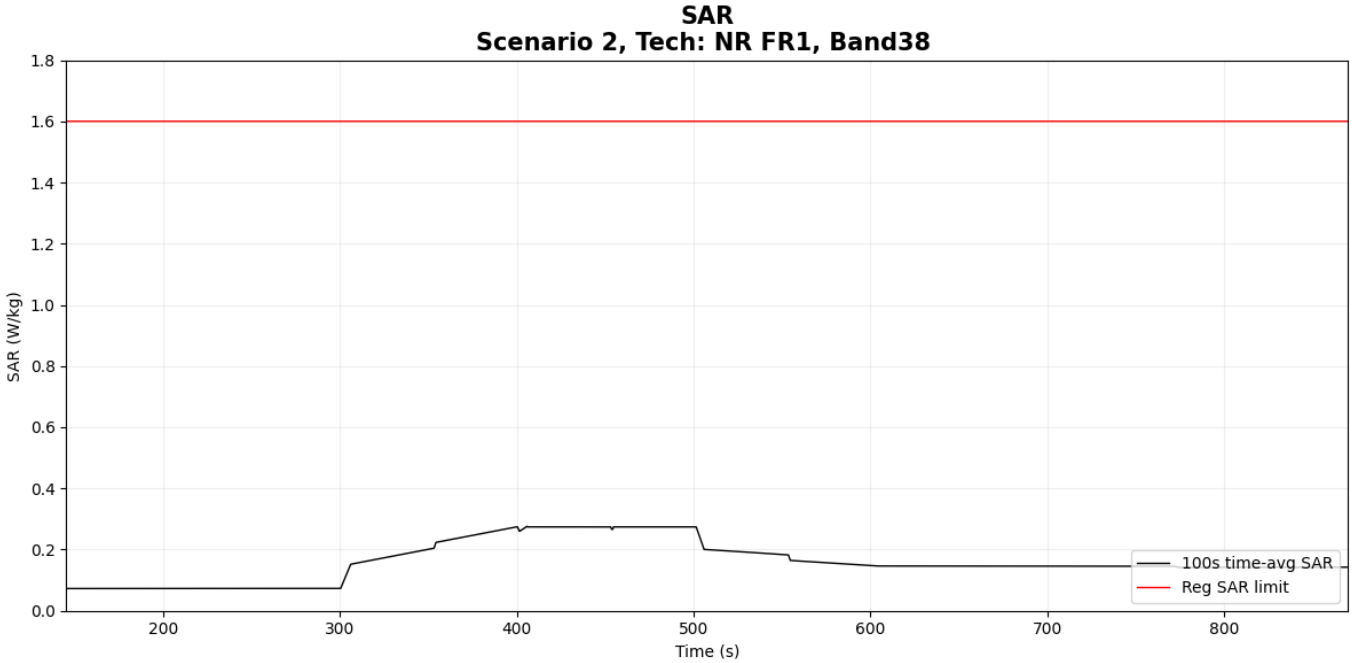

Figure 6-7 Time-averaged SAR for case 8 (sub6 NR n38)

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

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- Case 15 in Table 6-4: NR n71 result for test sequence 2

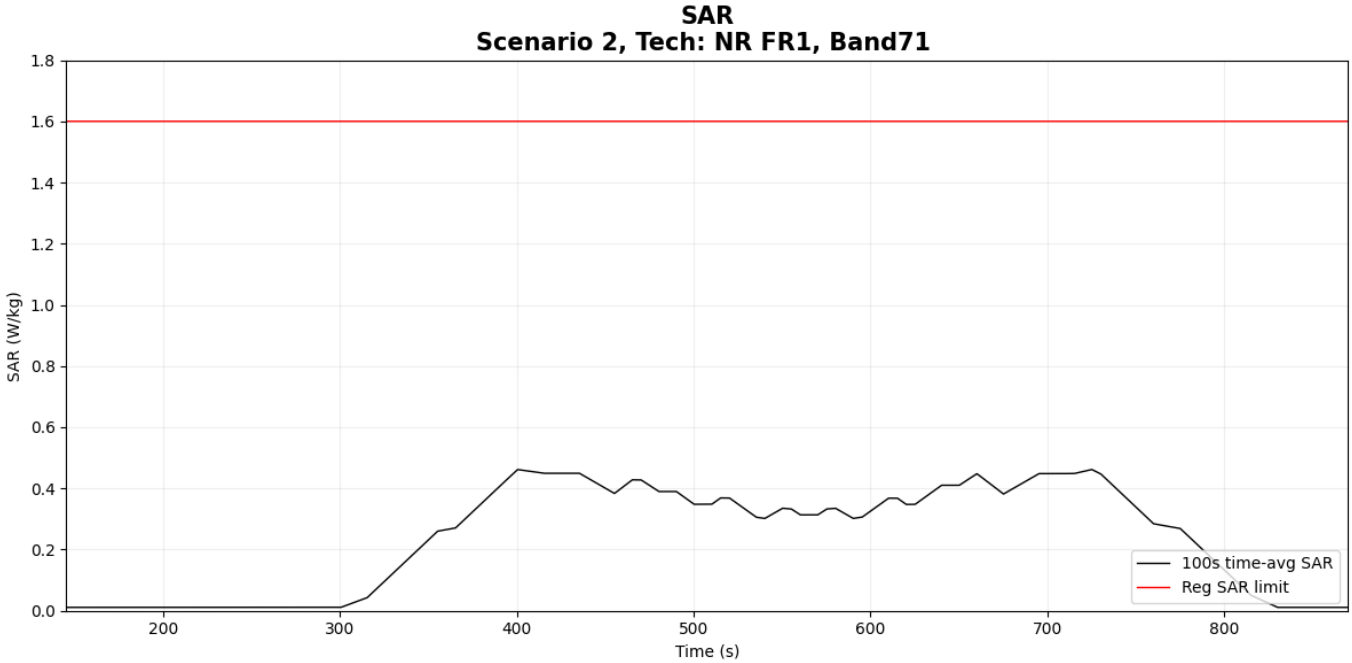

Figure 6-8 Time-averaged SAR for case 15 (sub6 NR n71)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.462 W/kg
Validation result: pass	

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- Case 16 in Table 6-4: NR n38 result for test sequence 2

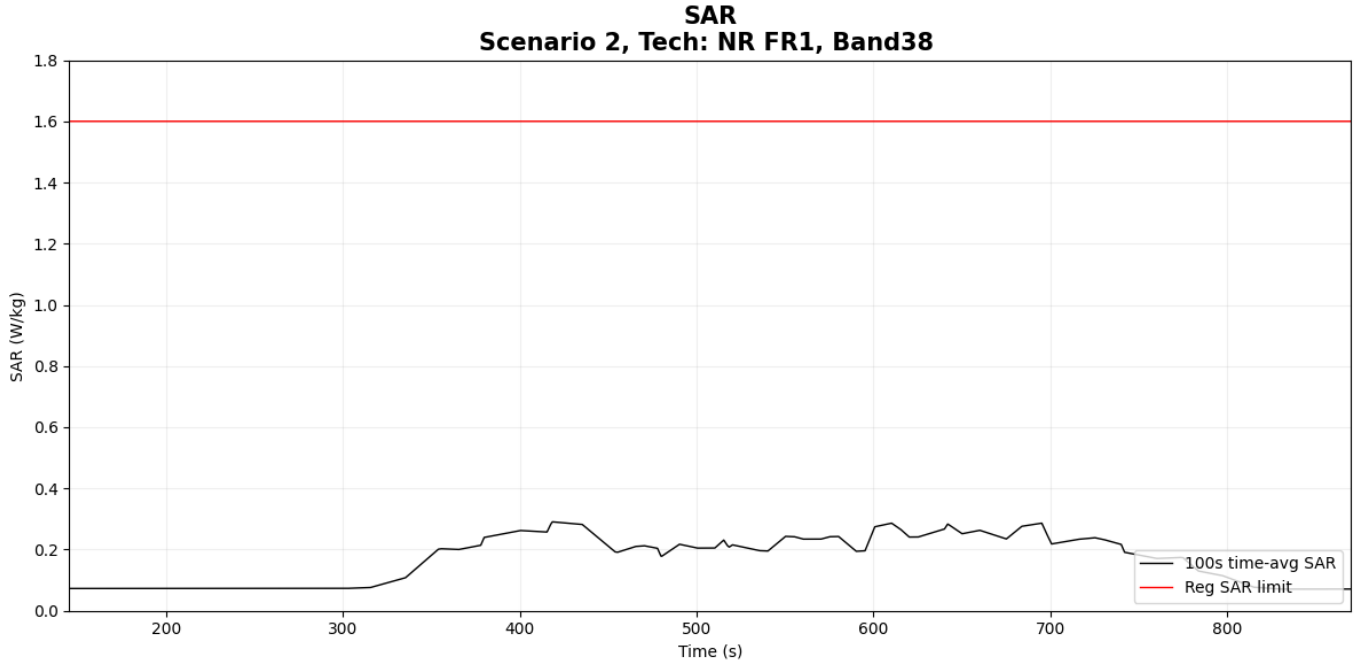

Figure 6-9 Time-averaged SAR for case 16 (sub6 NR n38)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.291 W/kg
Validation result: pass	

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6.3.2 Measurement results for LTE

These test cases are for 4G LTE and are conducted under LTE bands B5 and B41_PC3 with ECI = 3 and ECI = 5. The corresponding detailed test procedure is described in 5.3.2.

For each case, TX time-averaged power is converted into time-averaged SAR by using the equation listed in section 5.3.2. The figure illustrates the corresponding time-averaged SAR. For all test cases, the time-averaged SAR is below the compliance limit.

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- Case 5 in Table 6-4: LTE B5 result for test sequence 1

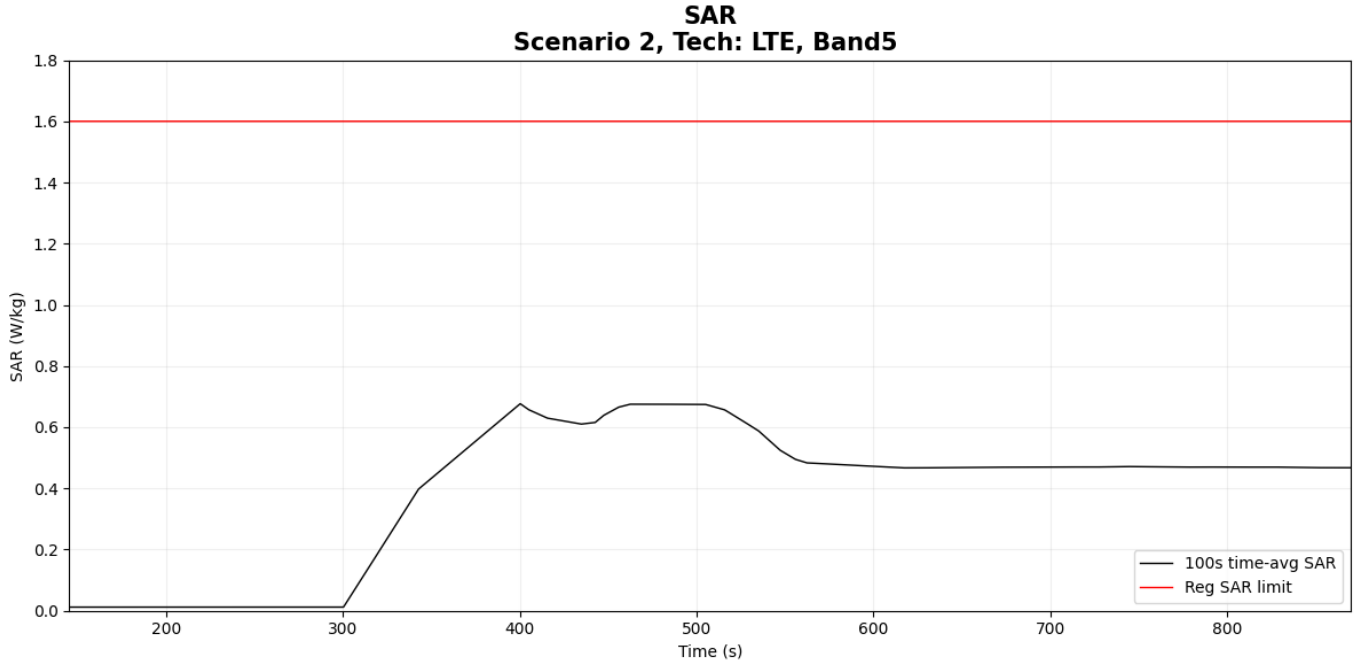

Figure 6-10 Time-averaged SAR for case 5 (LTE B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.677 W/kg
Validation result: pass	

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- Case 6 in Table 6-4: LTE B41_PC3 result for test sequence 1

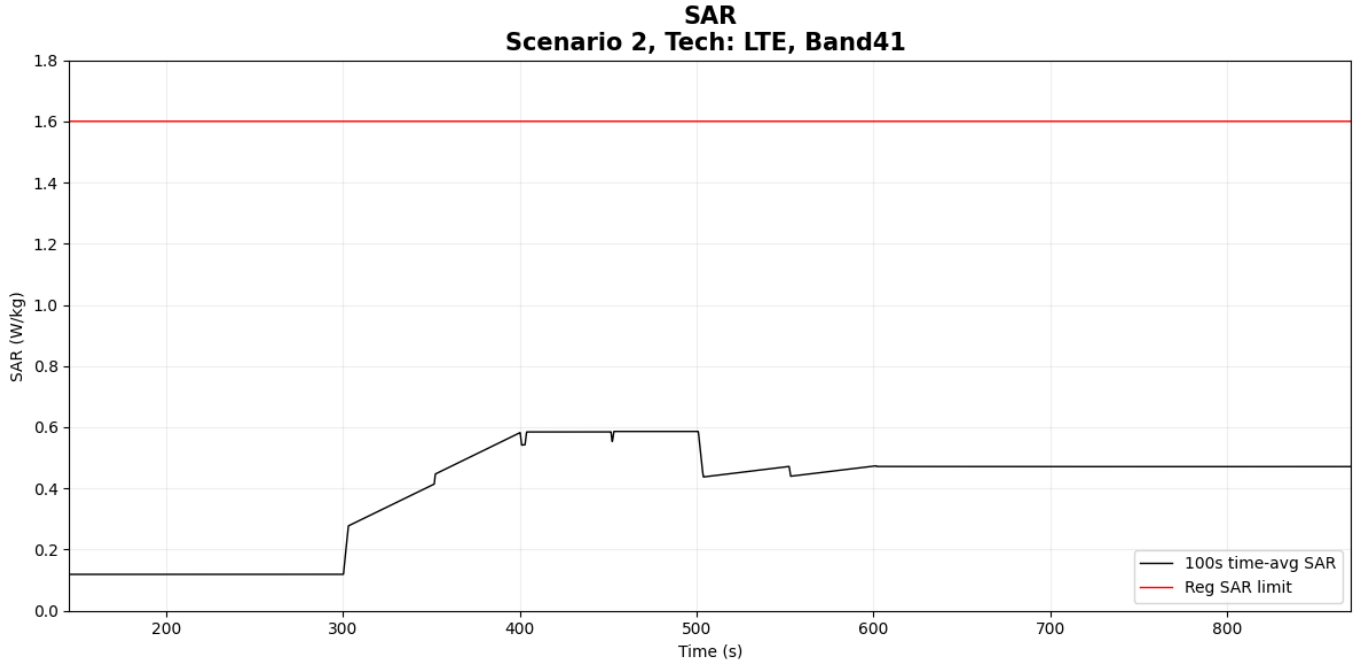

Figure 6-11 Time-averaged SAR for case 6 (LTE B41_PC3)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.586 W/kg
Validation result: pass	

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- Case 13 in Table 6-4: LTE B5 result for test sequence 2

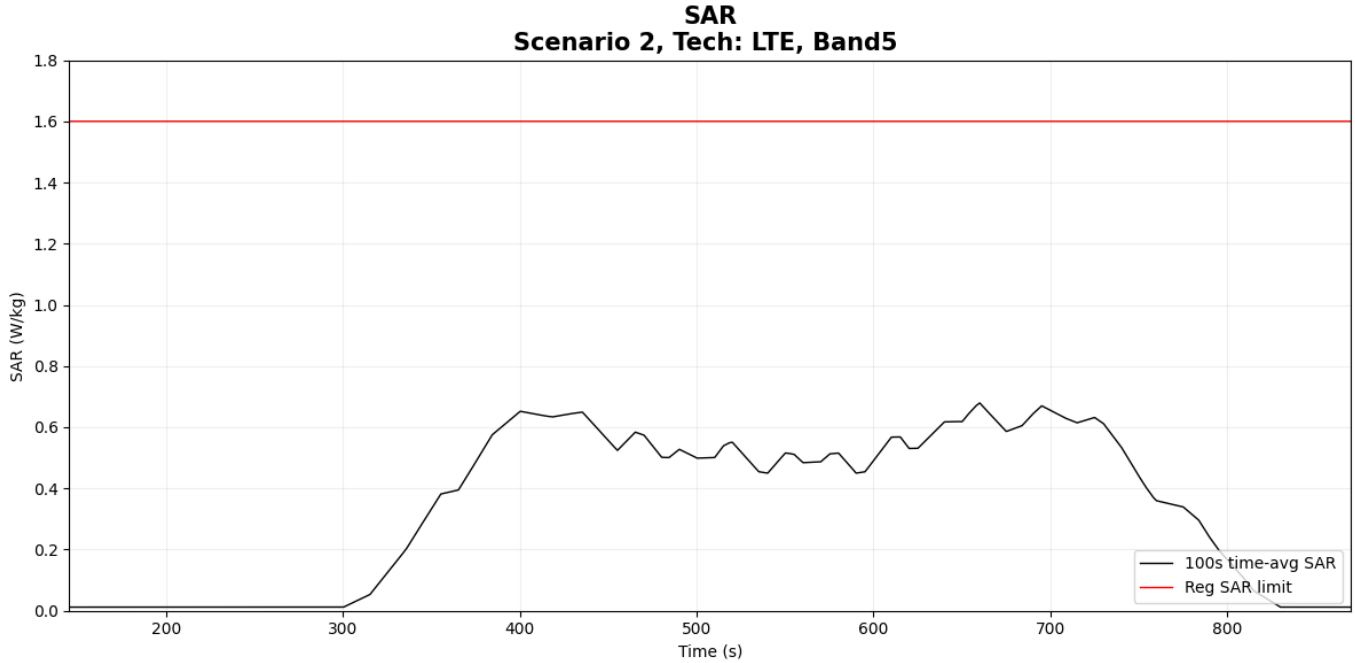

Figure 6-12 Time-averaged SAR for case 13 (LTE B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.679 W/kg
Validation result: pass	

