NTNV	Band66	1.4MHz	132665	1RB#0	24.79	23.97	24.0±1	23.0±1
NTNV	Band66	1.4MHz	132665	1RB#2	24.72	24.04	24.0±1	23.5±1
NTNV	Band66	1.4MHz	132665	1RB#5	24.56	23.81	24.0±1	23.0±1
NTNV	Band66	1.4MHz	132665	3RB#0	24.58	23.43	24.0±1	23.0±1
NTNV	Band66	1.4MHz	132665	3RB#1	24.57	23.42	24.0±1	23.0±1
NTNV	Band66	1.4MHz	132665	3RB#3	24.54	23.49	24.0±1	23.0±1
NTNV	Band66	1.4MHz	132665	6RB#0	23.70	22.77	24.0±1	23.0±1
NTNV	Band66	3MHz	131987	1RB#0	24.11	23.31	24.0±1	23.0±1
NTNV	Band66	3MHz	131987	1RB#8	24.25	23.25	24.0±1	23.0±1
NTNV	Band66	3MHz	131987	1RB#14	24.59	23.28	24.0±1	23.0±1
NTNV	Band66	3MHz	131987	8RB#0	23.34	22.52	24.0±1	23.0±1
NTNV	Band66	3MHz	131987	8RB#4	23.34	22.42	24.0±1	23.0±1
NTNV	Band66	3MHz	131987	8RB#7	23.52	22.43	24.0±1	23.0±1
NTNV	Band66	3MHz	131987	15RB#0	23.43	22.32	24.0±1	23.0±1
NTNV	Band66	3MHz	132322	1RB#0	24.76	23.61	24.0±1	23.0±1
NTNV	Band66	3MHz	132322	1RB#8	24.45	23.72	24.0±1	23.0±1
NTNV	Band66	3MHz	132322	1RB#14	24.79	23.91	24.0±1	23.0±1
NTNV	Band66	3MHz	132322	8RB#0	23.75	22.75	24.0±1	23.0±1
NTNV	Band66	3MHz	132322	8RB#4	23.71	22.90	24.0±1	23.0±1
NTNV	Band66	3MHz	132322	8RB#7	23.74	22.90	24.0±1	23.0±1
NTNV	Band66	3MHz	132322	15RB#0	23.71	22.56	24.0±1	23.0±1
NTNV	Band66	3MHz	132657	1RB#0	24.60	23.88	24.0±1	23.0±1
NTNV	Band66	3MHz	132657	1RB#8	24.40	23.63	24.0±1	23.0±1
NTNV	Band66	3MHz	132657	1RB#14	24.64	23.59	24.0±1	23.0±1
NTNV	Band66	3MHz	132657	8RB#0	23.66	22.71	24.0±1	23.0±1
NTNV	Band66	3MHz	132657	8RB#4	23.54	22.36	24.0±1	23.0±1
NTNV	Band66	3MHz	132657	8RB#7	23.59	22.48	24.0±1	23.0±1
NTNV	Band66	3MHz	132657	15RB#0	23.51	22.30	24.0±1	23.0±1
NTNV	Band66	5MHz	131997	1RB#0	23.99	22.73	24.0±1	23.0±1
NTNV	Band66	5MHz	131997	1RB#12	24.08	22.59	24.0±1	23.0±1
NTNV	Band66	5MHz	131997	1RB#24	24.05	22.57	24.0±1	23.0±1
NTNV	Band66	5MHz	131997	12RB#0	23.03	21.97	24.0±1	22.0±1
NTNV	Band66	5MHz	131997	12RB#6	23.02	22.06	24.0±1	23.0±1
NTNV	Band66	5MHz	131997	12RB#13	23.06	22.12	24.0±1	23.0±1
NTNV	Band66	5MHz	131997	25RB#0	23.01	21.97	24.0±1	22.0±1
NTNV	Band66	5MHz	132322	1RB#0	24.77	24.03	24.0±1	23.0±1
NTNV	Band66	5MHz	132322	1RB#12	24.60	23.44	24.0±1	23.0±1
NTNV	Band66	5MHz	132322	1RB#24	24.54	23.70	24.0±1	23.0±1
NTNV	Band66	5MHz	132322	12RB#0	23.50	22.62	24.0±1	23.0±1
NTNV	Band66	5MHz	132322	12RB#6	23.51	22.61	24.0±1	23.0±1

NTNV	Band66	5MHz	132322	12RB#13	23.58	22.69	24.0±1	23.0±1
NTNV	Band66	5MHz	132322	25RB#0	23.56	22.48	24.0±1	23.0±1
NTNV	Band66	5MHz	132647	1RB#0	25.03	24.03	24.0±1	23.0±1
NTNV	Band66	5MHz	132647	1RB#12	24.83	23.91	24.0±1	23.0±1
NTNV	Band66	5MHz	132647	1RB#24	24.89	23.95	24.0±1	23.0±1
NTNV	Band66	5MHz	132647	12RB#0	23.93	22.62	24.0±1	23.0±1
NTNV	Band66	5MHz	132647	12RB#6	23.85	22.72	24.0±1	23.0±1
NTNV	Band66	5MHz	132647	12RB#13	23.88	22.85	24.0±1	23.0±1
NTNV	Band66	5MHz	132647	25RB#0	23.82	22.89	24.0±1	23.0±1
NTNV	Band66	10MHz	132022	1RB#0	23.78	23.04	24.0±1	23.0±1
NTNV	Band66	10MHz	132022	1RB#24	24.27	23.66	24.0±1	23.0±1
NTNV	Band66	10MHz	132022	1RB#49	24.24	23.14	24.0±1	23.0±1
NTNV	Band66	10MHz	132022	25RB#0	23.03	22.08	24.0±1	23.0±1
NTNV	Band66	10MHz	132022	25RB#12	23.06	21.98	24.0±1	22.0±1
NTNV	Band66	10MHz	132022	25RB#25	23.37	22.22	24.0±1	23.0±1
NTNV	Band66	10MHz	132022	50RB#0	23.07	22.08	24.0±1	23.0±1
NTNV	Band66	10MHz	132322	1RB#0	24.66	23.86	24.0±1	23.0±1
NTNV	Band66	10MHz	132322	1RB#24	24.56	23.68	24.0±1	23.0±1
NTNV	Band66	10MHz	132322	1RB#49	24.45	23.85	24.0±1	23.0±1
NTNV	Band66	10MHz	132322	25RB#0	23.61	22.58	24.0±1	23.0±1
NTNV	Band66	10MHz	132322	25RB#12	23.62	22.68	24.0±1	23.0±1
NTNV	Band66	10MHz	132322	25RB#25	23.74	22.83	24.0±1	23.0±1
NTNV	Band66	10MHz	132322	50RB#0	23.57	22.56	24.0±1	23.0±1
NTNV	Band66	10MHz	132622	1RB#0	24.71	24.31	24.0±1	23.0±1
NTNV	Band66	10MHz	132622	1RB#24	24.95	24.45	24.0±1	23.0±1
NTNV	Band66	10MHz	132622	1RB#49	24.69	24.30	24.0±1	23.0±1
NTNV	Band66	10MHz	132622	25RB#0	23.93	22.91	24.0±1	23.0±1
NTNV	Band66	10MHz	132622	25RB#12	23.94	23.03	24.0±1	23.0±1
NTNV	Band66	10MHz	132622	25RB#25	23.98	22.93	24.0±1	23.0±1
NTNV	Band66	10MHz	132622	50RB#0	23.87	22.81	24.0±1	23.0±1
NTNV	Band66	15MHz	132047	1RB#0	23.86	23.08	24.0±1	23.0±1
NTNV	Band66	15MHz	132047	1RB#38	24.09	23.03	24.0±1	23.0±1
NTNV	Band66	15MHz	132047	1RB#74	24.25	23.24	24.0±1	23.0±1
NTNV	Band66	15MHz	132047	38RB#0	23.21	23.20	24.0±1	23.0±1
NTNV	Band66	15MHz	132047	38RB#18	23.20	23.20	24.0±1	23.0±1
NTNV	Band66	15MHz	132047	38RB#37	23.19	23.19	24.0±1	23.0±1
NTNV	Band66	15MHz	132047	75RB#0	23.19	22.20	24.0±1	23.0±1
NTNV	Band66	15MHz	132322	1RB#0	24.48	23.57	24.0±1	23.0±1
NTNV	Band66	15MHz	132322	1RB#38	24.56	23.49	24.0±1	23.0±1
NTNV	Band66	15MHz	132322	1RB#74	24.54	23.64	24.0±1	23.0±1