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- Case 14 in Table 6-4: LTE B41_PC3 result for test sequence 2

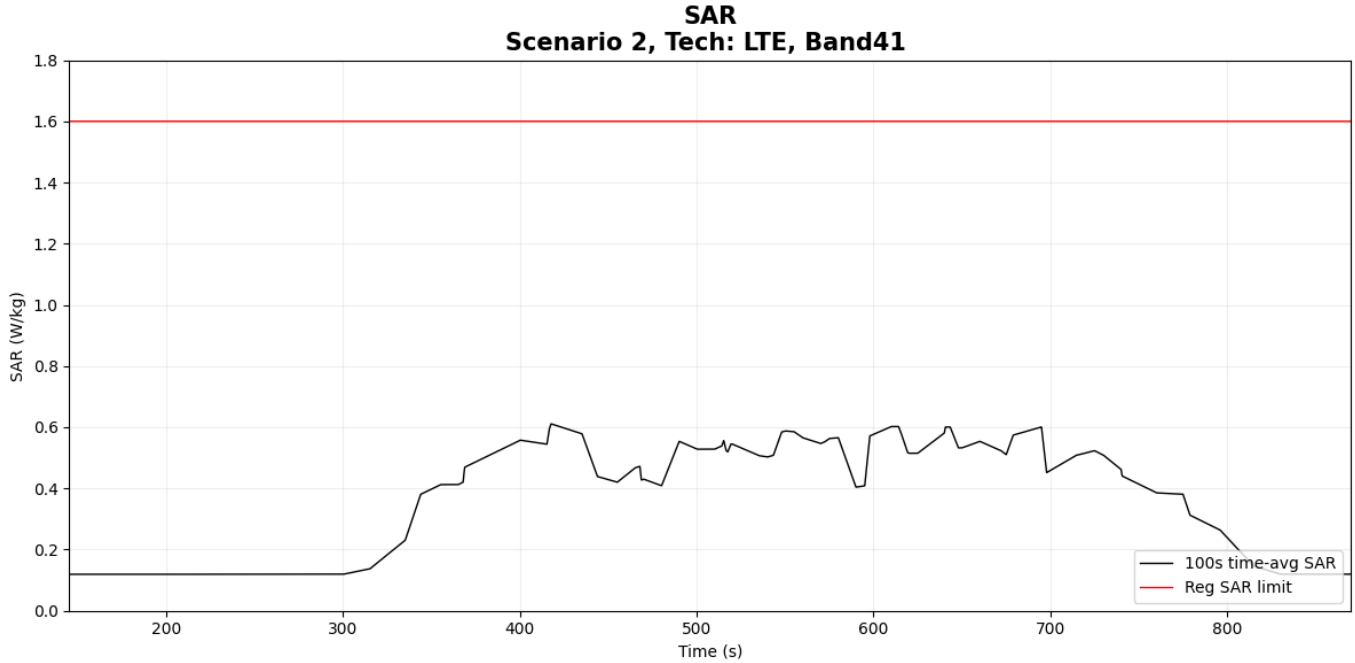

Figure 6-13 Time-averaged SAR for case 14 (LTE B41_PC3)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.611 W/kg
Validation result: pass	

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6.3.3 Measurement results for WCDMA

These test cases are for 3G WCDMA and are conducted under WCDMA bands B5 and B2 with ECI = 3 and ECI = 5. The corresponding detailed test procedure is described in 5.3.2.

For each case, TX time-averaged power is converted into time-averaged SAR by using the equation listed in section 5.3.2. The figure illustrates the corresponding time-averaged SAR. For all test cases, the time-averaged SAR is below the compliance limit.

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- Case 3 in Table 6-4: WCDMA B5 result for test sequence 1

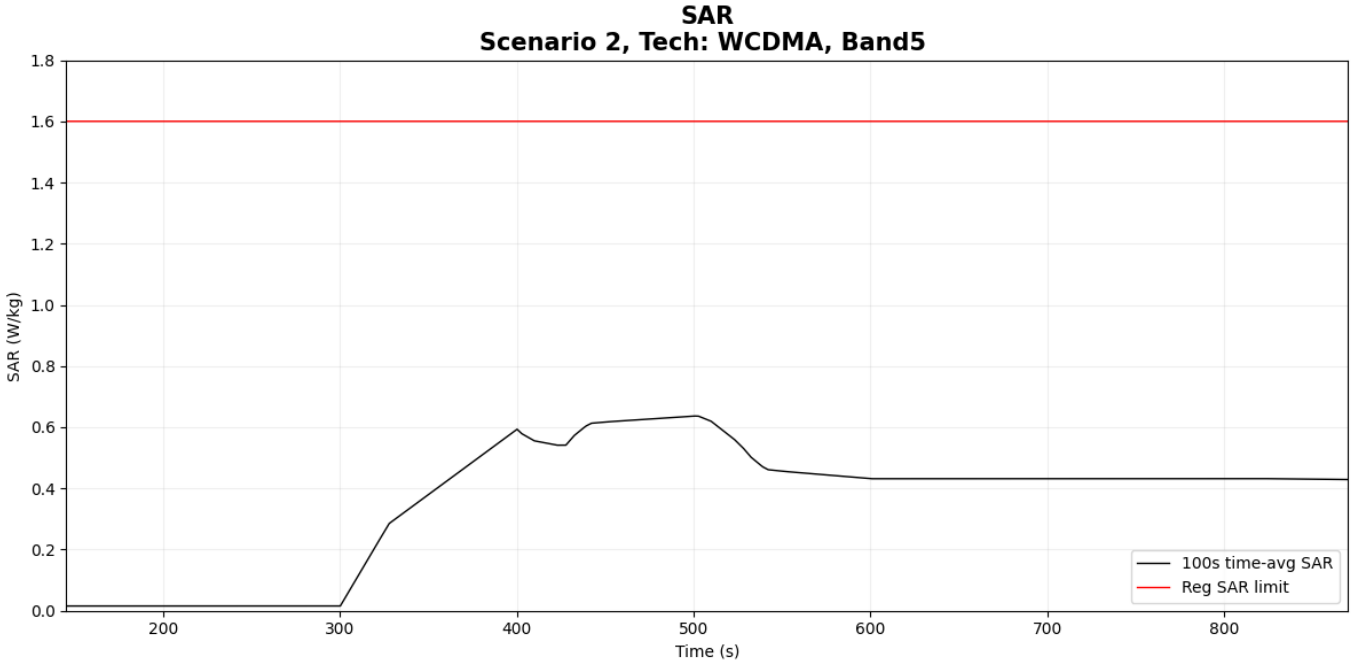

Figure 6-14 Time-averaged SAR for case 3 (WCDMA B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.637 W/kg
Validation result: pass	

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- Case 4 in Table 6-4: WCDMA B2 result for test sequence 1

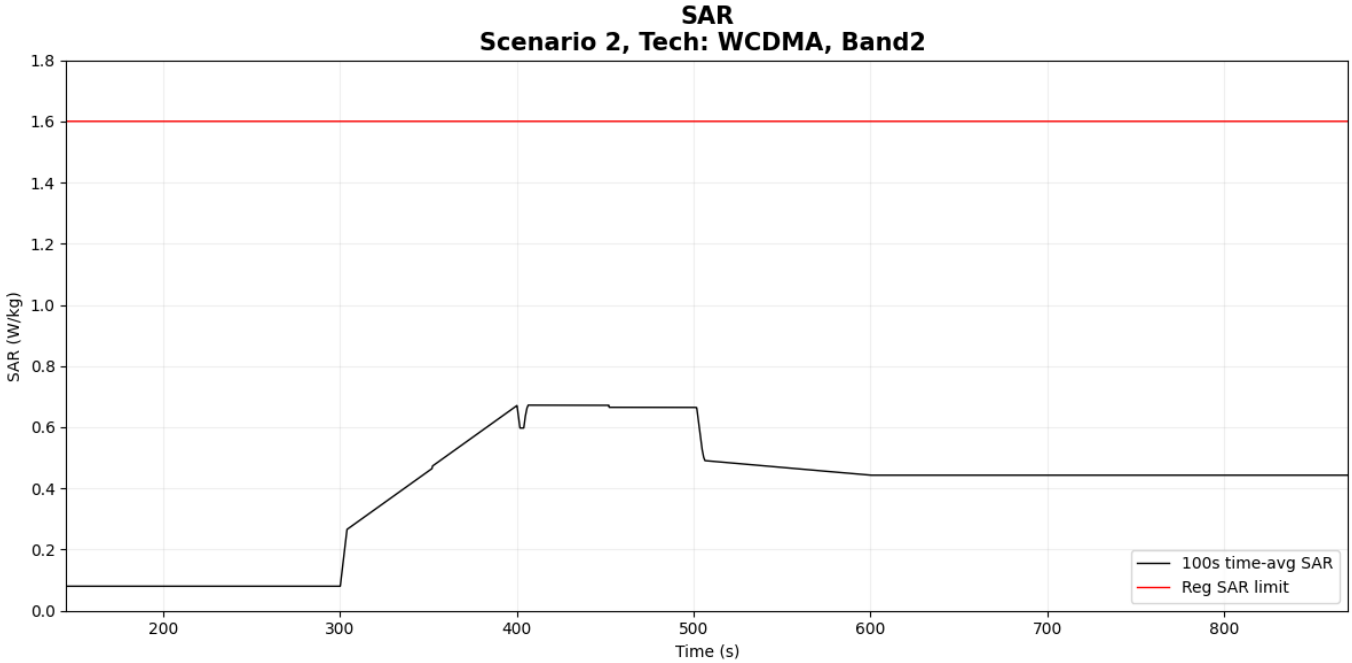

Figure 6-15 Time-averaged SAR for case 4 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.672 W/kg
Validation result: pass	

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- Case 11 in Table 6-4: WCDMA B5 result for test sequence 2

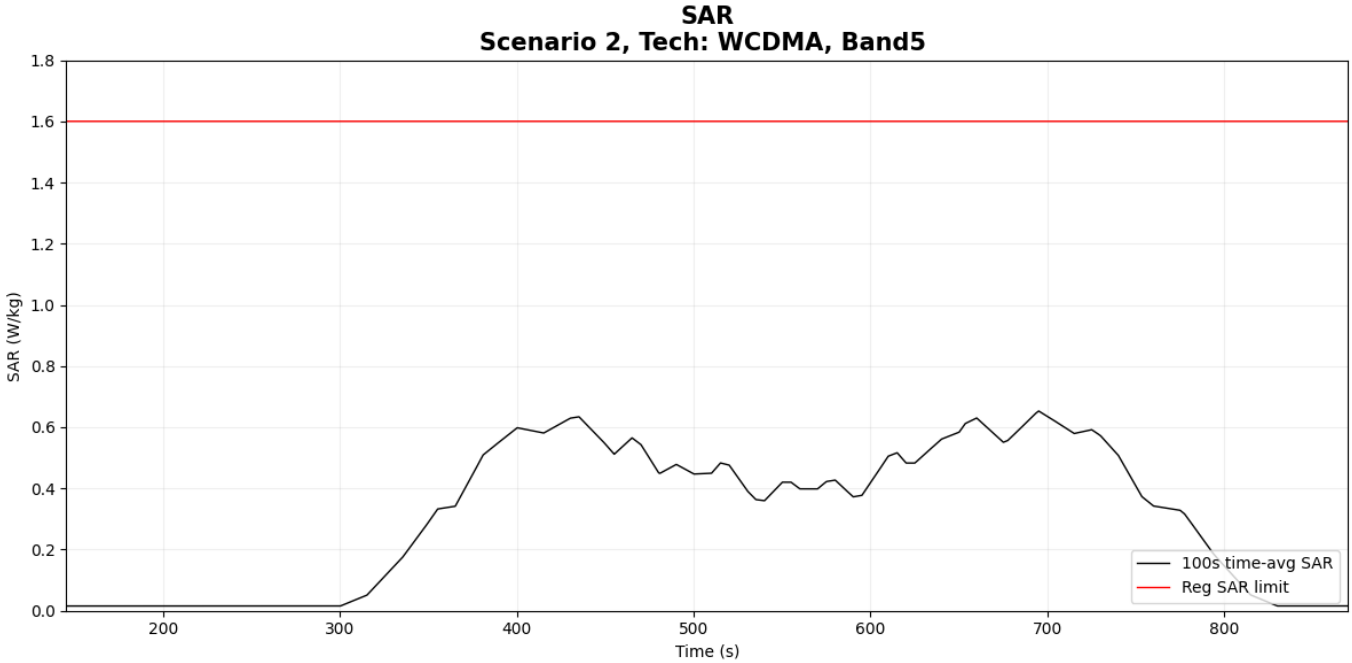

Figure 6-16 Time-averaged SAR for case 11 (WCDMA B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.653 W/kg
Validation result: pass	

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- Case 12 in Table 6-4: WCDMA B2 result for test sequence 2

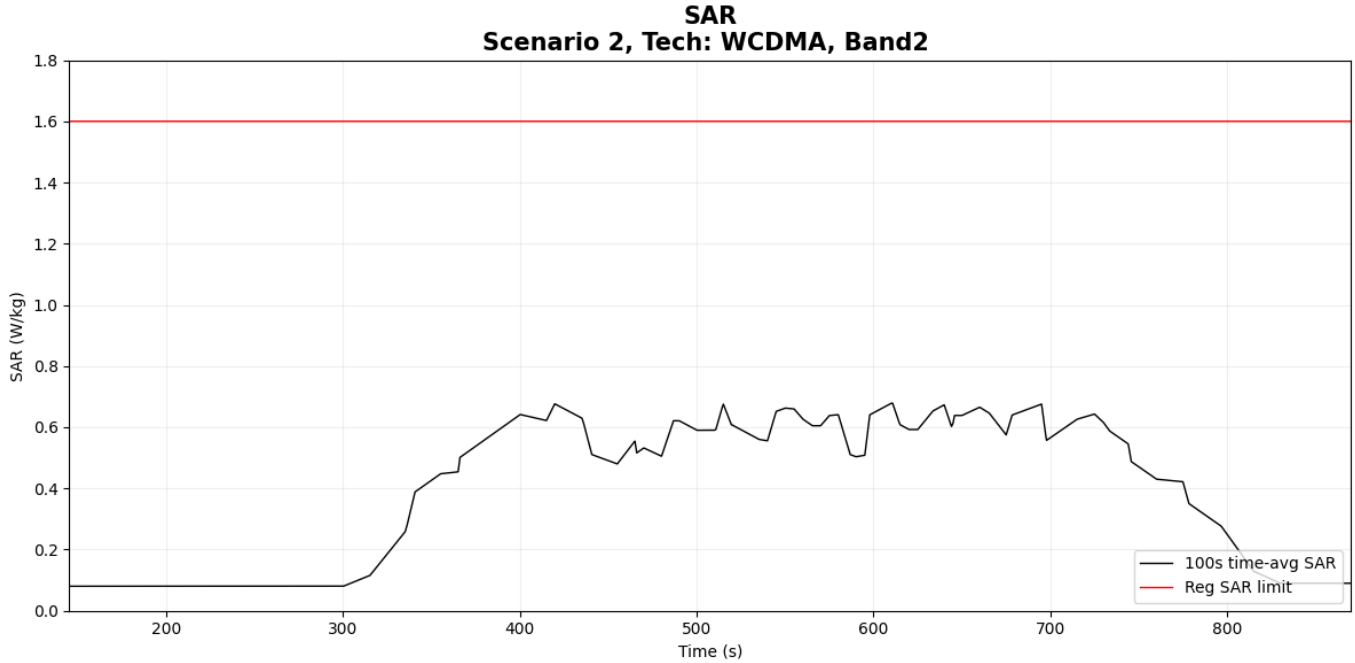

Figure 6-17 Time-averaged SAR for case 12 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.679 W/kg
Validation result: pass	

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6.3.4 Measurement results for 2G

These test cases are for 2G GPRS and are conducted under GPRS band 850 4TX and band 1900 3TX with ECI = 3 and ECI = 1. The corresponding detailed test procedure is described in 5.3.2.

For each case, TX time-averaged power is converted into time-averaged SAR by using the equation listed in section 5.3.2. The figure illustrates the corresponding time-averaged SAR. For all test cases, the time-averaged SAR is below the compliance limit.