NTNV	Band66	15MHz	132322	38RB#0	23.67	23.64	24.0±1	23.0±1
NTNV	Band66	15MHz	132322	38RB#18	23.64	23.73	24.0±1	23.0±1
NTNV	Band66	15MHz	132322	38RB#37	23.72	23.72	24.0±1	23.0±1
NTNV	Band66	15MHz	132322	75RB#0	23.72	22.69	24.0±1	23.0±1
NTNV	Band66	15MHz	132597	1RB#0	24.96	24.27	24.0±1	23.0±1
NTNV	Band66	15MHz	132597	1RB#38	24.99	24.22	24.0±1	23.0±1
NTNV	Band66	15MHz	132597	1RB#74	24.83	23.88	24.0±1	23.0±1
NTNV	Band66	15MHz	132597	38RB#0	23.98	23.98	24.0±1	23.0±1
NTNV	Band66	15MHz	132597	38RB#18	23.98	23.99	24.0±1	23.0±1
NTNV	Band66	15MHz	132597	38RB#37	23.99	24.00	24.0±1	23.0±1
NTNV	Band66	15MHz	132597	75RB#0	24.00	22.95	24.0±1	23.0±1
NTNV	Band66	20MHz	132072	1RB#0	23.85	23.01	24.0±1	23.0±1
NTNV	Band66	20MHz	132072	1RB#49	24.60	23.91	24.0±1	23.0±1
NTNV	Band66	20MHz	132072	1RB#99	24.75	23.82	24.0±1	23.0±1
NTNV	Band66	20MHz	132072	50RB#0	23.09	22.11	24.0±1	23.0±1
NTNV	Band66	20MHz	132072	50RB#25	23.17	22.12	24.0±1	23.0±1
NTNV	Band66	20MHz	132072	50RB#50	23.47	22.41	24.0±1	23.0±1
NTNV	Band66	20MHz	132072	100RB#0	23.25	22.23	24.0±1	23.0±1
NTNV	Band66	20MHz	132322	1RB#0	24.73	23.94	24.5±1	23.5±1
NTNV	Band66	20MHz	132322	1RB#49	24.74	24.11	24.5±1	23.5±1
NTNV	Band66	20MHz	132322	1RB#99	24.74	24.16	24.5±1	23.5±1
NTNV	Band66	20MHz	132322	50RB#0	23.77	22.77	24.5±1	23.5±1
NTNV	Band66	20MHz	132322	50RB#25	23.79	22.76	24.5±1	23.5±1
NTNV	Band66	20MHz	132322	50RB#50	23.75	22.73	24.5±1	23.5±1
NTNV	Band66	20MHz	132322	100RB#0	23.61	22.54	24.5±1	23.5±1
NTNV	Band66	20MHz	132572	1RB#0	24.76	23.92	24.5±1	23.5±1
NTNV	Band66	20MHz	132572	1RB#49	**25.05**	23.90	24.5±1	23.5±1
NTNV	Band66	20MHz	132572	1RB#99	24.77	23.98	24.5±1	23.5±1
NTNV	Band66	20MHz	132572	50RB#0	24.01	22.94	24.5±1	23.5±1
NTNV	Band66	20MHz	132572	50RB#25	23.97	22.95	24.5±1	23.5±1
NTNV	Band66	20MHz	132572	50RB#50	23.88	22.94	24.5±1	23.5±1
NTNV	Band66	20MHz	132572	100RB#0	23.97	22.86	24.5±1	23.5±1

<WLAN 2.4GHz Conducted Power>

Mode	Channel	Frequency (MHz)	Conducted Peak Output Power(dBm)	Conducted Average Output Power(dBm)	Tune-up power(dBm)
802.11b	1	2412	16.58	14.51	15.50
	6	2437	16.27	14.42	15.50
	11	2462	17.23	**15.17**	15.50
802.11g	1	2412	16.68	13.24	14.50
	6	2437	16.43	13.11	14.50
	11	2462	17.62	14.22	14.50
802.11n(HT20)	1	2412	16.61	13.11	14.50
	6	2437	16.31	13.02	14.50
	11	2462	17.25	14.07	14.50
802.11n(HT40)	3	2422	15.58	12.34	12.50
	6	2437	15.04	12.03	12.50
	9	2452	15.34	12.25	12.50

Note:

1. Per KDB 447498 D01, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

[(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

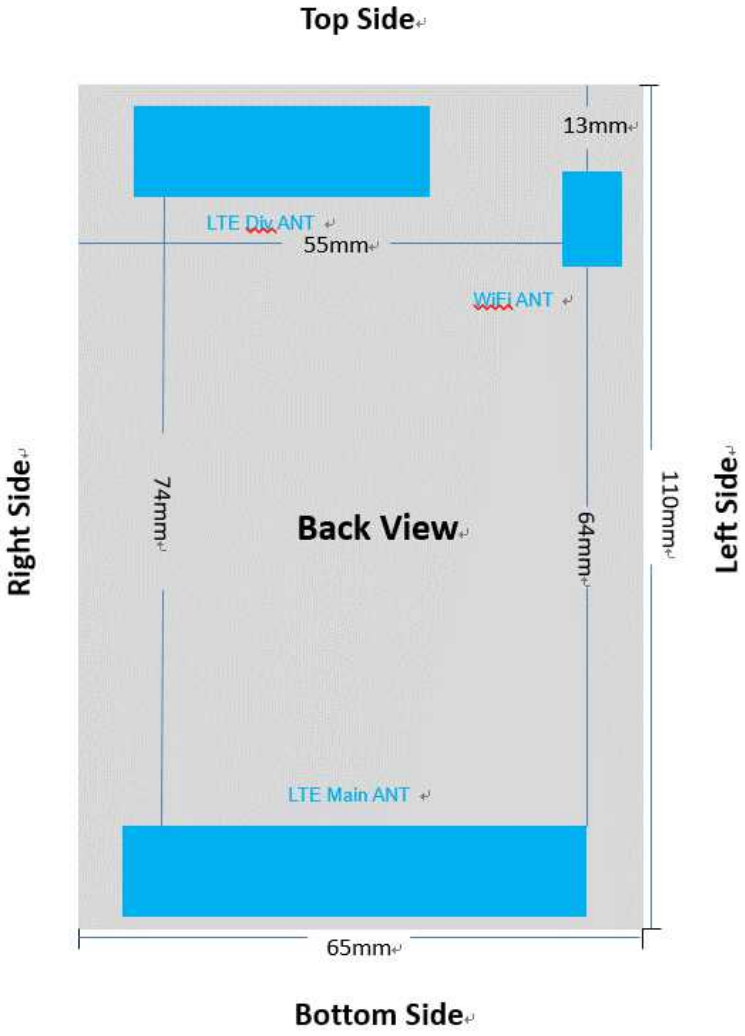
Mode	Frequency (GHz)	Tune-up Power (dBm)	Max. Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
802.11 n (HT40)	2462	15.5	35.48	10	5.567	3.0

2. Base on the result of note1, RF exposure evaluation of 2.4G WIFI is required.
3. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.
4. Per KDB 248227 D01, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:

   1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

   2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

11. Antenna Location



EUT BACK VIEW

Distance of The Antenna to the EUT surface and edge						
Antennas	**Front**	**Back**	**Top Side**	**Bottom Side**	**Left Side**	**Right Side**
WLAN	<25mm	<25mm	<25mm	>25mm	<25mm	>25mm
WWAN	<25mm	<25mm	>25mm	<25mm	<25mm	<25mm

Positions for SAR tests; Hotspot mode						
Antennas	**Front**	**Back**	**Top Side**	**Bottom Side**	**Left Side**	**Right Side**
WLAN	Yes	Yes	Yes	No	Yes	No
WWAN	Yes	Yes	No	Yes	Yes	Yes

General Note: According with FCC KDB 447498 D01, appendix A, <SAR test exclusion thresholds for 100MHz~6GHz and≤50mm＞table, this device SAR test configurations considerations are shown in the table above.