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- Case 1 in Table 6-4: GPRS 850 2TS result for test sequence 1

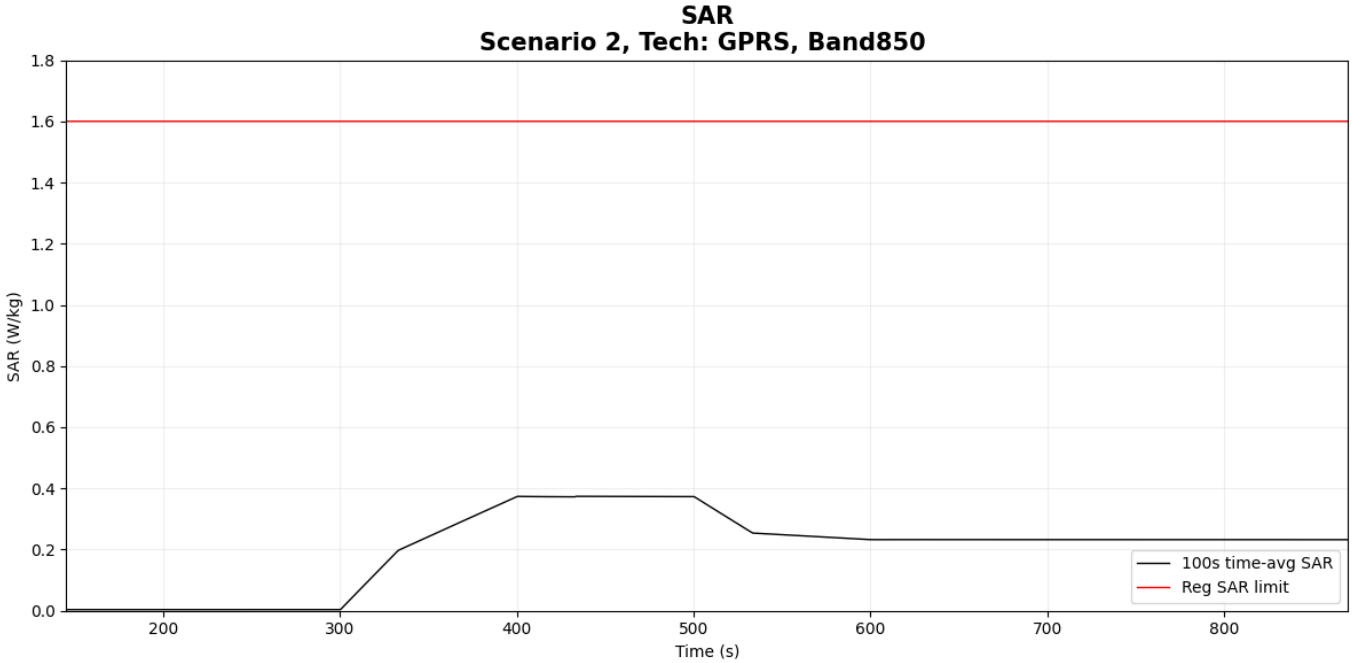

Figure 6-18 Time-averaged SAR for case 1 (GPRS 850 2TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.374 W/kg
Validation result: pass	

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- Case 2 in Table 6-4: GPRS 1900 3TS result for test sequence 1

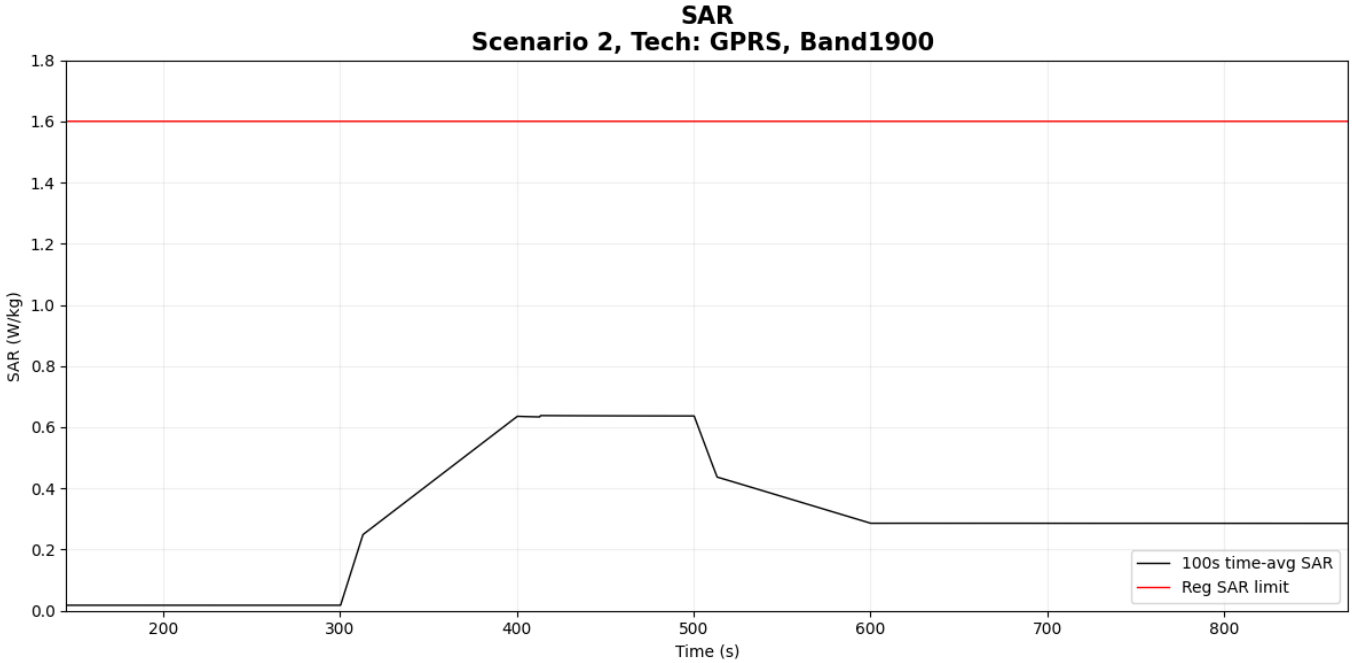

Figure 6-19 Time-averaged SAR for case 2 (GPRS 1900 3TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.638 W/kg
Validation result: pass	

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- Case 9 in Table 6-4: GPRS 850 2TS result for test sequence 2

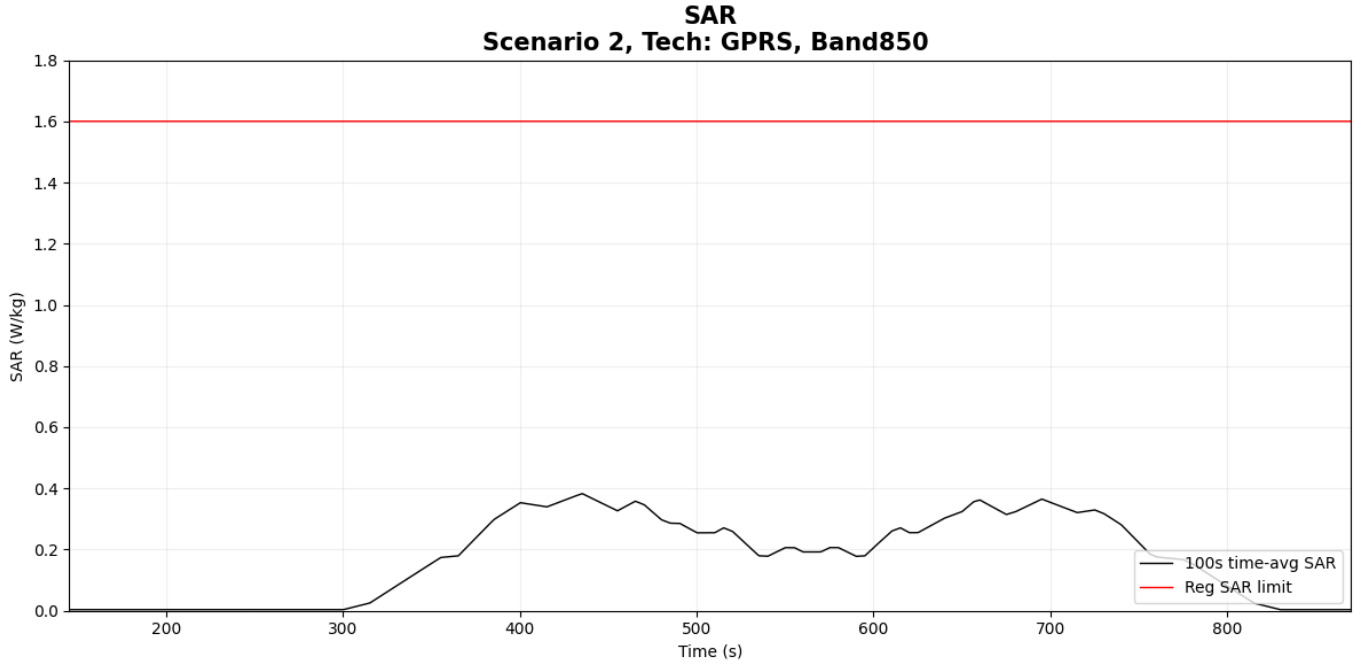

Figure 6-20 Time-averaged SAR for case 9 (GPRS 850 2TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.383 W/kg
Validation result: pass	

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- Case 10 in Table 6-4: GPRS 1900 3TS result for test sequence 2

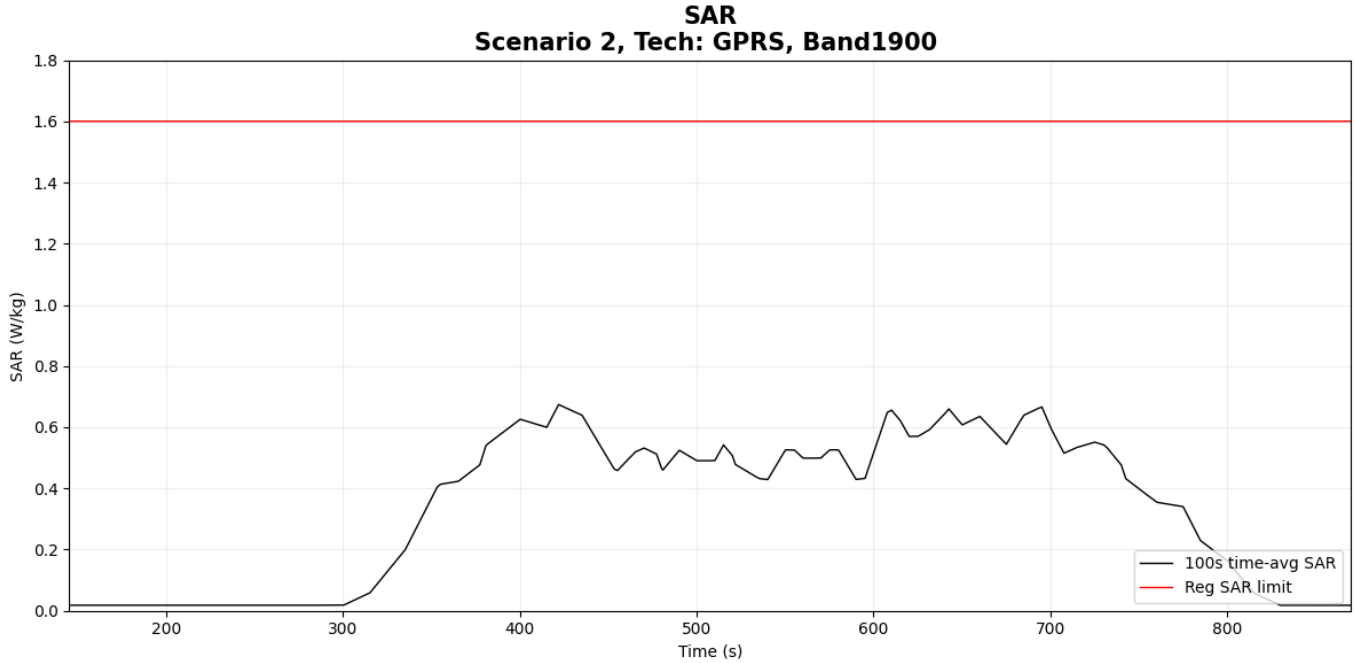

Figure 6-21 Time-averaged SAR for case 10 (GPRS 1900 3TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.573 W/kg
Validation result: pass	

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

In this scenario, test sequence #0 (i.e., maximum TX power is requested by a call box) 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 6-5, and the test procedure follows section 5.4.2. The measurement setup is shown in Figure 6-1. 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 6-5 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)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
17	LTE	B41_PC3	0	5	4	23.70	14.20	12.20	23.70	Pass

This test is for LTE and is conducted under LTE band n41_PC3 with ECI = 5. The corresponding detailed test procedure is described in 5.4.2.
For this case, TX time-averaged power is converted into time-averaged SAR by using the equation listed in section 5.4.2. The figure illustrates the corresponding time-averaged SAR. For all test cases, the time-averaged SAR is below the compliance limit.

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- Case 17 in Table 6-5: call drop happens at the time instance of 500 seconds.

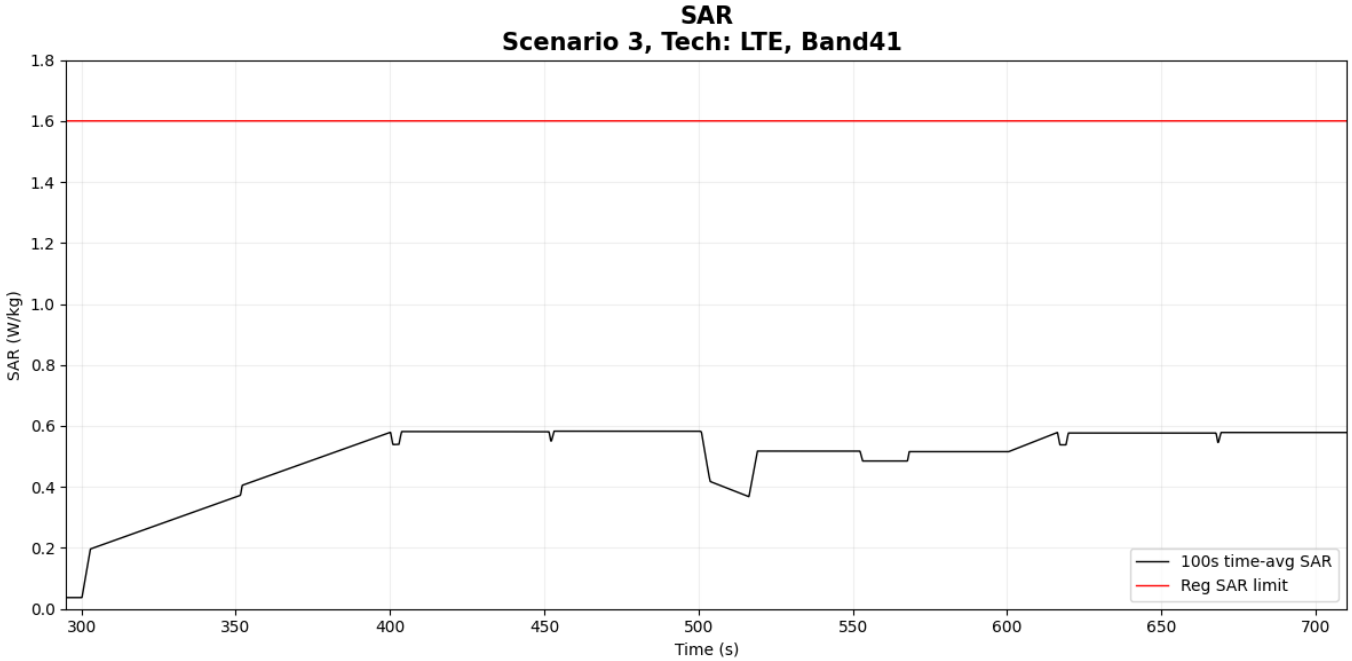

Figure 6-22 Time-averaged SAR for case 17 (LTE B41_PC3)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.583 W/kg
Validation result: pass	

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6.5 Conducted Power Measurement Results for Scenario 4: Band Handover

In this scenario, test sequence #0 (i.e., maximum TX power is requested by a call box for each band) is used, and band (and RAT) handover is manually configured at a specific time instance. The test case widely covers handover scenarios between two RATs. The test case for this scenario is relegated in Table 6-6, and the test procedure follows section 5.5.2. The measurement setup is shown in Figure 6-3 (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 6-6 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)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
18	LTE	B41_PC3	0	5	4	23.70	14.20	12.20	23.70	Pass
	WCDMA	B5	0	5	4	23.70	20.70	18.70	23.70	

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6.5.1 Measurement results for test case 18

This test aims to validate the TA-SAR Gen2 algorithm with a handover from LTE band B41_PC3 to WCDMA band B5 and ECI = 5, and the handover is configured at the time instance of 500 seconds.

The corresponding detailed test procedure is described in 5.5.2.

For this case, TX time-averaged power results are converted into normalized time-averaged SAR by using the equation listed in section 5.5.2. The figure illustrates the corresponding normalized time- averaged SAR, as well as total normalized time-averaged SAR. As seen in the figure, the total normalized time-averaged SAR is below the compliance limit.

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- Case 18 in Table 6-6: band handover happens at the time instance of 500 seconds.

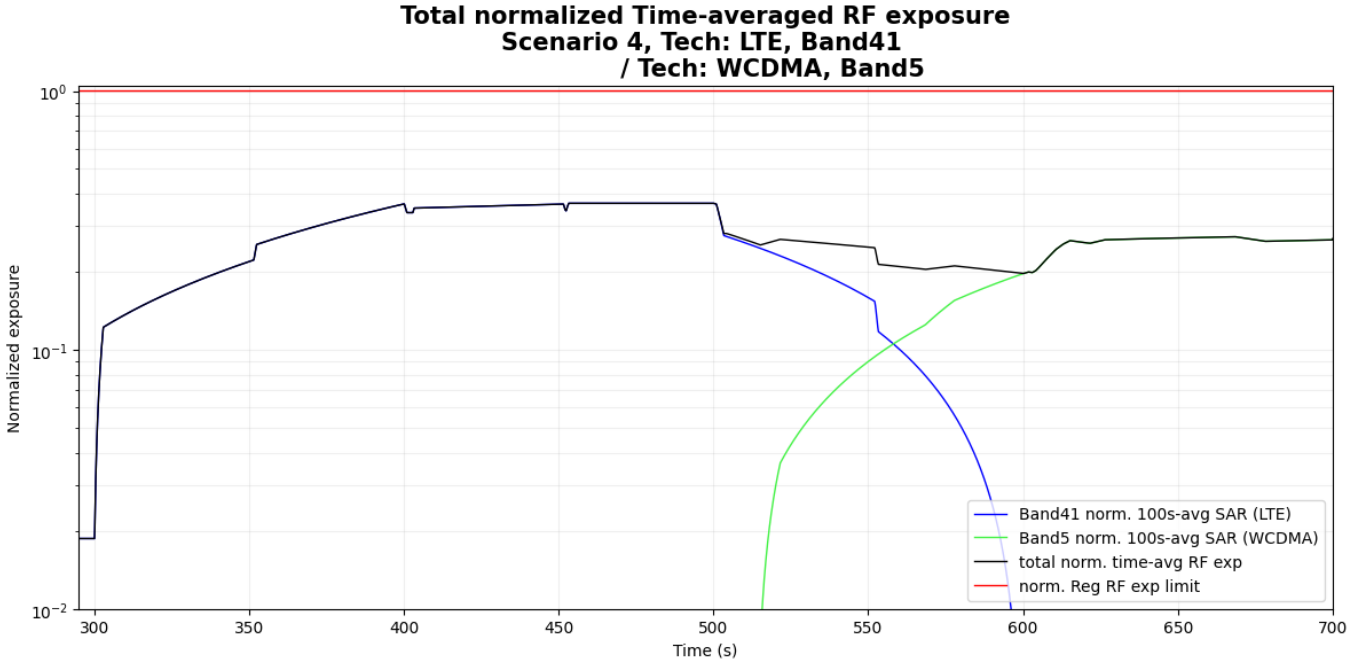

Figure 6-23 Normalized time-averaged SAR for case 18 (LTE B41_PC3, WCDMA B5)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.369
Validation result: pass	

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6.6 Conducted Power Measurement Results for Scenario 5: ECI Change

In this scenario, test sequence #0 (i.e., maximum TX power is requested by a call box) 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 6-7, and the test procedure follows section 5.6.2. The measurement setup is shown in Figure 6-1. 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 6-7 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)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
19	LTE	B41_PC3	0	5	4	23.70	14.20	12.20	23.70	Pass
				3	4		15.20	13.20	23.70	

This test aims to validate the TA-SAR Gen2 algorithm with ECI change from LTE band B41_PC3 with ECI = 5 to ECI = 3. The corresponding detailed test procedure is described in 5.6.2. During the test period, there are two ECI change events configured individually at the time instances 500 seconds and 700 seconds. The 1st change is from ECI = 5 to ECI = 3 and the 2nd change is from ECI = 3 back to ECI = 5.
For this case, TX time-averaged power results are converted into normalized time-averaged SAR by using the equation listed in section 5.6.2. The figure illustrates the corresponding normalized time- averaged SAR, as well as the total normalized time-averaged SAR. As seen in the figure, the total normalized time-averaged SAR is below the compliance limit.

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- Case 19 in Table 6-7: two ECI changes happen at the time instances of 500 and 700 seconds, respectively.

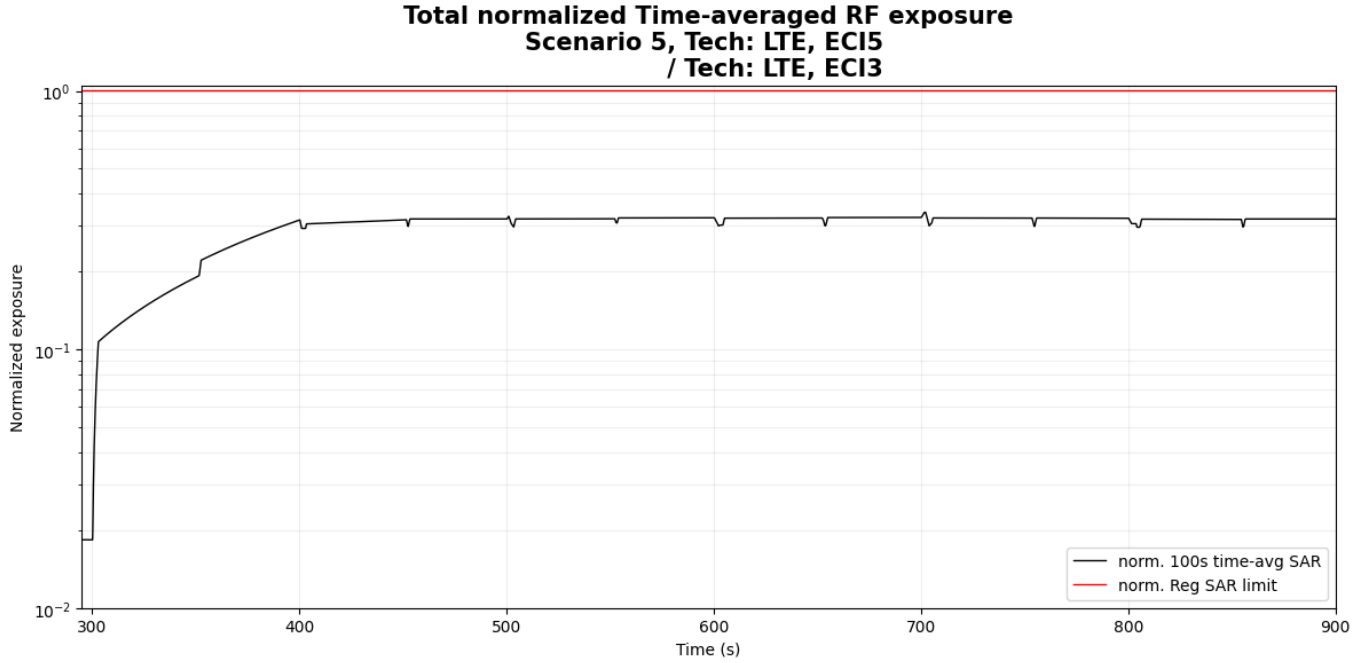

Figure 6-24 Normalized time-averaged SAR for case 19 (LTE B41_PC3)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.339
Validation result: pass	

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6.7 Conducted Power Measurement Results for Scenario 6: Antenna Switching

In this scenario, test sequence #0 (i.e., maximum TX power is requested by a call box) is used, and antenna change at the EUT side is manually configured at a specific time instance. The test case for this scenario is relegated in Table 6-8, and the test procedure follows section 5.7.2. The measurement setup is shown in Figure 6-2. 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 sections will demonstrate how Mediatek's TA-SAR Gen2 algorithm behaves.

Table 6-8 TA-SAR Gen2 parameters setting for scenario 6

Test case	RAT	Test band	Test seq.	ECI	ANT	Level_num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
20	LTE	B41_PC3	0	3	#2	4	24.20	20.70	18.70	24.20	Pass
					#1	4	23.70	15.20	13.20	23.70	

This test aims to validate the TA-SAR Gen2 algorithm with antenna change during the test period for LTE band B41_PC3 with ECI = 3. The corresponding detailed test procedure is described in 5.7.2. During the test period, there are two antenna change events configured individually at the time instances 500 seconds and 700 seconds. The 1st change is from ANT #2 to ANT #1 and the 2nd change is from ANT #1 back to ANT #2.

For this case, TX time-averaged power results are converted into normalized time-averaged SAR by using the equation listed in section 5.7.2. The figure illustrates the corresponding normalized time- averaged SAR, as well as the total normalized time-averaged SAR. As seen in the figure, the total normalized time-averaged SAR is below the compliance limit.

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- Case 20 in Table 6-8: ANT switching happens at the time instances of 500 and 700 seconds.

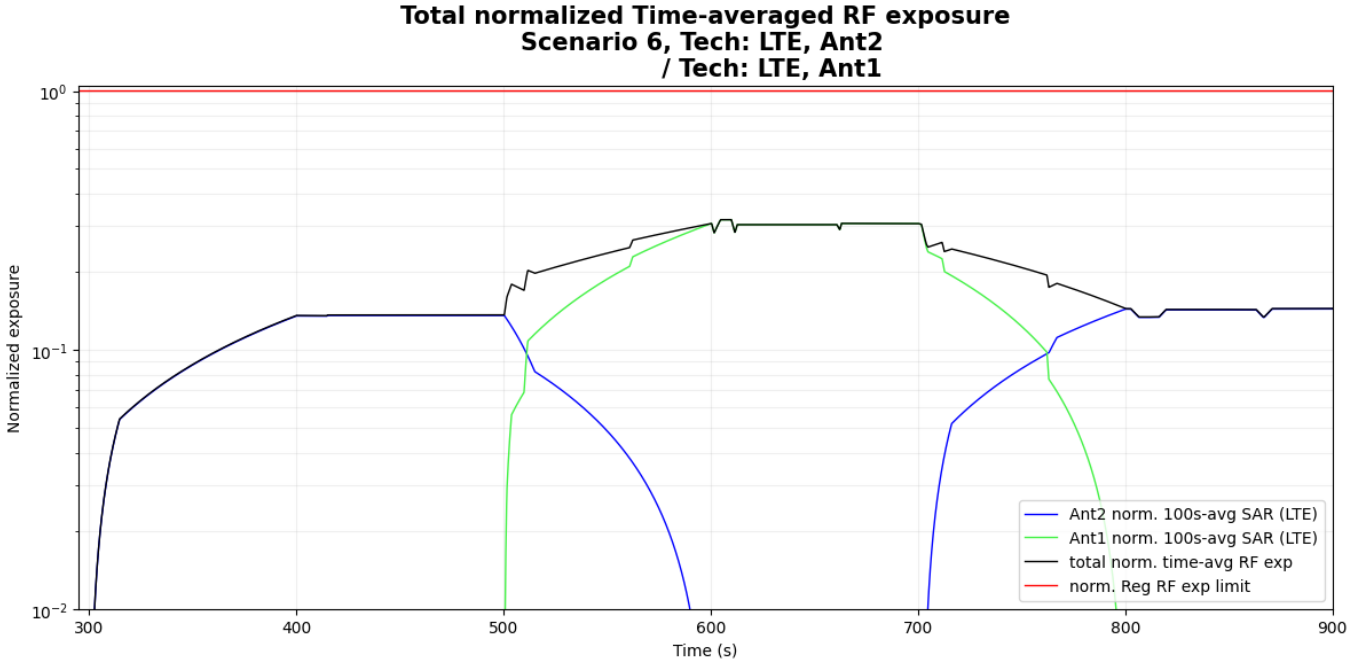

Figure 6-25 Normalized time-averaged SAR for case 20 (LTE B41_PC3)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.318
Validation result: pass	

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

In this scenario, test sequence #0 (i.e., maximum TX power is requested by a call box for each band) 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 the existence of moving average time window changes. The two test cases for this scenario are relegated in Table 6-9, and the test procedure follows section 5.8.2. The measurement setup is shown in Figure 6-2. 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 for all the cases. The following sections will demonstrate how Mediatek's TA-SAR Gen2 algorithm behaves.

Table 6-9 TA-SAR Gen2 parameters setting for scenario 7

Test case	RAT	Test band	Test seq.	ECI	SAR time window	Level _num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
21	LTE	B48	0	3	60s	4	23.50	17.50	15.50	23.50	Pass
	LTE	B41_PC3	0	3	100s	4	23.70	15.20	13.20	23.70	
22	LTE	B41_PC3	0	3	100s	4	23.70	15.20	13.20	23.70	Pass
	LTE	B48	0	3	60s	4	23.50	17.50	15.50	23.50	

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6.8.1 Measurement results for test case 21

This test case is conducted for LTE band B48 and B41_PC3 with ECI = 3. The corresponding detailed test procedure is described in 5.8.2. During the test period, there are two band handover events configured individually at the time instances 500 seconds and 620 seconds. The 1st handover is from B48 to B41_PC3 and the 2nd handover is from B41_PC3 back to B48. For this case, TX time-averaged power results are converted into normalized time-averaged SAR by using the equation listed in section 5.8.2. The figure illustrates the corresponding normalized time- averaged SAR, as well as the total normalized time-averaged SAR. As seen in the figure, the total normalized time-averaged SAR is below the compliance limit.

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- Case 21 in Table 6-9: band handover happens at the time instances of 500 and 620 seconds.

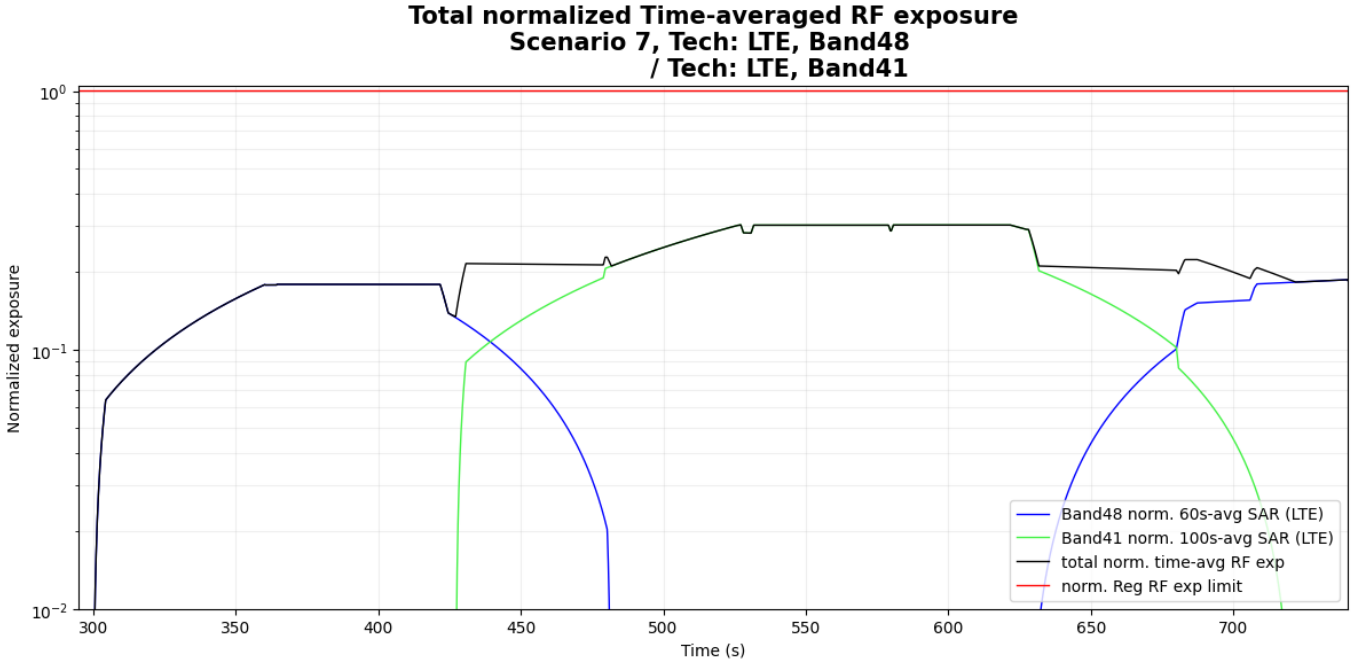

Figure 6-26 Normalized time-averaged SAR for case 21 (LTE B48 and B41_PC3)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.304
Validation result: pass	

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6.8.2 Measurement results for test case 22

This test case is conducted for LTE band B41_PC3 and B48 with ECI = 3. The corresponding detailed test procedure is described in 5.8.2. During the test period, there are two band handover events configured individually at the time instances 500 seconds and 620 seconds. The 1st handover is from B41_PC3 to B48 and the 2nd handover is from B48 back to B41_PC3. For this case, TX time-averaged power results are converted into normalized time-averaged SAR by using the equation listed in section 5.8.2. The figure illustrates the corresponding normalized time- averaged SAR, as well as the total normalized time-averaged SAR. As seen in the figure, the total normalized time-averaged SAR is below the compliance limit.

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- Case 22 in Table 6-9: band handover happens at the time instances of 420 and 620 seconds.

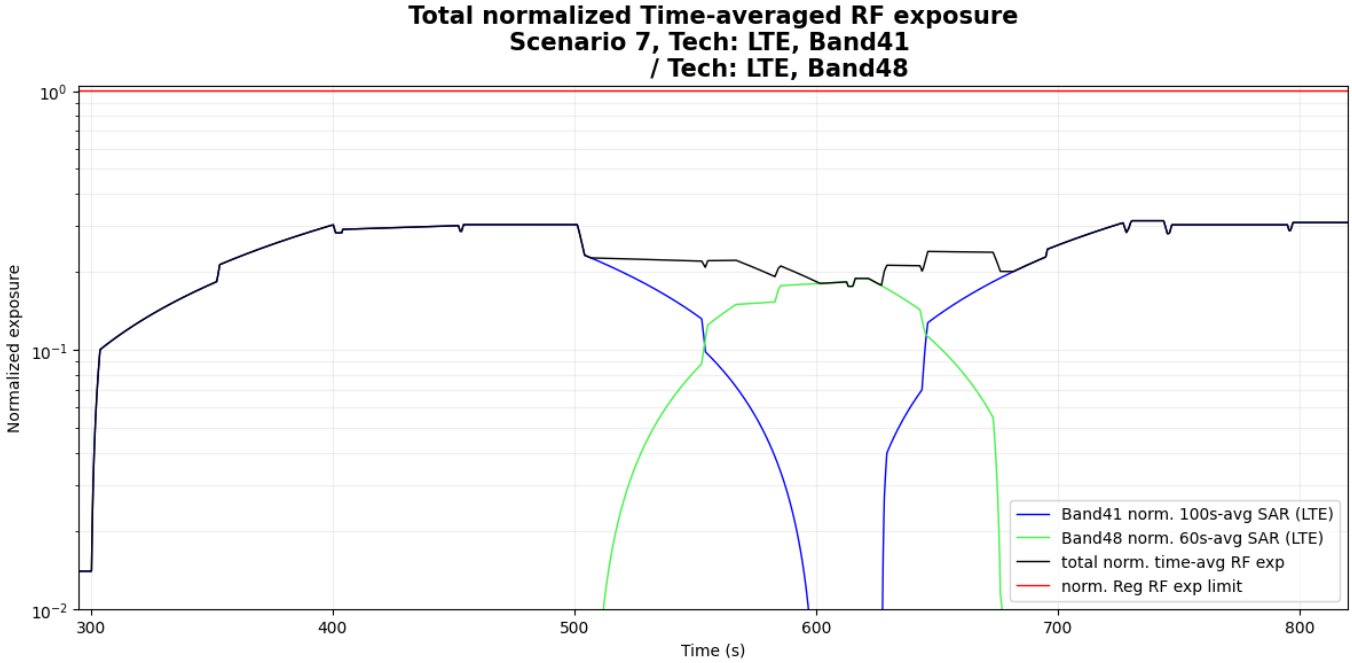

Figure 6-27 Normalized time-averaged SAR for case 22 (LTE B41_PC3 and B48)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.315
Validation result: pass	

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6.9 Conducted Power Measurement Results for Scenario 8: SAR Exposure Switching

In this scenario, test sequence #0 (i.e., maximum TX power is requested by a call box for each band) is used, and radio set 1 and radio set 2 are turned on at the same time for a pre-defined period during the test. This scenario aims to validate whether the TA-SAR Gen2 algorithm is able to maintain TER below the FCC limit when the two radio sets change TX power dynamically. The experiment parameters are summarized in Table 6-11, and the test procedure follows section 5.9.2. The measurement setups of 26, 27 are shown in Figure 6-3,.