Per KDB 447498 D01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.

12. SAR Test Results Summary

General Note:

1.Per KDB 447498 D01v05r01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.

Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.

Reported SAR(W/kg)= Measured SAR(W/kg) Scaling Factor*

2.Per KDB 447498 D01v05r01, for each exposure position, if the highest output channel reported SAR≤0.8W/kg, other channels SAR testing are not necessary

3.Per KDB 941225 D05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.

4.Per KDB 941225 D05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.

5.Per KDB 941225 D05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

6.Per KDB 941225 D05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05, 16QAM SAR testing is not required.

7.Per KDB 941225 D05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05, smaller bandwidth SAR testing is not required.

8.Per KDB865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/Kg; if the deviation among the repeated measurement is ≤20%,and the measured SAR <1.45W/Kg, only one repeated measurement is required.

9.When the user enables the personal Wireless router functions for the handsets, actual operationsinclude simultaneous transmission of both the Wi-Fi transmitting frequency and thus cannot beevaluated for SAR under actual use conditions. The “Portable Hotspot” feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmissionfrequency RF signal.

12.1. Body–worn and Hotspot SAR Results

<LTE>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	LTE Band 2	20MHz/1RB	Front	10	18700	1860	23.40	24.5	1.288	0.07	0.397	0.511
	LTE Band 2	20MHz/50RB	Front	10	18700	1860	22.33	24.5	1.648	0.13	0.226	0.372
#1	LTE Band 2	20MHz/1RB	Back	10	18700	1860	23.40	24.5	1.288	0.11	0.526	**0.678**
	LTE Band 2	20MHz/50RB	Back	10	18700	1860	22.33	24.5	1.648	-0.12	0.397	0.654
	LTE Band 2	20MHz/1RB	Left Side	10	18700	1860	23.40	24.5	1.288	-0.08	0.441	0.568
	LTE Band 2	20MHz/50RB	Left Side	10	18700	1860	22.33	24.5	1.648	0.03	0.315	0.519
	LTE Band 2	20MHz/1RB	Right Side	10	18700	1860	23.40	24.5	1.288	0.05	0.461	0.594
	LTE Band 2	20MHz/50RB	Right Side	10	18700	1860	22.33	24.5	1.648	0.04	0.342	0.564
	LTE Band 2	20MHz/1RB	Top Side	10	18700	1860	24.43	24.5	1.288	N/A	N/A	N/A
	LTE Band 2	20MHz/50RB	Top Side	10	18700	1860	23.12	24.5	1.648	N/A	N/A	N/A
	LTE Band 2	20MHz/1RB	Bottom Side	10	18700	1860	23.40	24.5	1.288	0.03	0.507	0.653
	LTE Band 2	20MHz/50RB	Bottom Side	10	18700	1860	22.33	24.5	1.648	0.11	0.388	0.639
	LTE Band 4	20MHz/1RB	Front	10	20050	1720	24.78	25.0	1.052	0.07	0.435	0.458
	LTE Band 4	20MHz/50RB	Front	10	20050	1720	23.47	25.0	1.422	0.02	0.307	0.437
#2	LTE Band 4	20MHz/1RB	Back	10	20050	1720	24.78	25.0	1.052	-0.09	0.591	**0.622**
	LTE Band 4	20MHz/50RB	Back	10	20050	1720	23.47	25.0	1.422	0.11	0.428	0.609
	LTE Band 4	20MHz/1RB	Left Side	10	20050	1720	24.78	25.0	1.052	0.07	0.384	0.404
	LTE Band 4	20MHz/50RB	Left Side	10	20050	1720	23.47	25.0	1.422	0.12	0.278	0.395
	LTE Band 4	20MHz/1RB	Right Side	10	20050	1720	24.78	25.0	1.052	0.05	0.477	0.502
	LTE Band 4	20MHz/50RB	Right Side	10	20050	1720	23.47	25.0	1.422	0.08	0.344	0.489
	LTE Band 4	20MHz/1RB	Top Side	10	20050	1720	24.78	25.0	1.052	N/A	N/A	N/A
	LTE Band 4	20MHz/50RB	Top Side	10	20050	1720	23.47	25.0	1.422	N/A	N/A	N/A
	LTE Band 4	20MHz/1RB	Bottom Side	10	20050	1720	24.78	25.0	1.052	0.03	0.557	0.586
	LTE Band 4	20MHz/50RB	Bottom	10	20050	1720	23.47	25.0	1.422	-0.07	0.405	0.576

			Side									
	LTE Band 12	10MHz/1RB	Front	10	23095	707.5	23.59	24.5	1.233	0.15	0.348	0.429
	LTE Band 12	10MHz/25RB	Front	10	23095	707.5	22.40	24.5	1.622	0.07	0.234	0.380
#3	LTE Band 12	10MHz/1RB	Back	10	23095	707.5	23.59	24.5	1.233	0.02	0.563	**0.694**
	LTE Band 12	10MHz/25RB	Back	10	23095	707.5	22.40	24.5	1.622	0.03	0.419	0.680
	LTE Band 12	10MHz/1RB	Left Side	10	23095	707.5	23.59	24.5	1.233	-0.18	0.379	0.467
	LTE Band 12	10MHz/25RB	Left Side	10	23095	707.5	22.40	24.5	1.622	-0.09	0.252	0.409
	LTE Band 12	10MHz/1RB	Right Side	10	23095	707.5	23.59	24.5	1.233	0.08	0.476	0.587
	LTE Band 12	10MHz/25RB	Right Side	10	23095	707.5	22.40	24.5	1.622	0.12	0.357	0.579
	LTE Band 12	10MHz/1RB	Top Side	10	23095	707.5	23.59	24.5	1.233	N/A	N/A	N/A
	LTE Band 12	10MHz/25RB	Top Side	10	23095	707.5	22.40	24.5	1.622	N/A	N/A	N/A
	LTE Band 12	10MHz/1RB	Bottom Side	10	23095	707.5	23.59	24.5	1.233	0.05	0.511	0.630
	LTE Band 12	10MHz/25RB	Bottom Side	10	23095	707.5	22.40	24.5	1.622	0.13	0.379	0.615
	LTE Band 13	10MHz/1RB	Front	10	23230	782	21.47	22.5	1.268	0.07	0.176	0.223
	LTE Band 13	10MHz/50RB	Front	10	23230	782	20.17	22.5	1.710	-0.12	0.071	0.121
#4	LTE Band 13	10MHz/1RB	Back	10	23230	782	21.47	22.5	1.268	0.06	0.384	**0.487**
	LTE Band 13	10MHz/50RB	Back	10	23230	782	20.17	22.5	1.710	0.05	0.235	0.402
	LTE Band 13	10MHz/1RB	Left Side	10	23230	782	21.47	22.5	1.268	-0.11	0.221	0.280
	LTE Band 13	10MHz/50RB	Left Side	10	23230	782	20.17	22.5	1.710	-0.13	0.113	0.193
	LTE Band 13	10MHz/1RB	Right Side	10	23230	782	21.47	22.5	1.268	0.10	0.243	0.308
	LTE Band 13	10MHz/50RB	Right Side	10	23230	782	20.17	22.5	1.710	0.11	0.127	0.217
	LTE Band 13	10MHz/1RB	Top Side	10	23230	782	21.47	22.5	1.268	N/A	N/A	N/A
	LTE Band 13	10MHz/50RB	Top Side	10	23230	782	20.17	22.5	1.710	N/A	N/A	N/A
	LTE Band 13	10MHz/1RB	Bottom Side	10	23230	782	21.47	22.5	1.268	0.07	0.313	0.397
	LTE Band 13	10MHz/50RB	Bottom Side	10	23230	782	20.17	22.5	1.710	0.05	0.154	0.263
	LTE Band 66	20MHz/1RB	Front	10	132572	1770	25.05	25.5	1.109	0.08	0.342	0.379
	LTE Band 66	20MHz/50RB	Front	10	132572	1770	24.01	25.5	1.409	-0.06	0.213	0.300
#5	LTE Band 66	20MHz/1RB	Back	10	132572	1770	25.05	25.5	1.109	-0.03	0.536	**0.595**
	LTE Band 66	20MHz/50RB	Back	10	132572	1770	24.01	25.5	1.409	0.12	0.411	0.579
	LTE Band 66	20MHz/1RB	Left Side	10	132572	1770	25.05	25.5	1.109	-0.08	0.435	0.482
	LTE Band 66	20MHz/50RB	Left Side	10	132572	1770	24.01	25.5	1.409	-0.06	0.328	0.462
	LTE Band 66	20MHz/1RB	Right	10	132572	1770	25.05	25.5	1.109	-0.13	0.463	0.514

			Side									
	LTE Band 66	20MHz/50RB	Right Side	10	132572	1770	24.01	25.5	1.409	0.11	0.327	0.461
	LTE Band 66	20MHz/1RB	Top Side	10	132572	1770	25.05	25.5	1.109	N/A	N/A	N/A
	LTE Band 66	20MHz/50RB	Top Side	10	132572	1770	24.01	25.5	1.409	N/A	N/A	N/A
	LTE Band 66	20MHz/1RB	Bottom Side	10	132572	1770	25.05	25.5	1.109	0.07	0.472	0.524
	LTE Band 66	20MHz/50RB	Bottom Side	10	132572	1770	24.01	25.5	1.409	0.03	0.351	0.495

<WIFI 2.4GHz>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
	WIFI2.4GHz	802.11b	Front	10	11	2462	15.17	15.5	1.079	0.07	0.219	0.236
#6	WIFI2.4GHz	802.11b	Back	10	11	2462	15.17	15.5	1.079	-0.02	0.488	**0.527**
	WIFI2.4GHz	802.11b	Left Side	10	11	2462	15.17	15.5	1.079	0.10	0.349	0.377
	WIFI2.4GHz	802.11b	Right Side	10	11	2462	15.17	15.5	1.079	N/A	N/A	N/A
	WIFI2.4GHz	802.11b	Top Side	10	11	2462	15.17	15.5	1.079	0.10	0.243	0.262
	WIFI2.4GHz	802.11b	Bottom Side	10	11	2462	15.17	15.5	1.079	N/A	N/A	N/A

Note:

1. Per KDB 865664 D01V01,for each frequency band ,repeated SAR measurement is required only when the measured SAR is≥0.8W/Kg.
2. Per KDB 865664 D01V01,if the ratio of largest to smallest SAR for the original and first repeated measurement is≤1.2and the measured SAR＜1.45W/Kg, only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is＞1.20 or when the original or repeated measurement is ≥ 1.45W/Kg
4. The ratio is the difference in percentage between original and repeated measured SAR.

13. Simultaneous Transmission Analysis

Simultaneous TX SAR Considerations

No.	Applicable Simultaneous Transmission
1.	LTE+WIFI2.4G

Evaluation of Simultaneous SAR

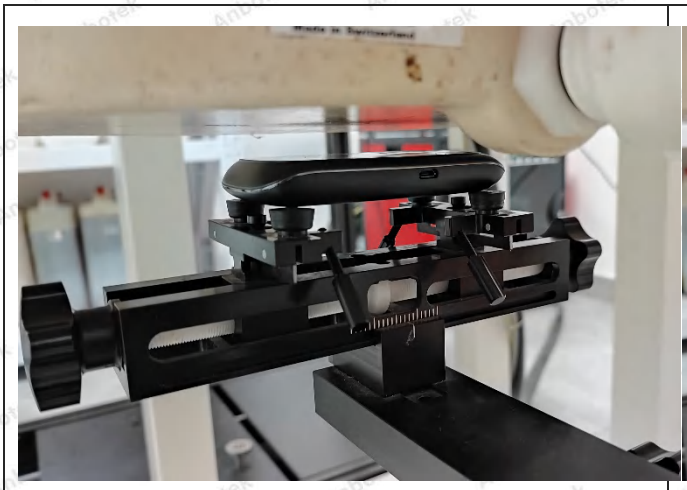
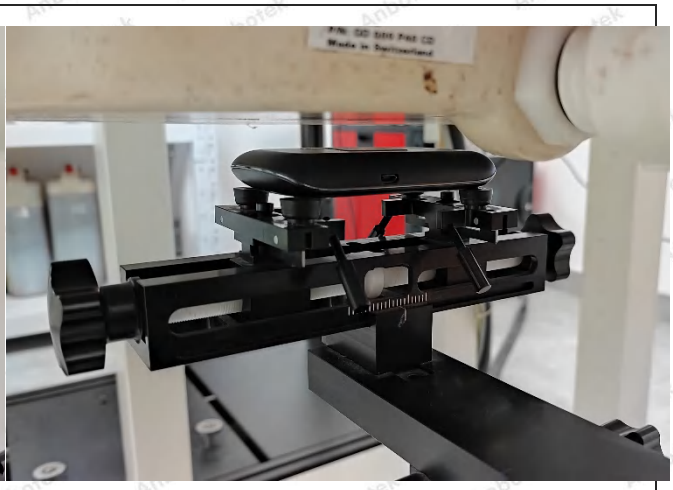
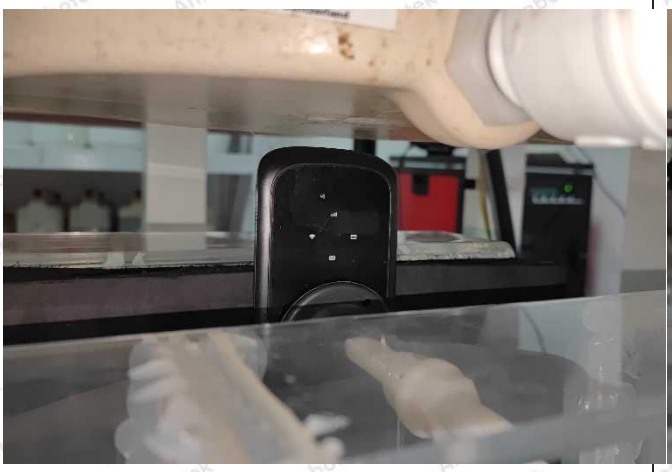
<LTE+2.4GWiFi >

Test Position	WiFi SAR_{1-g} (W/Kg)	LTE BAND 2_{1-g} (W/Kg)	LTE BAND 4_{1-g} (W/Kg)	LTE BAND 12_{1-g} (W/Kg)	LTE BAND 13_{1-g} (W/Kg)	LTE BAND 66_{1-g} (W/Kg)	MAX. ΣSAR_{1-g} (W/Kg)	SAR_{1-g} Limit (W/Kg)	Simut. Meas. Required
Front	0.236	0.511	0.458	0.429	0.223	0.379	0.747	1.6	N/A
Back	**0.527**	**0.678**	**0.622**	**0.694**	**0.487**	**0.595**	**1.221**	1.6	N/A
Left Side	0.377	0.568	0.404	0.467	0.28	0.482	0.945	1.6	N/A
Right Side	N/A	0.594	0.502	0.587	0.308	0.514	0.594	1.6	N/A
Top side	0.262	N/A	N/A	N/A	N/A	N/A	0.262	1.6	N/A
Bottom Side	N/A	0.653	0.586	0.63	0.397	0.524	0.653	1.6	N/A

14. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is< 1.5 W/Kg, the extensive SAR measurement uncertainty analysis is not required in SAR reports submitted for equipment approval.