Table 6-10 TA-SAR Gen2 parameters setting for scenario 8

Test case	RAT	Test band	Test seq.	ECI	SAR time window	ANT	Level _num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
23 (2 ANT)	LTE (Radio set 2)	B2	0	3	100s	#2	4	23.20	16.70	14.70	23.20	Pass
	NR (Radio set 1)	n7	0	3	100s	#1	4	23.10	13.60	11.60	23.10	

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6.9.1 Measurement results for test case 23

During the test period,

- Time = 300s~500s: radio set 1 (NR FR1 n7) dominant scenario.
- Time = 500s~700s: radio set 1 (NR FR1 n7) + radio set 2 (LTE B2)
- Time = 700s~900s: radio set 2 (LTE B2) dominant scenario.

For this case, TX time-averaged power results are converted into normalized time-averaged SAR by using the equation listed in section 5.9.2. The figure illustrates the corresponding normalized time- averaged SAR, as well as the total normalized time-averaged SAR. As seen in the figure, the total normalized time-averaged SAR is below the compliance limit.

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- Case 23 in Table 6-10

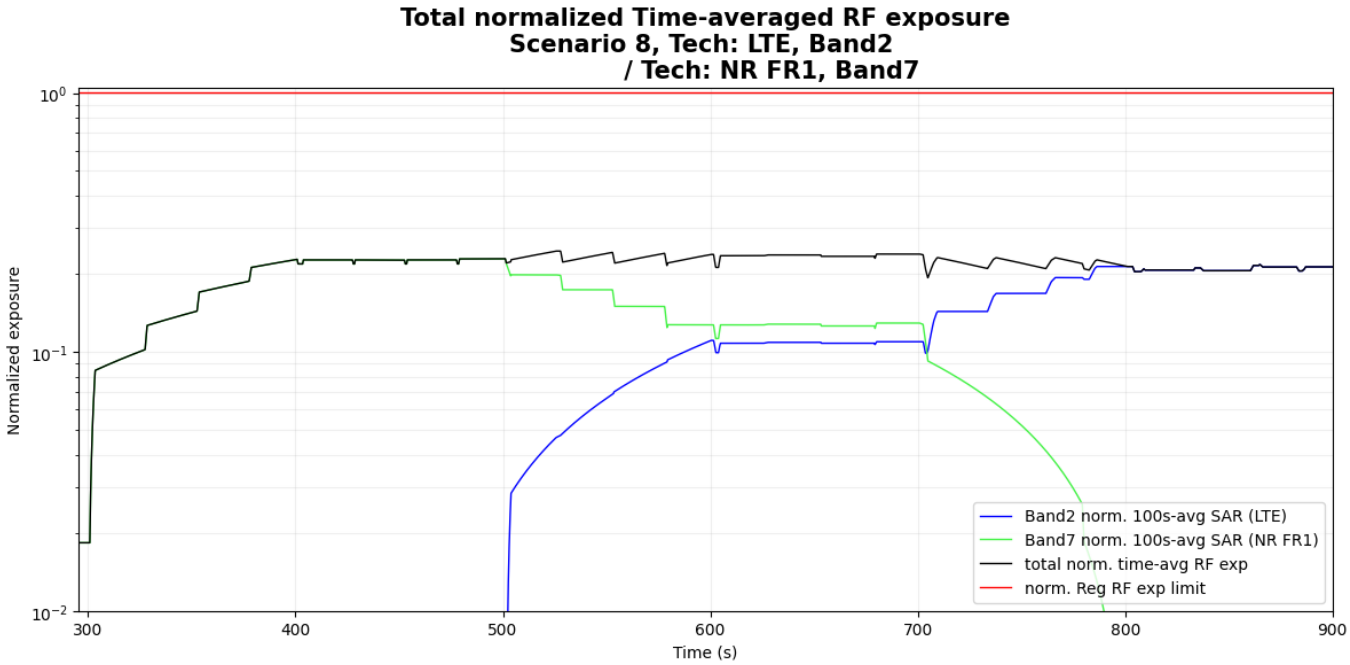

Figure 6-28 Normalized time-averaged SAR for case 23 (LTE B2, sub6 NR n7)

FCC limit of total RF exposure (normalized)	1.0
Max total normalized time-averaged RF exposure	0.245
Validation result: pass	

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7 TA-SAR GEN2 VALIDATION VIA SAR MEASUREMENTS

7.1 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 the 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 the call box antenna and the EUT is well calibrated. The test setup is illustrated in Figure 7-1.

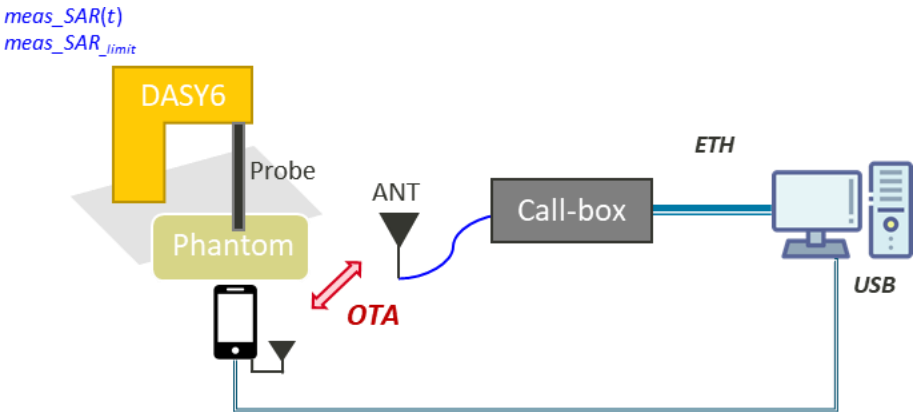

Figure 7-1 TA-SAR Gen2 wireless test environment

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7.2 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. Test sequence #1 is shown in section 4.1 and test sequence #2 is tabulated in Table 5-4. All of the test cases for this scenario are relegated in Table 8-1 and the test procedure follows section 4.10.2. The measurement setup is shown in Figure 7-1. 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 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 7-1 Operating parameters for different TA-SAR Gen2 parameters setting

Test case	RAT	Test band	Test seq.	ECI	Level_ num	Max power (dBm)	P_{sub6_limit} (dBm)	$P_{UE_backoff}$ (dBm)	$P_{UE_max_cust}$ (dBm)	Pass /Fail SAR limit
1	2G	GPRS 850 2TS	1	5	4	31.00	28.50	27.25	26.50	Pass
2	2G	GPRS 1900 3TS	1	5	4	25.50	22.00	20.75	20.00	Pass
3	WCDMA	B5	1	3	4	24.20	22.20	20.20	24.20	Pass
4	WCDMA	B2	1	5	4	23.70	15.70	13.70	23.70	Pass
5	LTE	B5	1	3	4	24.70	23.70	21.70	24.70	Pass
6	LTE	B41_PC3	1	5	4	23.70	14.20	12.20	23.70	Pass
7	FR1	n71	1	3	4	24.00	23.50	21.50	24.00	Pass
8	FR1	N38	1	3	4	23.10	12.60	10.60	22.60	Pass
9	2G	GPRS 850 2TS	2	5	4	31.00	28.50	27.25	26.50	Pass
10	2G	GPRS 1900 3TS	2	5	4	25.50	22.00	20.75	20.00	Pass
11	WCDMA	B5	2	3	4	24.20	22.20	20.20	24.20	Pass
12	WCDMA	B2	2	5	4	23.70	15.70	13.70	23.70	Pass
13	LTE	B5	2	3	4	24.70	23.70	21.70	24.70	Pass
14	LTE	B41_PC3	2	5	4	23.70	14.20	12.20	23.70	Pass
15	FR1	n71	2	3	4	24.00	23.50	21.50	24.00	Pass
16	FR1	N38	2	3	4	23.10	12.60	10.60	22.60	Pass

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7.2.1 SAR Measurement results for NR

- Case 7 in Table 7-1: NR n71 result for test sequence 1

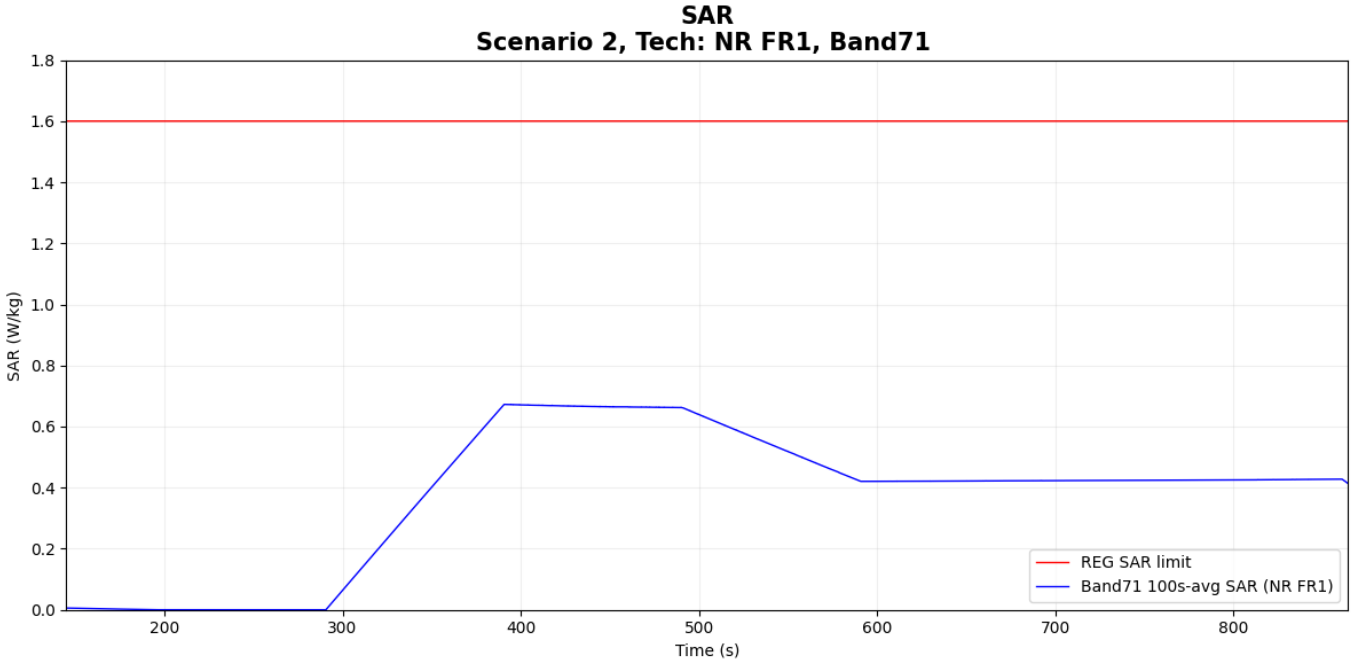

Figure 7-2 Time-averaged SAR for case 7 (sub6 NR n71)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.673 W/kg
Validation result: pass	

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- Case 8 in Table 7-1: NR n38 result for test sequence 1

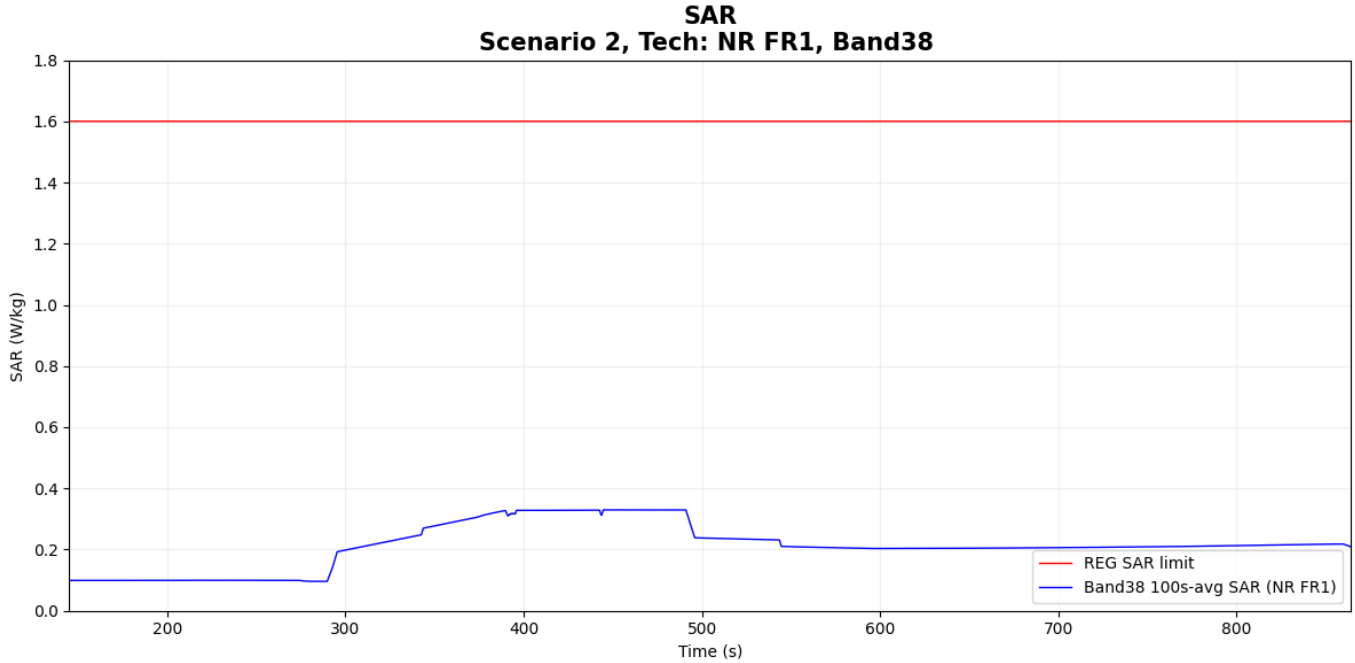

Figure 7-3 Time-averaged SAR for case 8 (sub6 NR n38)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.330 W/kg
Validation result: pass	

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- Case 15 in Table 7-1: NR n71 result for test sequence 2

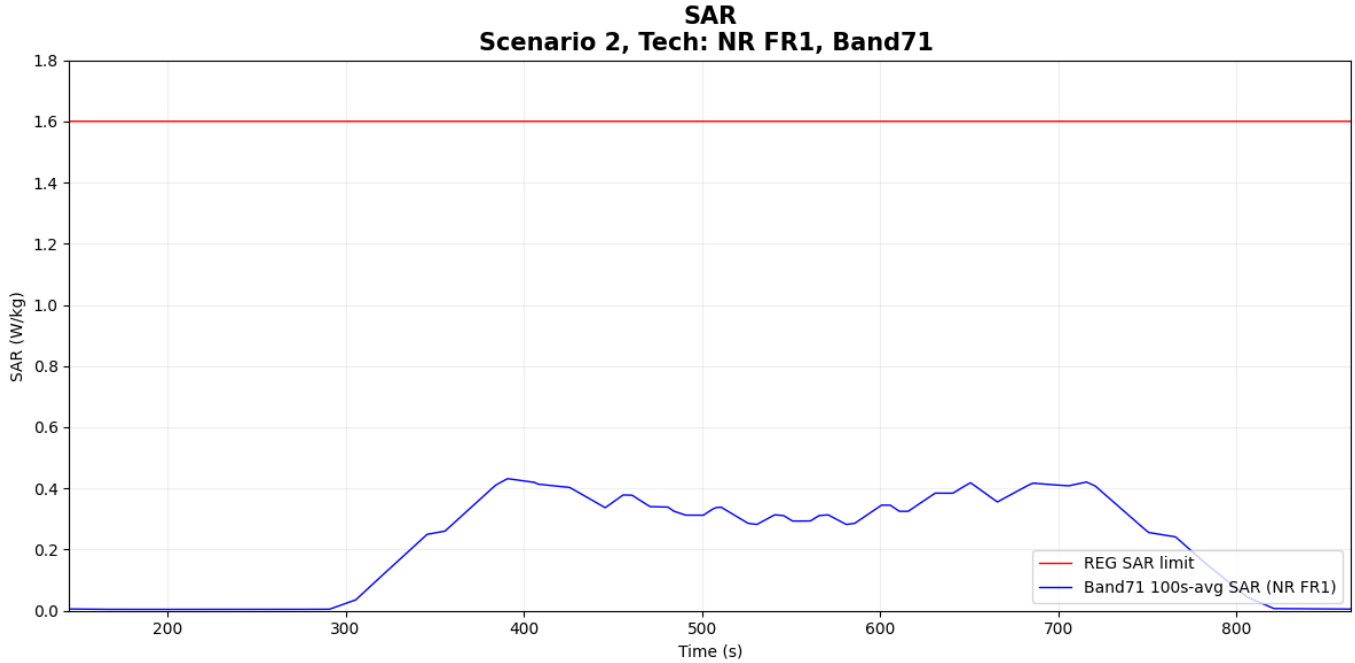

Figure 7-4 Time-averaged SAR for case 15 (sub6 NR n71)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.432 W/kg
Validation result: pass	

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- Case 16 in Table 7-1: NR n38 result for test sequence 2

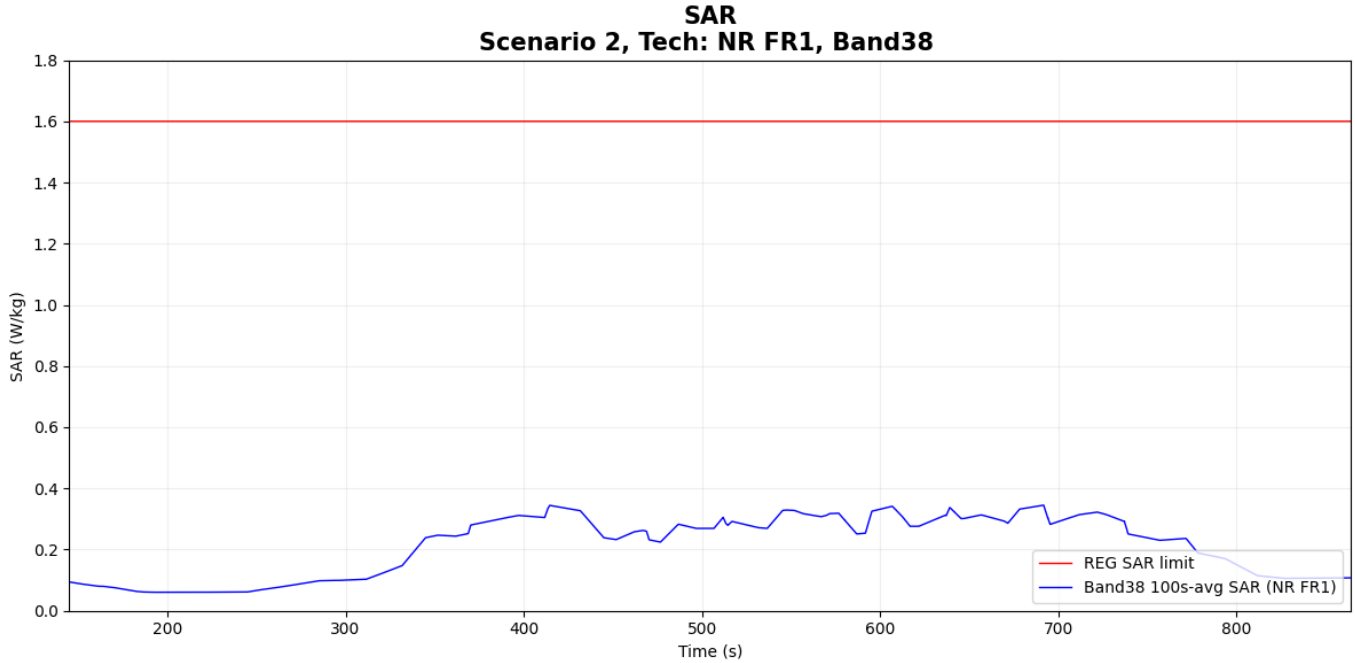

Figure 7-5 Time-averaged SAR for case 16 (sub6 NR n38)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.345 W/kg
Validation result: pass	