Appendix A. EUT Photos and Test Setup Photos

	
Front (10mm)	Back(10mm)
	
Left Side (10mm)	Right Side (10mm)
	
Top Side (10mm)	Bottom Side (10mm)

Appendix B. Plots of SAR System Check

750MHz Body System Check

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1163

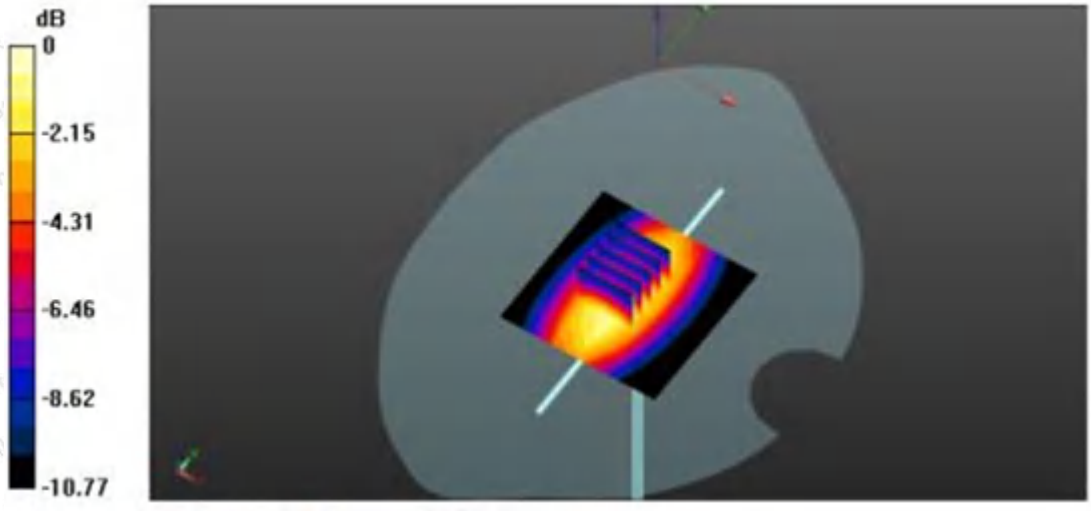
Date:12/15/2021

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.97 S/m; εr = 55.31; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(10.09, 10.09, 10.09); Calibrated: May,06.2021;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn387; Calibrated: Sep.06.2021
Phantom: SAM 1; Type: SAM;
Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.28 W/kg
Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 58.616 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.77 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.40 W/kg
Maximum value of SAR (measured) = 3.01 W/kg



1750MHz Body System Check

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2

Date:12/14/2021

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f =1750 MHz; σ =1.45 S/m; εr =53.42; ρ =1000 kg/m3

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7396; ConvF(8.24, 8.24, 8.24); Calibrated: May,06.2021;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06.2021;
- Phantom: SAM 1 ; Type: QD 000 P40 CD; Serial: TP - 1802
- Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Configuration/Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 12.1 W/kg

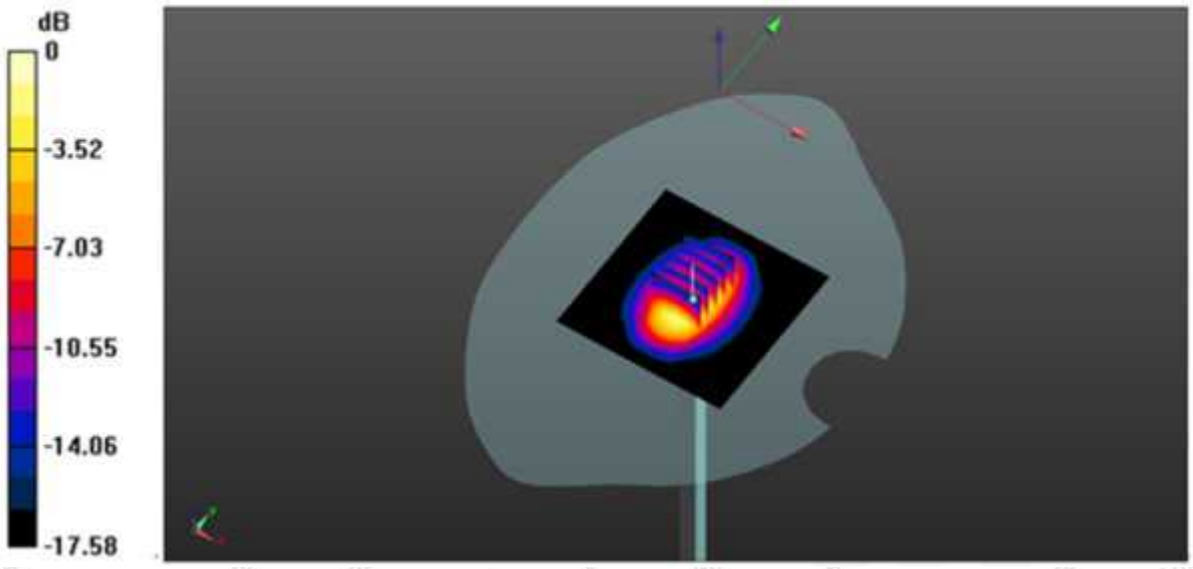
Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 92.55 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 16.828 W/kg

SAR(1 g) =9.72 W/kg; SAR(10 g) = 5.08 W/kg

Maximum value of SAR (measured) = 12.0 W/kg



1900 MHz Body System Check

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d175

Date:12/13/2021

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55S/m; εr = 53.33; ρ = 1000 kg/m3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(7.97, 7.97, 7.97); Calibrated: 05,06.2021;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.06,2021;

Phantom: SAM 1; Type: SAM;

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Area Scan (61x91x1): Measurement grid: dx=15.00 mm, dy=15.00 mm

Maximum value of SAR (interpolated) = 16.365 W/kg

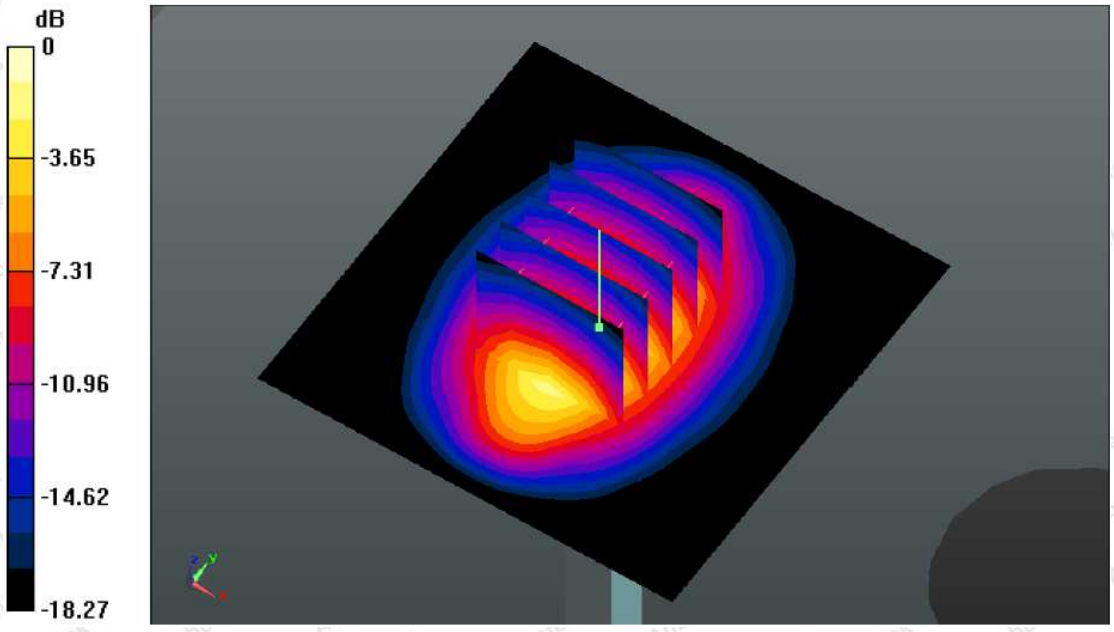
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.414 V/m; Power Drift = -0.12dB

Peak SAR (extrapolated) = 19.622 W/kg

SAR(1 g) = 10.14 W/kg; SAR(10 g) = 5.32 W/kg

Maximum value of SAR (measured) = 15.11 W/kg



2450 MHz Body System Check

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 910

Date:12/13/2021

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2450 MHz; σ = 1.99S/m; εr = 53.18; ρ = 1000 kg/m3

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7396; ConvF(7.53, 7.53, 7.53); Calibrated: 05,06.2021;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn387; Calibrated: Sep.06.2021

Phantom: SAM 1; Type: SAM;

Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Area Scan (61x91x1): Measurement grid: dx=10.00 mm, dy=10.00 mm

Maximum value of SAR (interpolated) = 19.225 W/kg

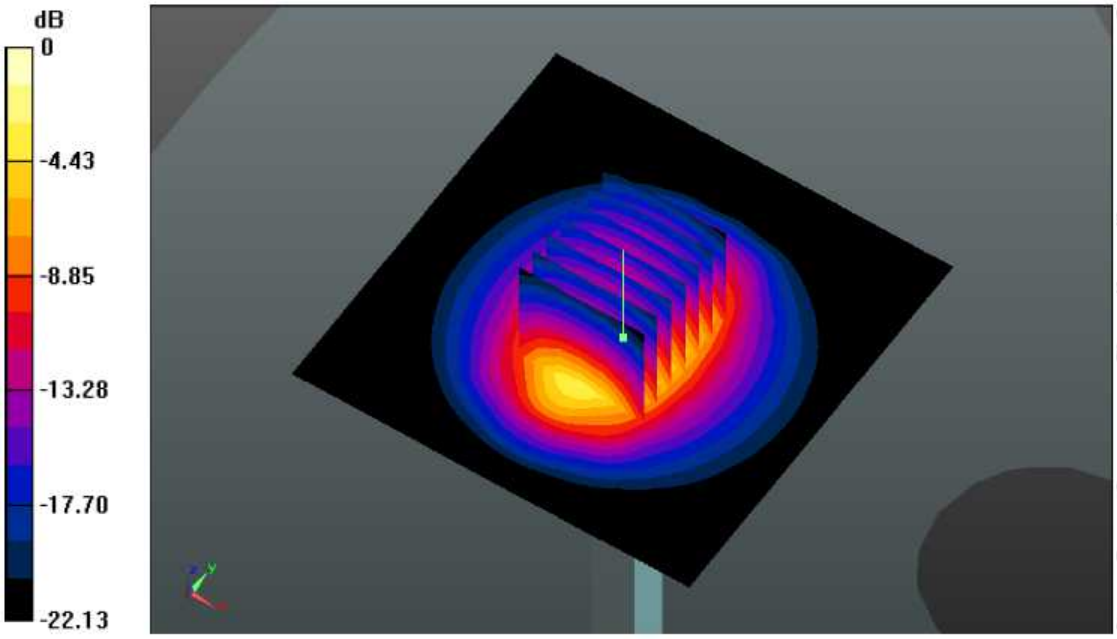
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.153 V/m; Power Drift = 0.05dB

Peak SAR (extrapolated) = 26.125 W/kg

SAR(1 g) = 12.94 W/kg; SAR(10 g) = 5.92 W/kg

Maximum value of SAR (measured) = 19.18W/kg



Appendix C. Plots of SAR Test Data

#1

Date: 12/13/2021

LTE Band 2_ Body Back_1RB_Ch18700

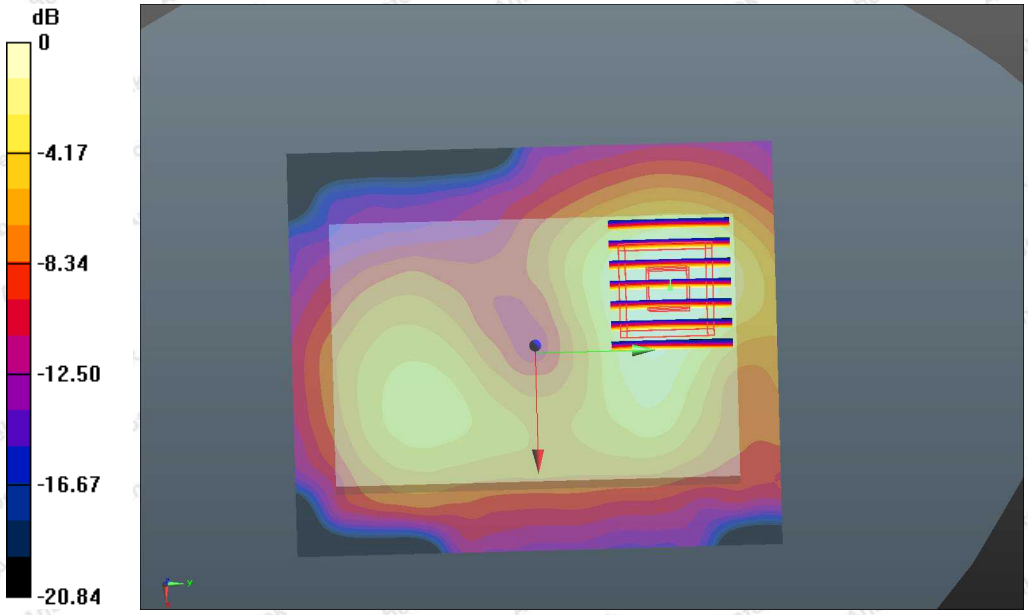
Communication System: UID 0, Generic LTE (0); Frequency: 1860.0 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1860.0 MHz; σ = 1.55 S/m; ε_r = 53.33; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(7.97, 7.97, 7.97); Calibrated: May,06.2021;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK /Area Scan (101x121x1): Measurement grid: dx=1.000mm, dy=1.000mm
Maximum value of SAR (interpolated) = 1.386 W/kg

BODY/BACK /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.36 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.382 W/kg
SAR(1 g) = 0.556 W/kg; SAR(10 g) = 0.301 W/kg
Maximum value of SAR (measured) = 1.373 W/kg