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7.2.2 SAR Measurement results for LTE

- Case 5 in Table 7-1: LTE B5 result for test sequence 1

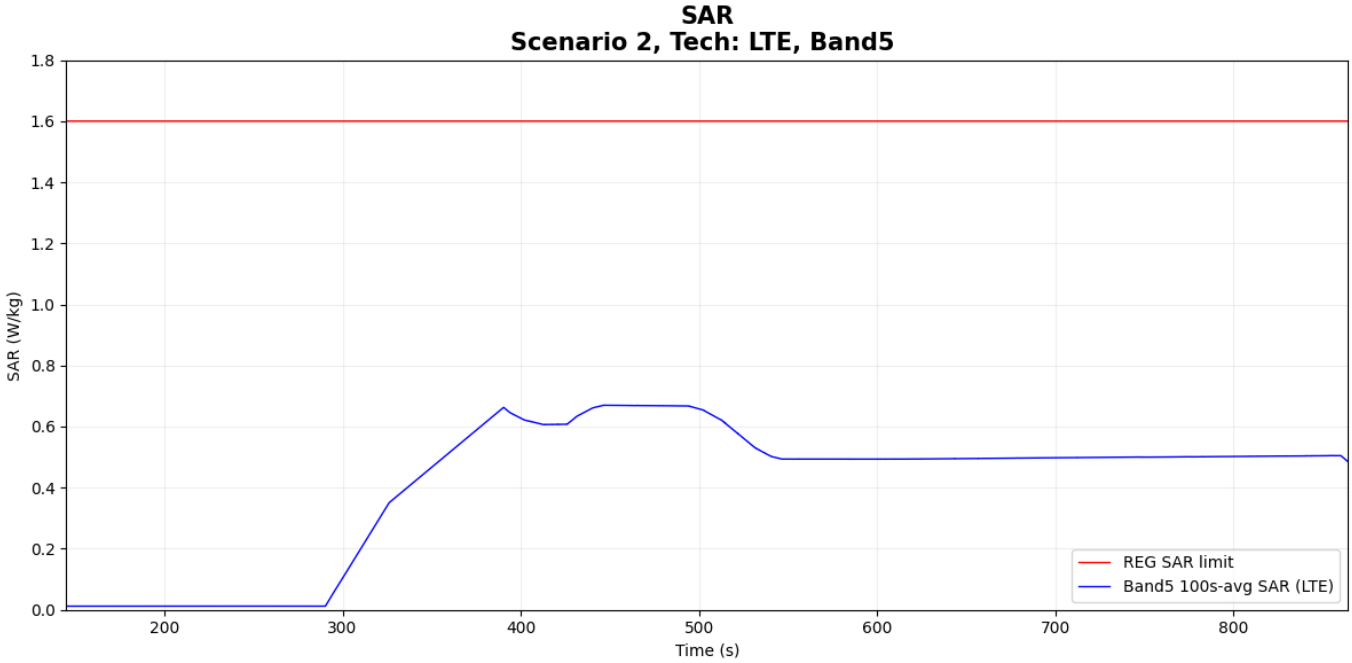

Figure 7-6 Time-averaged SAR for case 5 (LTE B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.670 W/kg
Validation result: pass	

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- Case 6 in Table 7-1: LTE B41_PC3 result for test sequence 1

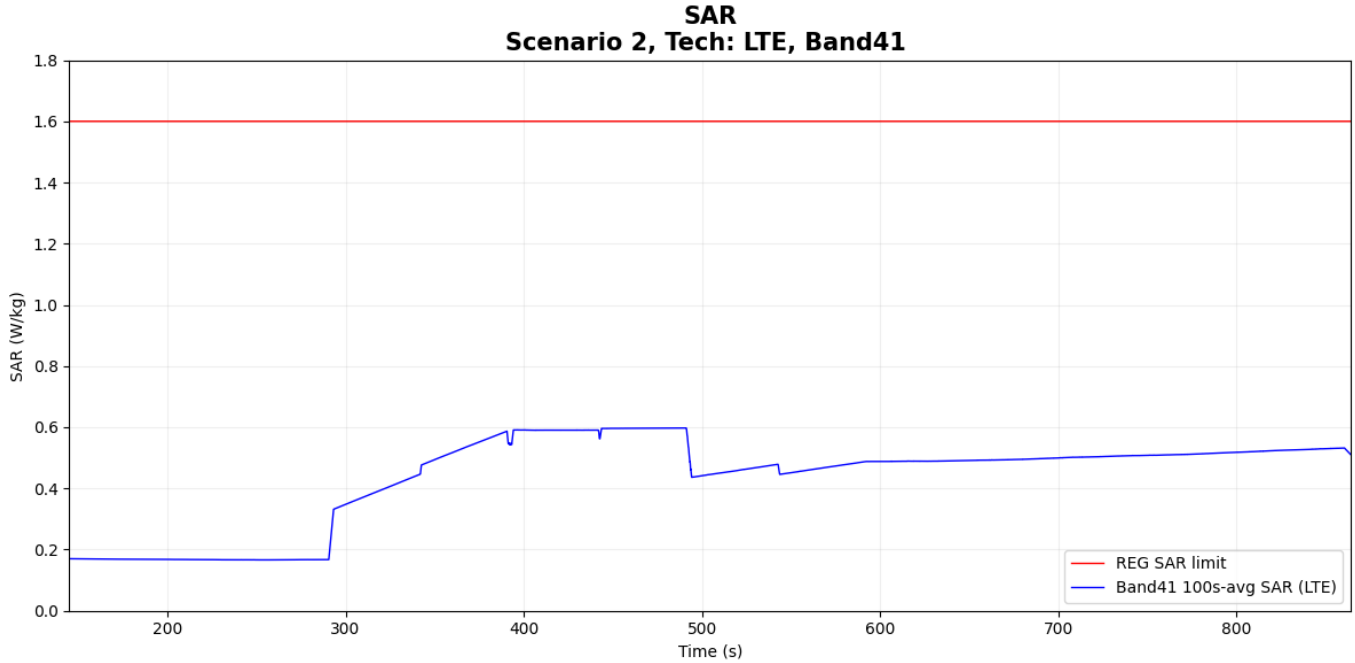

Figure 7-7 Time-averaged SAR for case 6 (LTE B41_PC3)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.597 W/kg
Validation result: pass	

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- Case 13 in Table 7-1: LTE B5 result for test sequence 2

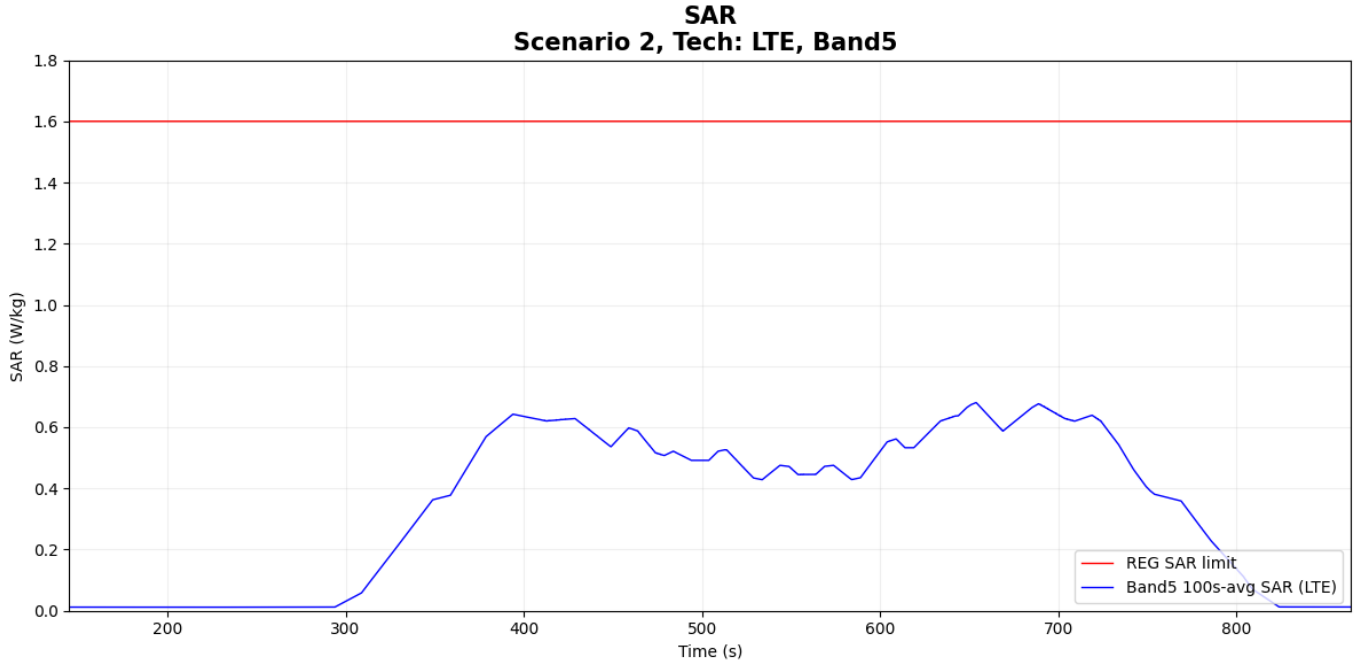

Figure 7-8 Time-averaged SAR for case 13 (LTE B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.680 W/kg
Validation result: pass	

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- Case 14 in Table 7-1: LTE B41_PC3 result for test sequence 2

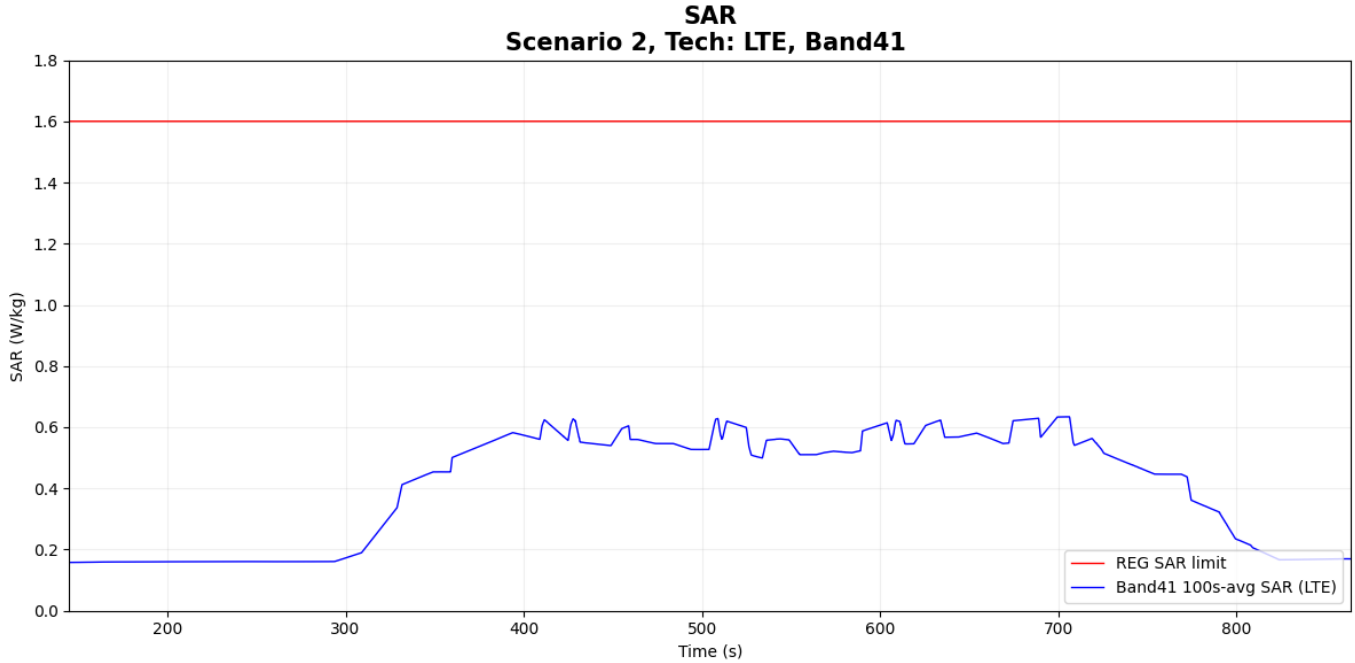

Figure 7-9 Time-averaged SAR for case 14 (LTE B41_PC3)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.634 W/kg
Validation result: pass	

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7.2.3 SAR Measurement results for 3G WCDMA

- Case 3 in Table 7-1: WCDMA B5 result for test sequence 1

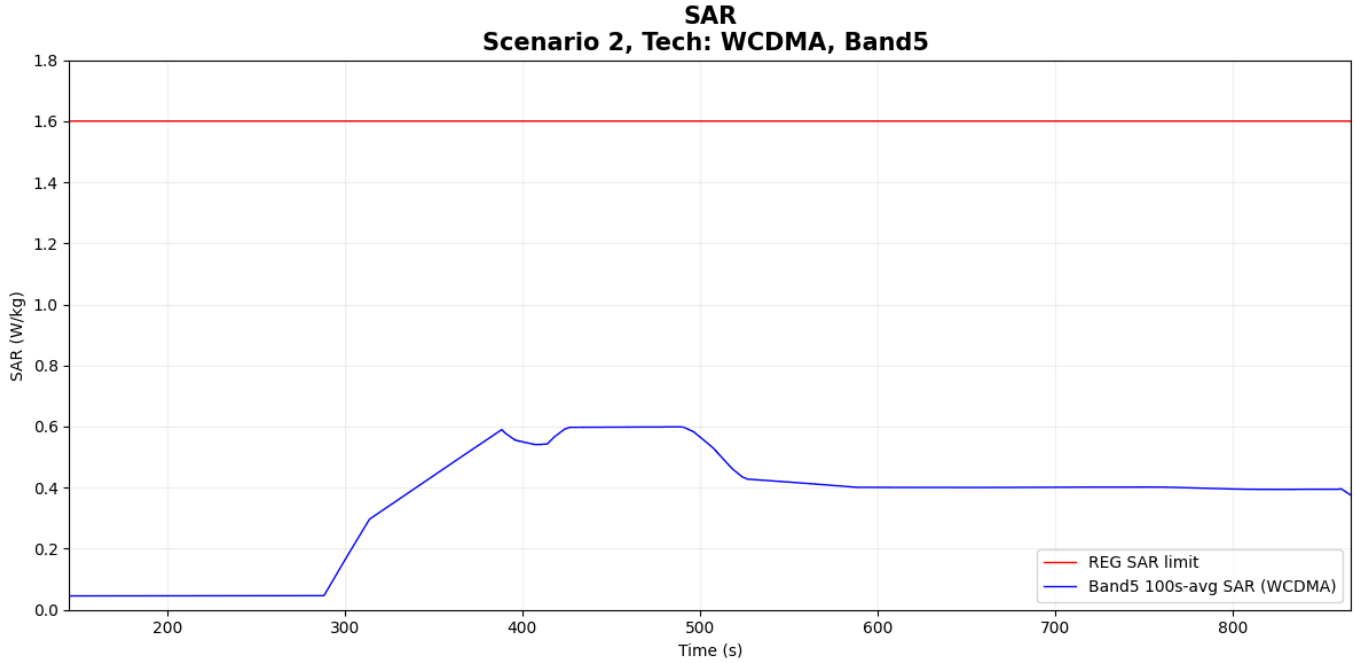

Figure 7-10 Time-averaged SAR for case 3 (WCDMA B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.599 W/kg
Validation result: pass	

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- Case 4 in Table 7-1: WCDMA B2 result for test sequence 1