#2

Date: 12/14/2021

LTE Band 4_ Body Back_1RB_Ch20050

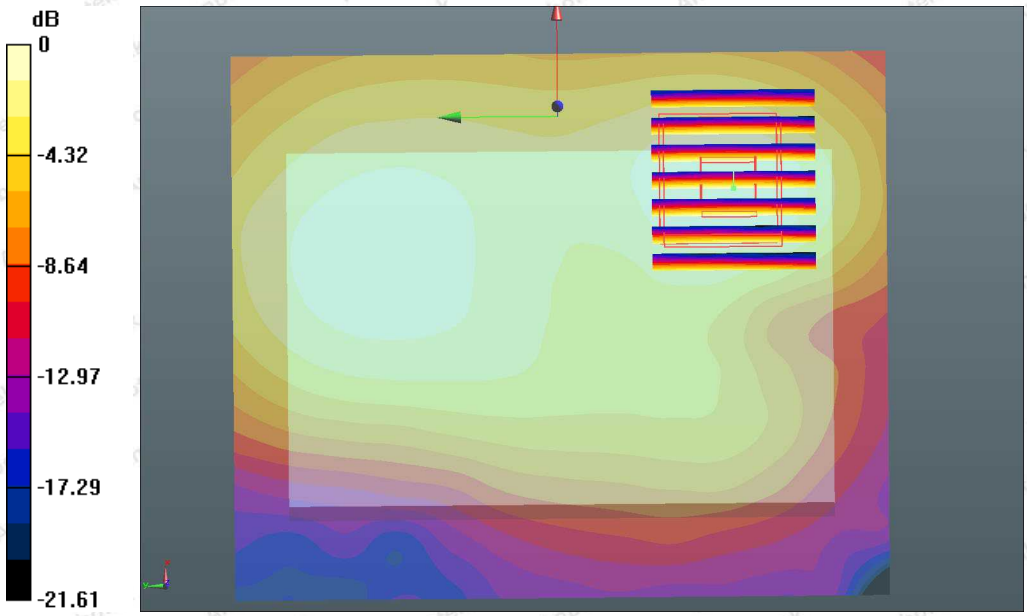
Communication System: UID 0, Generic LTE (0); Frequency: 1720 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1720 MHz; σ = 1.45 S/m; ε_r = 53.42; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.24, 8.24, 8.24); Calibrated: May,06.2021;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK /Area Scan (101x121x1): Measurement grid: dx=1.000mm, dy=1.000mm
Maximum value of SAR (interpolated) = 1.254 W/kg

BODY/BACK /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.85 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.245 W/kg
SAR(1 g) = 0.531 W/kg; SAR(10 g) = 0.277 W/kg
Maximum value of SAR (measured) = 1.238 W/kg



#3

Date: 12/15/2021

LTE Band 12_ Body Back_1RB_Ch23095

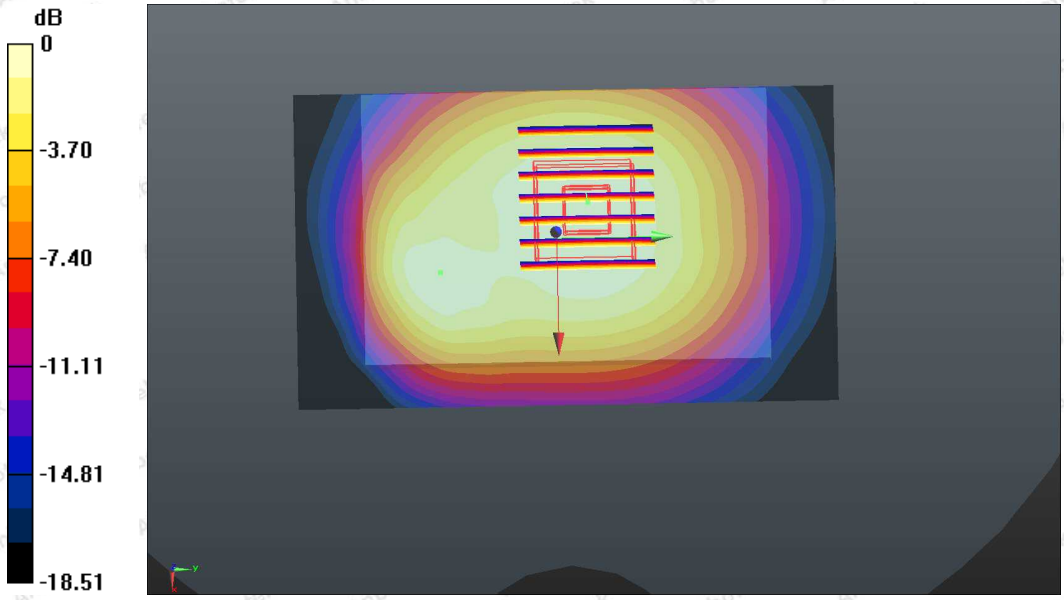
Communication System: UID 0, Generic LTE (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.97 S/m; ε_r= 55.31; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(10.09, 10.09,10.09); Calibrated: May 06, 2021;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK/Area Scan (101x121x1): Measurement grid: dx=1.000mm, dy=1.000mm
Maximum value of SAR (interpolated) = 1.271 W/kg

BODY/BACK/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.879 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.281 W/kg
SAR(1 g) = 0.563 W/kg; SAR(10 g) = 0.289 W/kg
Maximum value of SAR (measured) = 1.279 W/kg



#4

Date: 12/15/2021

LTE Band 13_ Body Back_1RB_Ch23230

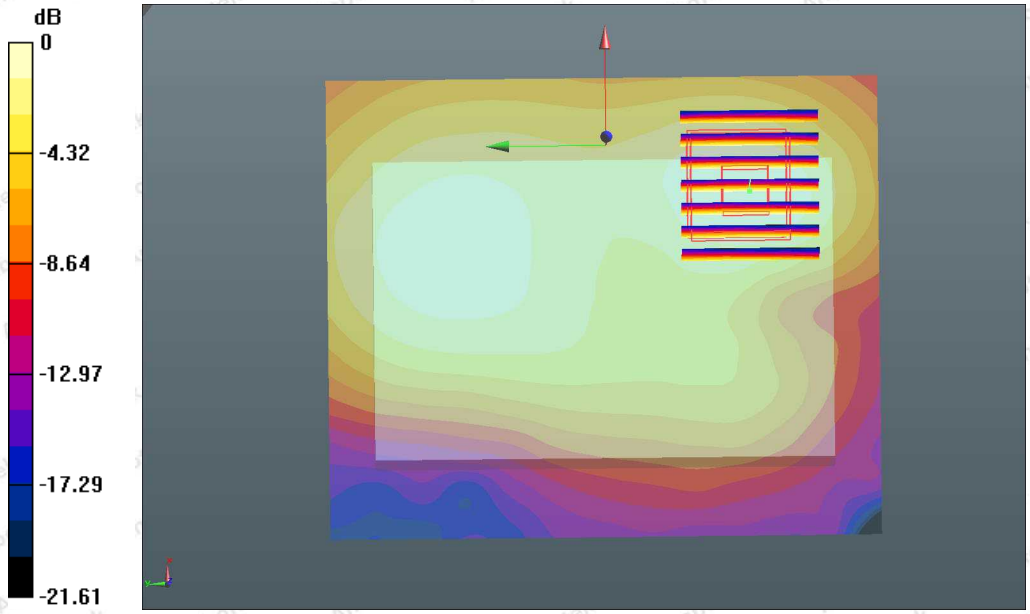
Communication System: UID 0, Generic LTE (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 782 MHz; = 0.97 S/m; ε_r= 55.31; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(10.09, 10.09,10.09); Calibrated: May 06, 2021;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK /Area Scan (101x121x1): Measurement grid: dx=1.000mm, dy=1.000mm
Maximum value of SAR (interpolated) = 0.686 W/kg

BODY/BACK/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.15 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.694 W/kg
SAR(1 g) = 0.384 W/kg; SAR(10 g) = 0.172 W/kg
Maximum value of SAR (measured) = 0.681 W/kg