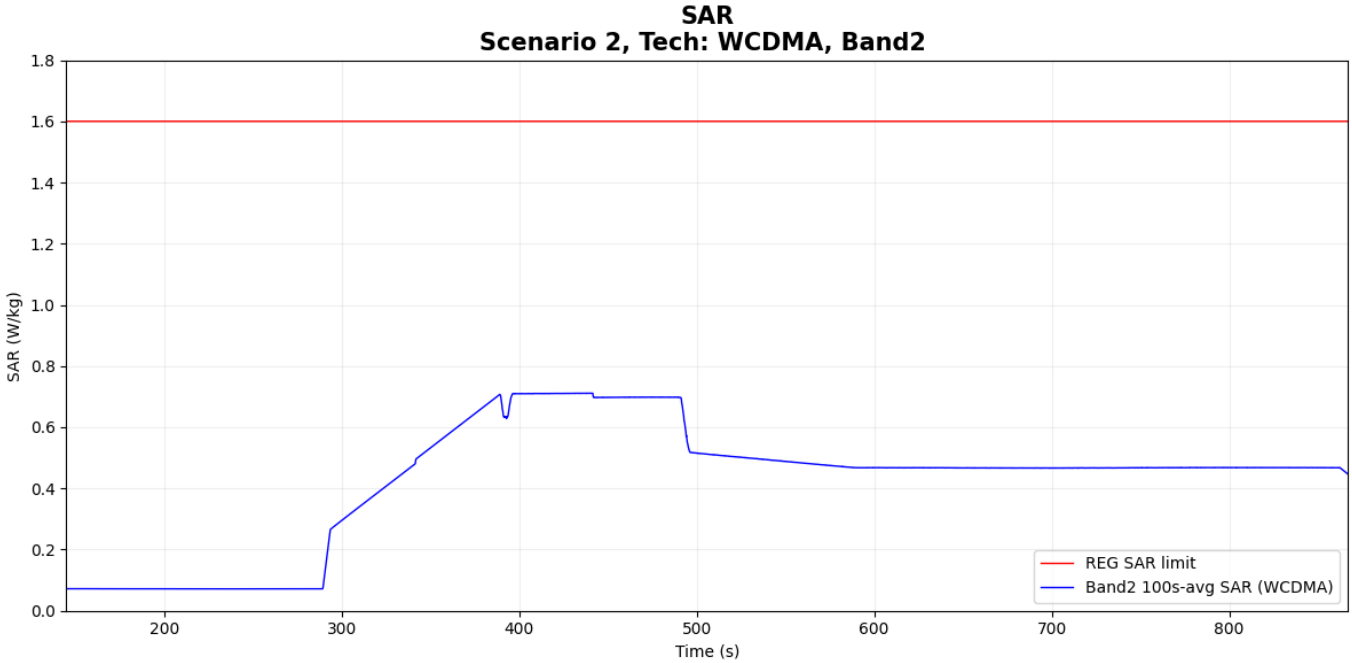

Figure 7-11 Time-averaged SAR for case 4 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.711 W/kg
Validation result: pass	

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- Case 11 in Table 7-1: WCDMA B5 result for test sequence 2

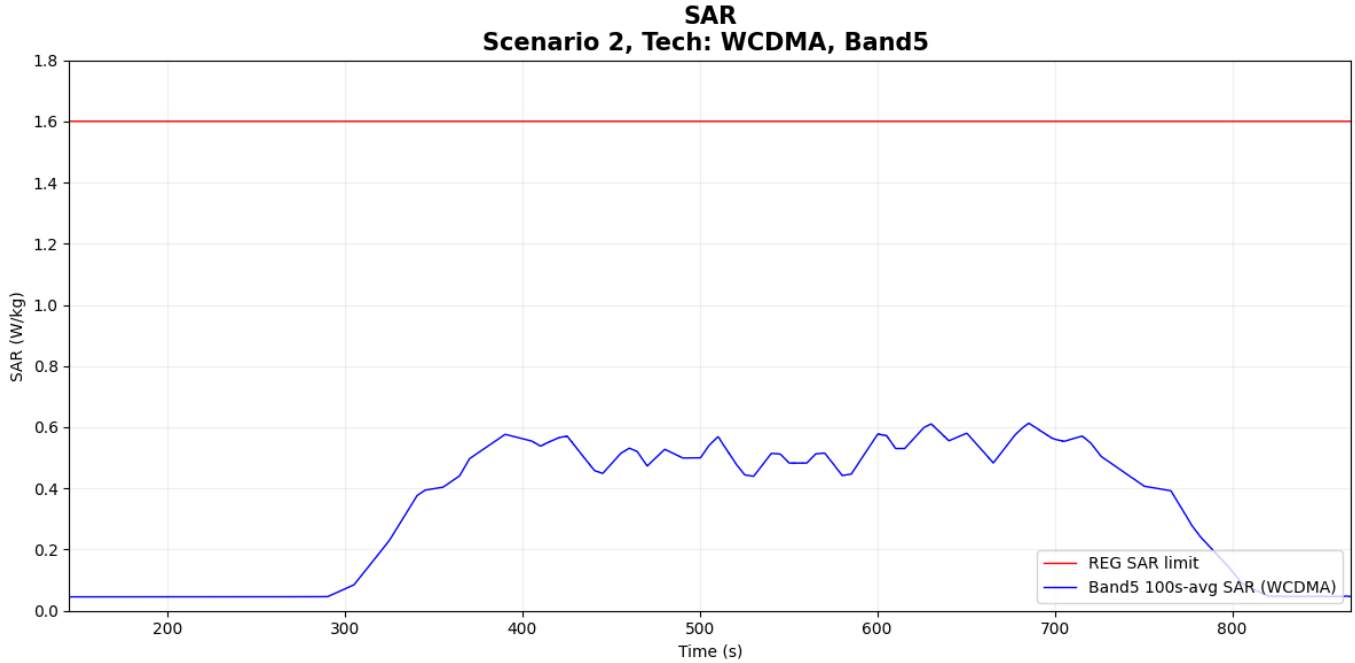

Figure 7-12 Time-averaged SAR for case 11 (WCDMA B5)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.613 W/kg
Validation result: pass	

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- Case 12 in Table 7-1: WCDMA B2 result for test sequence 2

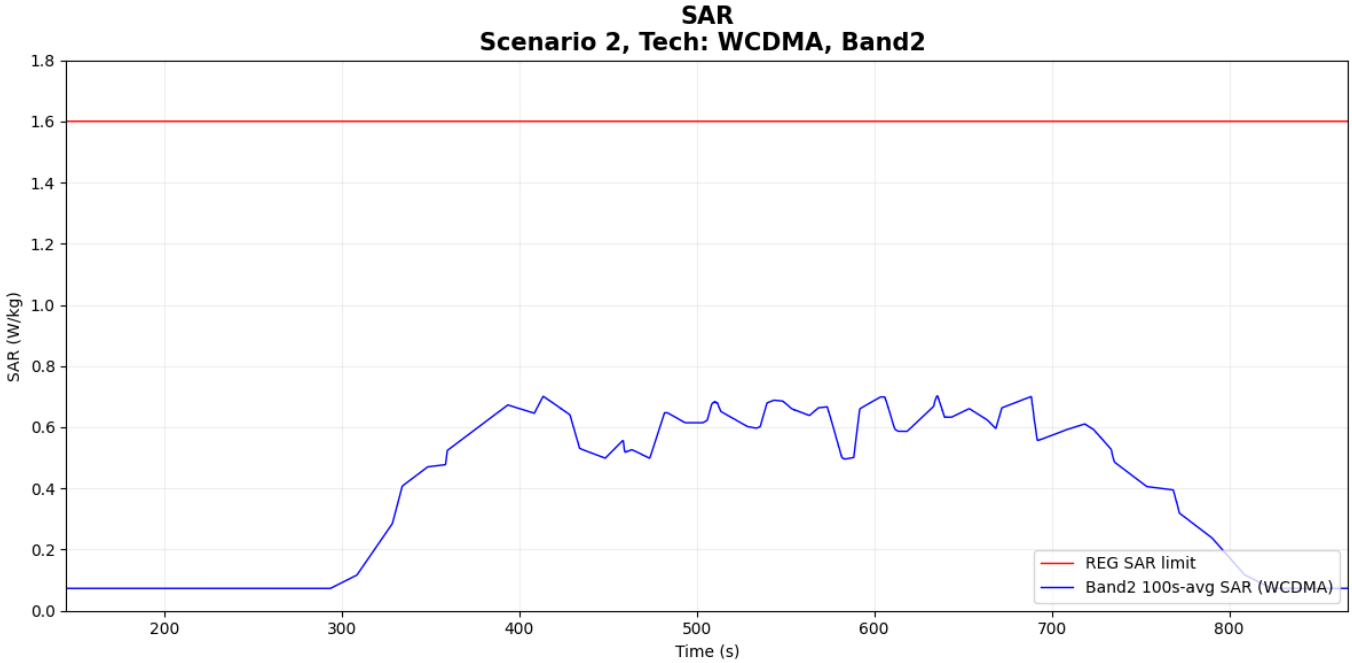

Figure 7-13 Time-averaged SAR for case 12 (WCDMA B2)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.702 W/kg
Validation result: pass	

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7.2.4 SAR Measurement results for 2G

- Case 1 in Table 7-1: GPRS 850 2TS result for test sequence 1

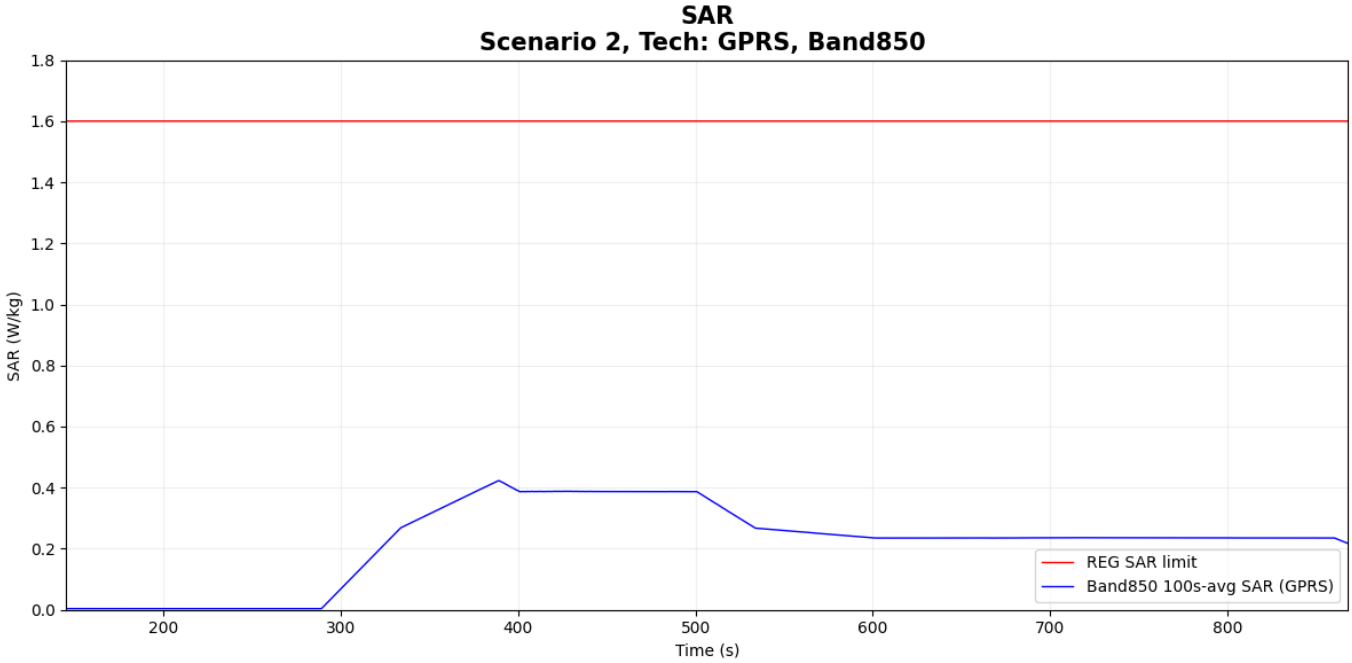

Figure 7-14 Time-averaged SAR for case 1 (GPRS 850 2TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.423 W/kg
Validation result: pass	

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- Case 2 in Table 7-1: GPRS 1900 3TS result for test sequence 1

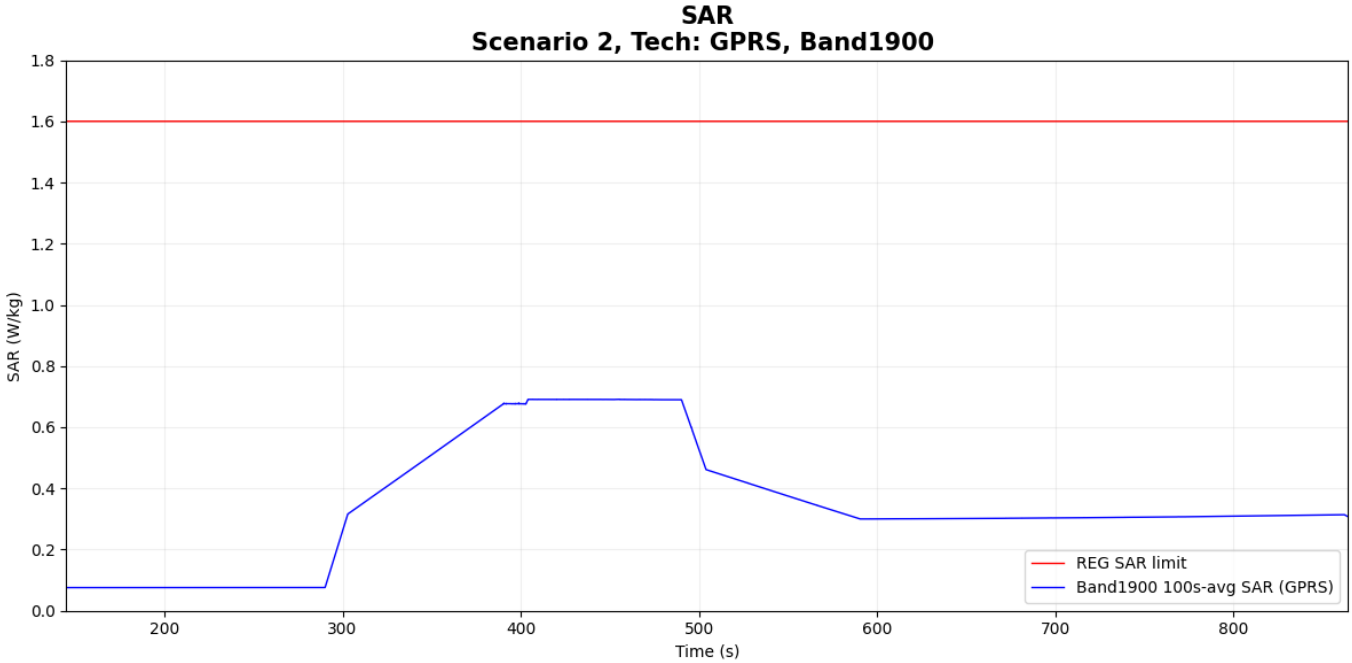

Figure 7-15 Time-averaged SAR for case 2 (GPRS 1900 3TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.691 W/kg
Validation result: pass	

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- Case 9 in Table 7-1: GPRS 850 2TS result for test sequence 2

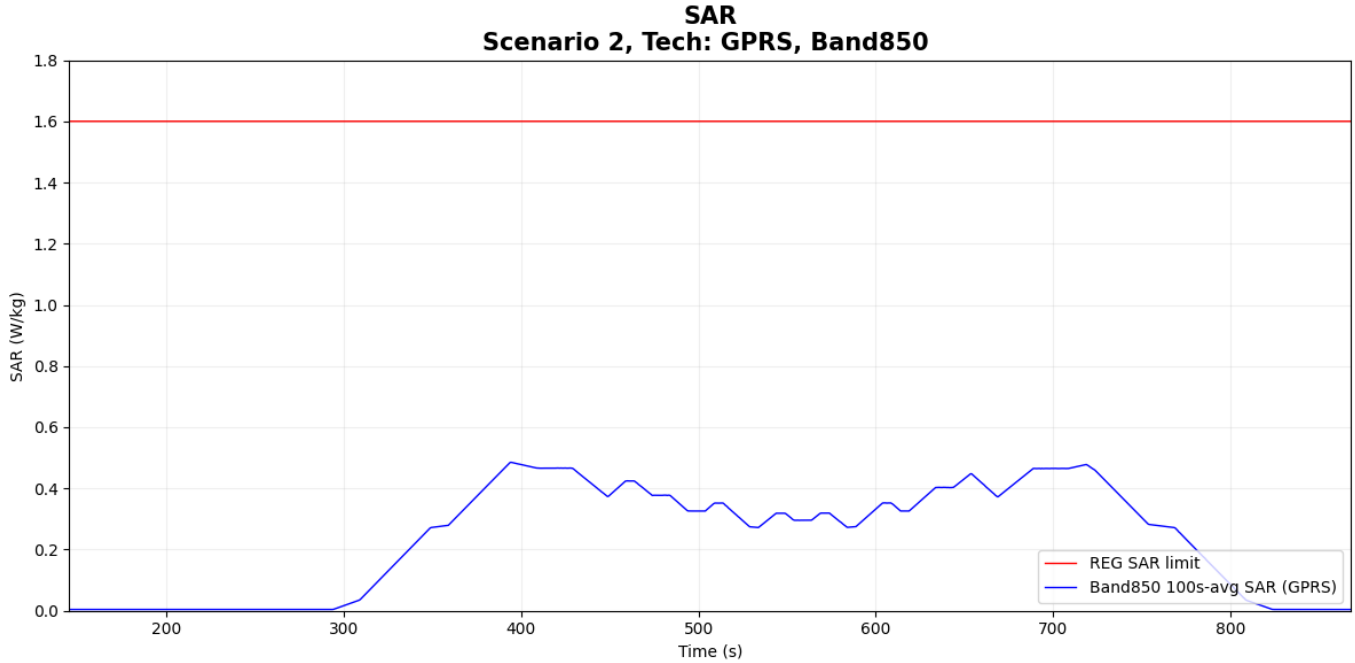

Figure 7-16 Time-averaged SAR for case 9 (GPRS 850 2TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.485 W/kg
Validation result: pass	

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- Case 10 in Table 7-1: GPRS 1900 3TS result for test sequence 2

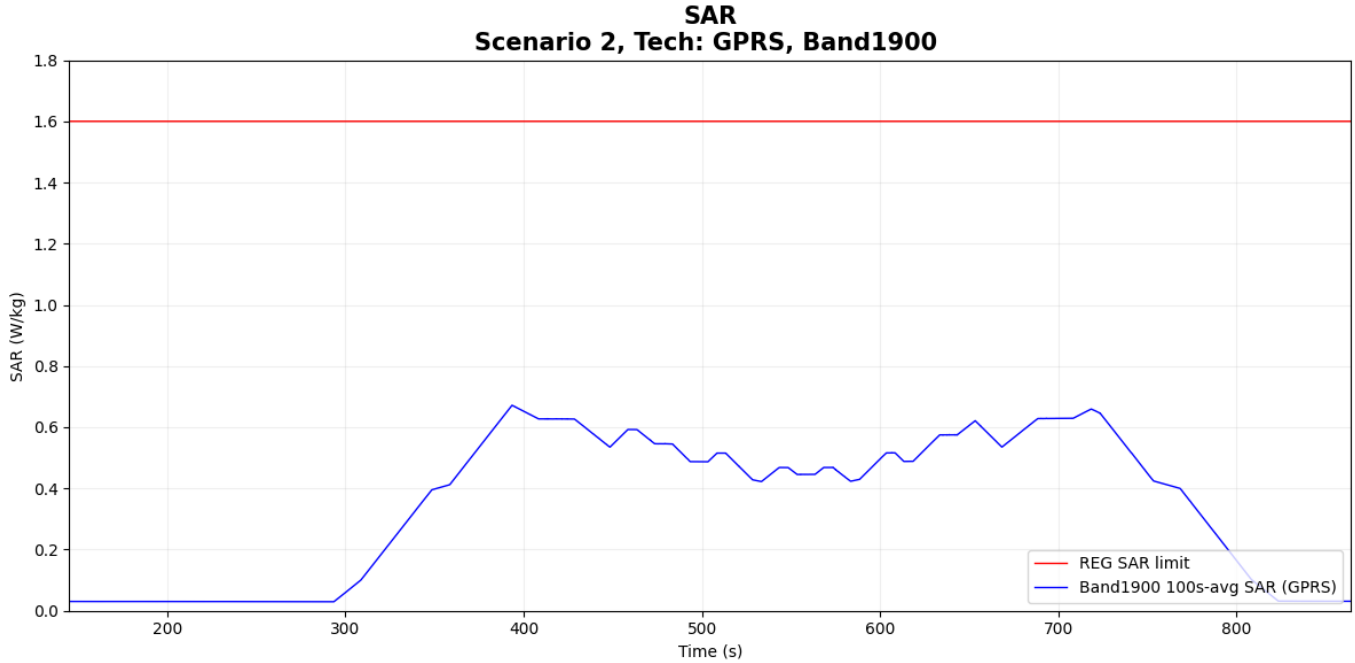

Figure 7-17 Time-averaged SAR for case 10 (GPRS 1900 3TS)

FCC 1gSAR limit	1.6 W/kg
Max 100s-time averaged 1gSAR	0.672 W/kg
Validation result: pass	

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8 CONCLUSIONS

This document proposes test scenarios and procedures to validate Mediatek's TA-SAR Gen2 algorithm and further proves it can meet the FCC SAR regulations with the proposed test scenarios and procedures. As shown in Chapters 6, Mediatek's TA-SAR Gen2 algorithm can maintain SAR over time below the FCC regulatory limits (based on the agreed TX-power- to-SAR translation).The results shown in Chapters 7 demonstrate that Mediatek's TA-SAR Gen2 algorithm can maintain SAR over time below the FCC regulatory limits under the proposed test procedures. Based on the provided measurement evidence, it is concluded that Mediatek's TA-SAR Gen2 algorithm can be tested by using the proposed test methodology.

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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 750/835/1900/2600 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	1751	Mar/27/2025	Mar/26/2026
SPEAG	Dosimetric E-Field Probe	EX3DV4	7712	Mar/24/2025	Mar/23/2026
SPEAG	System Validation Dipole	D750V3	1015	Sep/26/2025	Sep/25/2026
SPEAG	System Validation Dipole	D835V2	4d063	Sep/09/2025	Sep/08/2026
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	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	MY48220468	Sep/09/2025	Sep/08/2026
Agilent	Dual-directional coupler	772D	MY46151258	Oct/08/2025	Oct/07/2026
EMCI	Amplifier	EMC 074225P	980155	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	Sep/05/2025	Sep/04/2026
SPEAG	Software	DASY 52 V52.10.4	N/A	Calibration not required	Calibration not required
SPEAG	Software	DASY 6 V16.0.2.136	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	SAM	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
TECPEL	Digital thermometer	HTC-1	EC23010602	Dec/30/2024	Dec/29/2025

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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 fromeference po 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 (DAKS-3.5)
All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within ± 5% of the target values.

Measurement results of Tissue Simulant Liquid

Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Limit	Measurement Date
680.5	42.271	0.885	42.698	0.866	1.01%	-2.15%	± 5%	Dec. 21, 2025
750	41.900	0.890	42.294	0.872	0.94%	-2.02%	± 5%	
835	41.500	0.900	42.013	0.889	1.24%	-1.22%	± 5%	
836.4	41.500	0.902	41.975	0.892	1.14%	-1.11%	± 5%	
836.5	41.500	0.902	41.858	0.893	0.86%	-0.96%	± 5%	
836.6	41.500	0.902	41.848	0.895	0.84%	-0.75%	± 5%	
1880	40.000	1.400	40.495	1.373	1.24%	-1.93%	± 5%	
1900	40.000	1.400	40.492	1.381	1.23%	-1.36%	± 5%	
2593	39.009	1.953	39.467	1.906	1.17%	-2.38%	± 5%	
2595	39.007	1.955	39.368	1.910	0.93%	-2.29%	± 5%	
2600	39.000	1.960	39.347	1.918	0.89%	-2.14%	± 5%	

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The composition of the tissue simulating liquid:

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

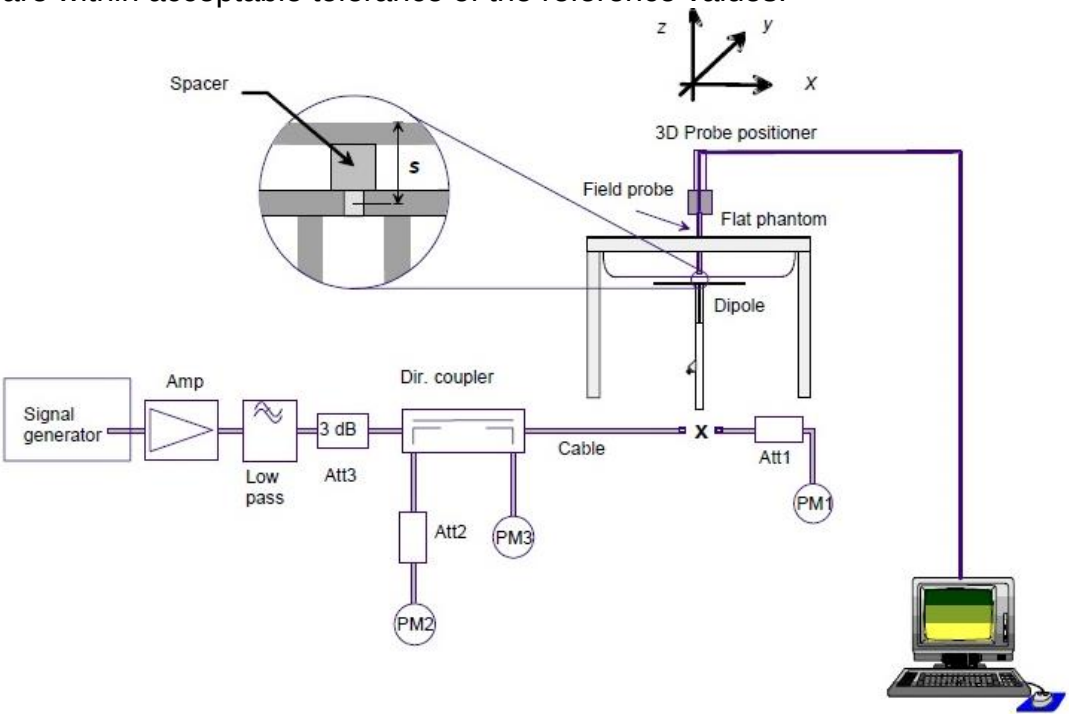
Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

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
D750V3	1015	750	8.54	2.1	8.4	-1.64	± 10%	Dec.21,2025
D835V2	4d063	835	9.47	2.44	9.76	3.06	± 10%	Dec.21,2025
D1900V2	5d173	1900	39.8	10.5	42	5.53	± 10%	Dec.21,2025
D2600V2	1005	2600	55.3	13.8	55.2	-0.18	± 10%	Dec.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	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√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	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√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	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	1.24%	N	1	1	0.64	0.43	0.79%	0.53%	M
Liquid Conductivity (mea.)	2.38%	N	1	1	0.6	0.49	1.43%	1.17%	M
Combined standard uncertainty		RSS					11.53%	11.48%	
Expant uncertainty (95% confidence interval), K=2							23.07%	22.96%	

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9 SAR SYSTEM CHECK RESULTS

Date: 2025/12/21

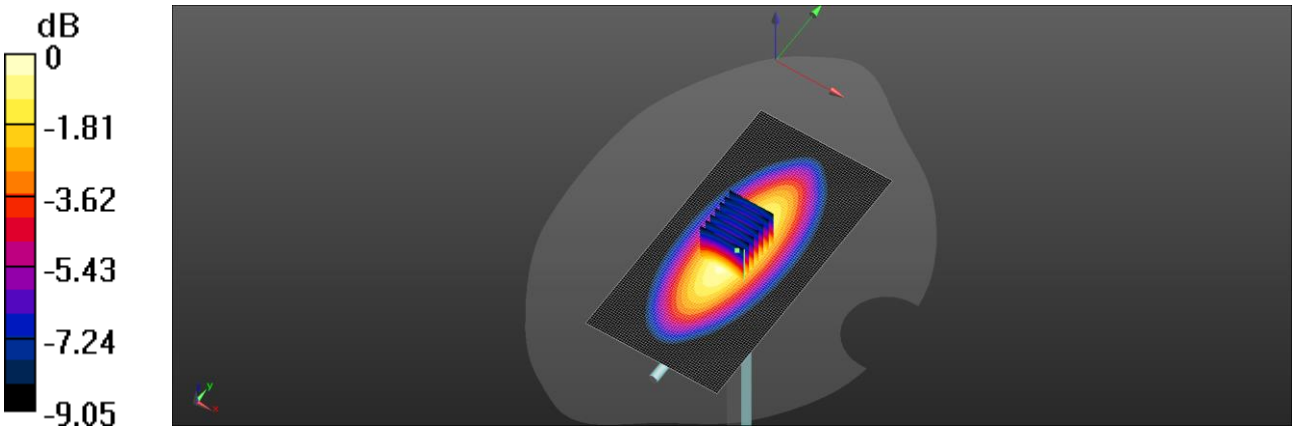
Report No. :TESA2512000993EN
Dipole 750 MHz_SN:1015
Communication System: CW; Frequency: 750 MHz; Duty cycle= 1:1
Medium parameters used: f = 750 MHz; σ = 0.872 S/m; ε_r = 42.294; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7712; ConvF(10.83, 10.18, 10.1) @ 750 MHz; Calibrated: 2025/3/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1751; Calibrated: 2025/3/27
- Phantom: SAM
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.54 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.77 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.88 W/kg
SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.44 W/kg
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 72.4%
Maximum value of SAR (measured) = 2.57 W/kg



0 dB = 2.57 W/kg = 4.10 dBW/kg

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Date: 2025/12/21

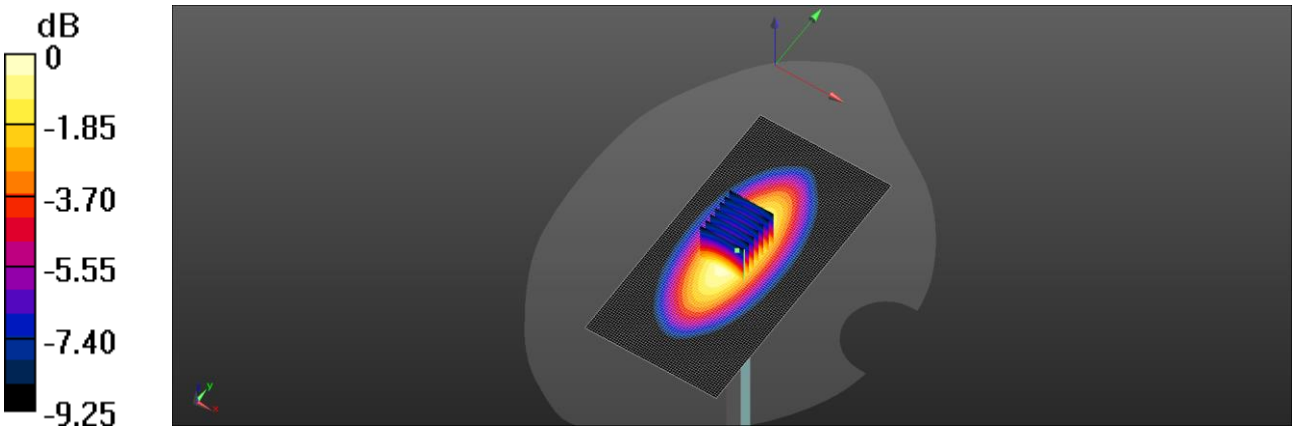
Report No. :TESA2512000993EN
Dipole 835 MHz_SN:4d063
Communication System: CW; Frequency: 835 MHz; Duty cycle= 1:1
Medium parameters used: f = 835 MHz; σ = 0.889 S/m; ε_r = 42.013; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7712; ConvF(10.55, 9.93, 9.85) @ 835 MHz; Calibrated: 2025/3/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1751; Calibrated: 2025/3/27
- Phantom: SAM
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.02 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.66 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.38 W/kg
SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.66 W/kg
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 71.7%
Maximum value of SAR (measured) = 2.99 W/kg



0 dB = 2.99 W/kg = 4.76 dBW/kg

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Date: 2025/12/21

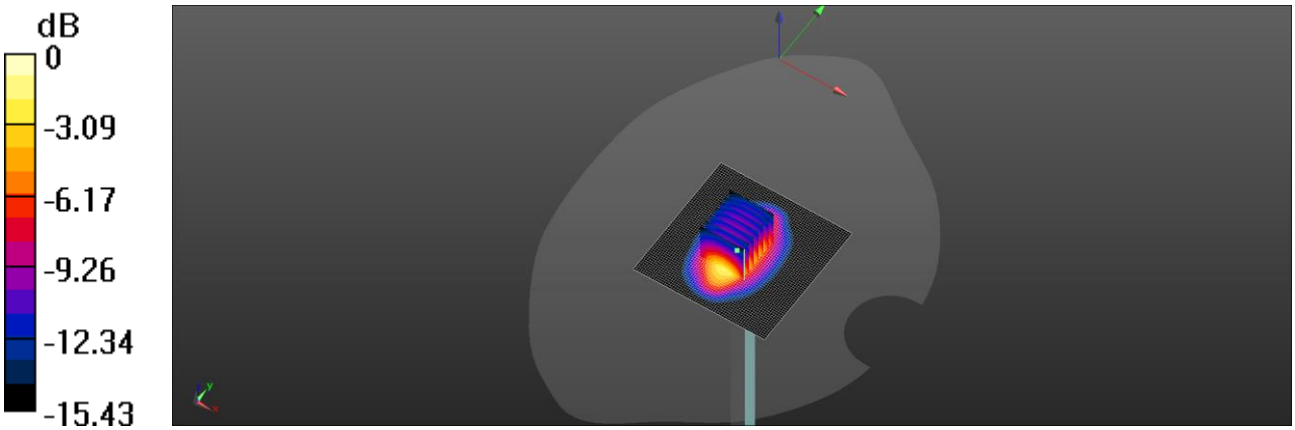
Report No. :TESA2512000993EN
Dipole 1900 MHz_SN:5d173
Communication System: CW; Frequency: 1900 MHz; Duty cycle= 1:1
Medium parameters used: f = 1900 MHz; σ = 1.381 S/m; ε_r = 40.492; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7712; ConvF(8.42, 7.92, 7.86) @ 1900 MHz; Calibrated: 2025/3/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1751; Calibrated: 2025/3/27
- Phantom: SAM
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x61x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 15.1 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.7 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.65 W/kg
Smallest distance from peaks to all points 3 dB below = 10 mm
Ratio of SAR at M2 to SAR at M1 = 59.3%
Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.90 dBW/kg

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Date: 2025/12/21

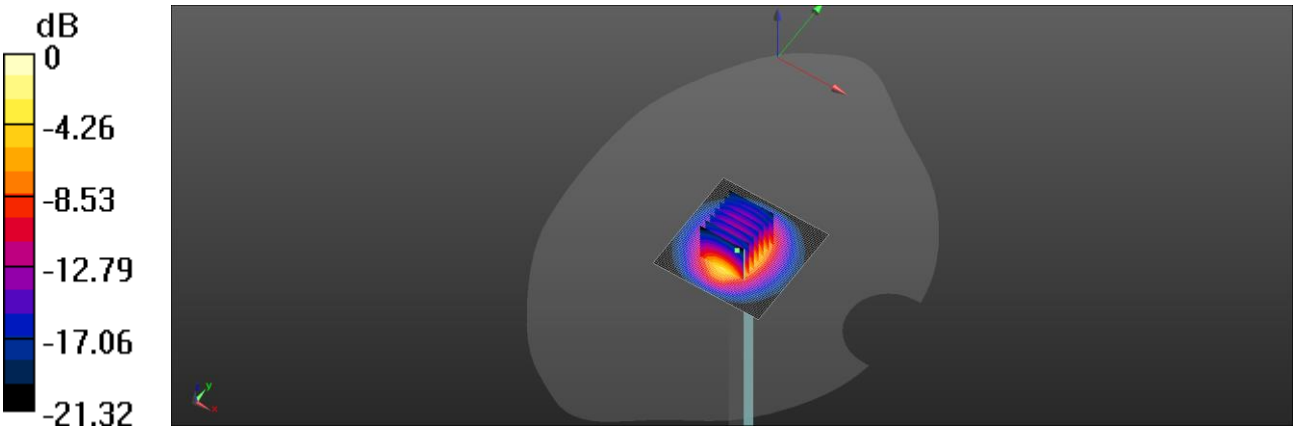
Report No. :TESA2512000993EN
Dipole 2600 MHz_SN:1005
Communication System: CW; Frequency: 2600 MHz; Duty cycle= 1:1
Medium parameters used: f = 2600 MHz; σ = 1.918 S/m; ε_r = 39.347; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN7712; ConvF(7.61, 7.16, 7.1) @ 2600 MHz; Calibrated: 2025/3/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1751; Calibrated: 2025/3/27
- Phantom: SAM
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x61x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 20.9 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.3 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.44 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 51.2%
Maximum value of SAR (measured) = 21.0 W/kg



0 dB = 21.0 W/kg = 13.22 dBW/kg

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10 APPENDIXES

Refer to separated files for the following appendixes.

10.1 SAR_Appendix E Photographs

10.2 SAR_Appendix F DAE & Probe Cal. Certificate

10.3 SAR_Appendix G Phantom Description & Dipole Cal. Certificate

- End of report -

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