#14

Date: 12/14/2021

LTE Band 66_ Body Back_1RB_Ch132572

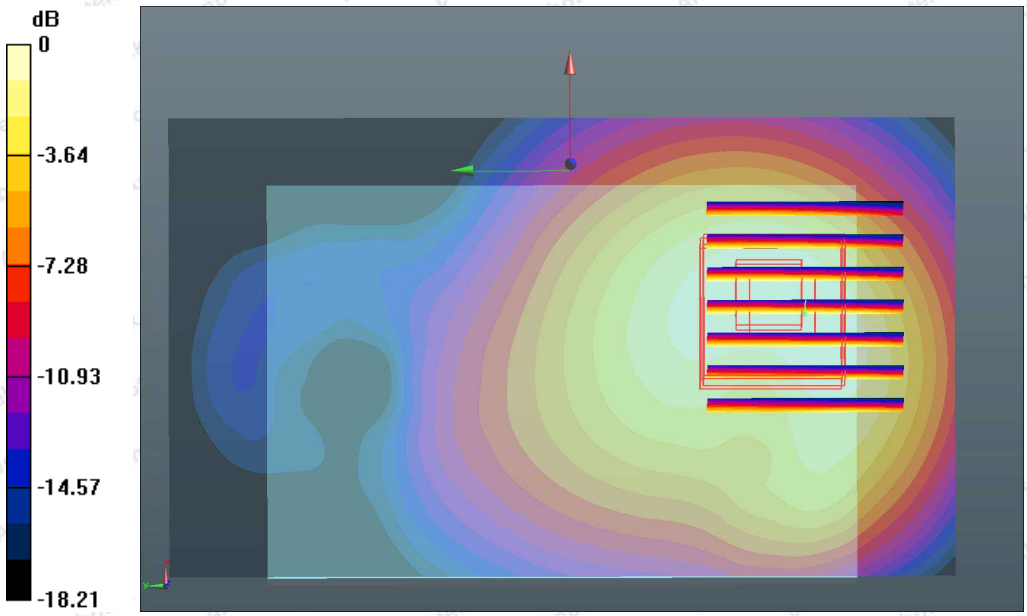
Communication System: UID 0, Generic LTE (0); Frequency: 1770 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1770 MHz; σ = 1.45 S/m; ε_r = 53.42; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN7396; ConvF(8.24, 8.24, 8.24); Calibrated: May,06.2021;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
- Phantom: SAM; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK/Area Scan (101x121x1): Measurement grid: dx=1.000mm, dy=1.000mm
Maximum value of SAR (interpolated) = 1.126 W/kg

BODY/BACK/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.57 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.132 W/kg
SAR(1 g) = 0.536 W/kg; SAR(10 g) = 0.271 W/kg
Maximum value of SAR (measured) = 1.127 W/kg



#5

Date: 12/13/2021

WIFI 2.4G_802.11b_Body Back _Ch11

Communication System: UID 0, wifi (fcc) (0); Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2462 MHz; σ = 1.97 S/m; ε_r = 53.1; ρ = 1000 kg/m^3

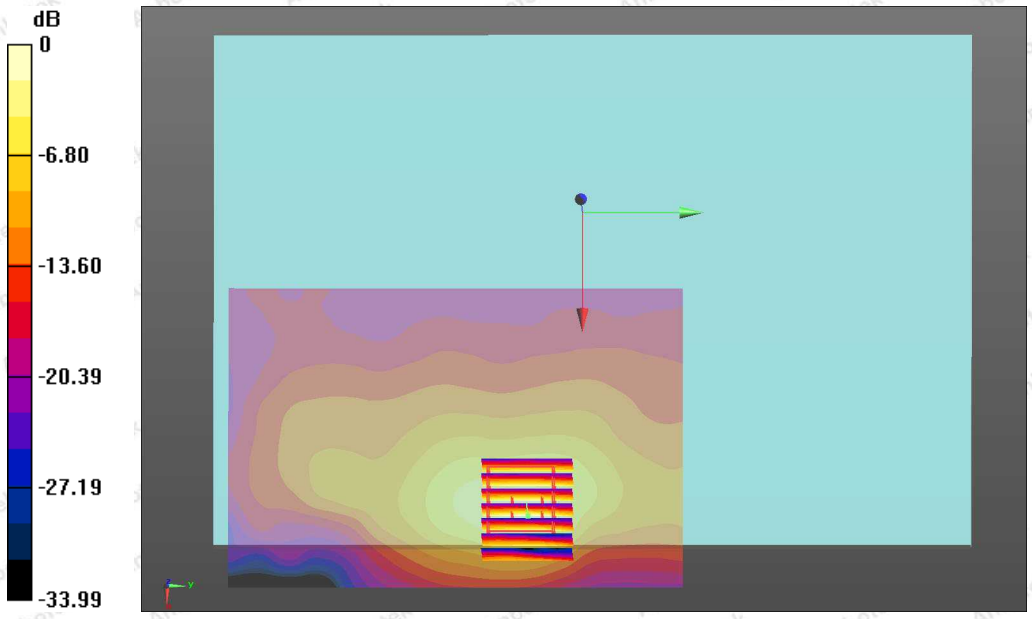
Phantom section: Flat Section

DASY5 Configuration:

•Probe: EX3DV4 - SN7396; ConvF(7.53, 7.53, 7.53); Calibrated: 05,06.2021;
•Sensor-Surface: 4mm (Mechanical Surface Detection)
•Electronics: DAE4 Sn387; Calibrated: Sep.06,2021
•Phantom: SAM 1; Type: SAM;
•Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.10 (7164)

BODY/BACK/Area Scan (101x121x1): Measurement grid: dx=1.000mm, dy=1.000mm
Maximum value of SAR (measured) = 0.945 W/kg
BODY/BACK/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.355 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.974 W/kg
SAR(1 g) = 0.488 W/kg; SAR(10 g) = 0.228 W/kg

Maximum value of SAR (measured) = 0.953 W/kg



Appendix D. DASY System Calibration Certificate

In Collaboration with
s p e a g
CALIBRATION LABORATORY

CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0570

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2218 Fax: +86-10-62304633-2209
E-mail: cttl@chinattl.com Http://www.chinattl.cn

Client **Anbotek (Auden)** **Certificate No: Z21-98671**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:7396
Calibration Procedure(s)	FF-Z12-006-08 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	May 06 , 2021

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	20-Jun-20 (CTTL, No.J20X07447)	Jun-21
Power sensor NRP-Z91	101547	20-Jun-20 (CTTL, No.J20X07447)	Jun-21
Power sensor NRP-Z91	101548	20-Jun-20 (CTTL, No.J20X07447)	Jun-21
Reference10dBAttenuator	18N50W-10dB	13-Mar-21(CTTL,No.J21X01547)	Mar-22
Reference20dBAttenuator	18N50W-20dB	13-Mar-21(CTTL, No.J21X01548)	Mar-22
Reference Probe EX3DV4	SN 7433	26-Sep-20(SPEAG,No.EX3-7433_Sep20)	Sep-21
DAE4	SN 549	13-Dec-20(SPEAG, No.DAE4-549_Dec20)	Dec -21
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGeneratorMG3700A	6201052605	27-Jun-20 (CTTL, No.J20X04776)	Jun-21
Network Analyzer E5071C	MY46110673	13-Jan-21 (CTTL, No.J21X00285)	Jan -22

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: May06 , 2021

In Collaboration with
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2218 Fax: +86-10-62304633-2209
E-mail: cttl@chinattl.com Http://www.chinattl.cn

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz)", February 2005

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z;VRx,y,z:*A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2218 Fax: +86-10-62304633-2209
E-mail: cttl@chinattl.com Http://www.chinattl.cn

Probe EX3DV4

SN: 7396

Calibrated: May 06, 2021

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 7396

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm(μV/(V/m)^2)^A	0.54	0.53	0.50	±10.0%
DCP(mV)^B	97.8	104.5	102.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	199.9	±2.4%
		Y	0.0	0.0	1.0		203.3	
		Z	0.0	0.0	1.0		195.0	

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of Norm X, Y, Z do not affect the E^2-field uncertainty inside TSL (see Page 5 and Page 6).
^{B} Numerical linearization parameter: uncertainty not required.
^{E} Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 7396

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (k=2)
750	41.9	0.89	9.82	9.82	9.82	0.30	0.85	±12.1%
835	41.5	0.90	9.71	9.71	9.71	0.15	1.36	±12.1%
900	41.5	0.97	9.87	9.87	9.87	0.16	1.37	±12.1%
1750	40.1	1.37	8.61	8.61	8.61	0.25	1.04	±12.1%
1900	40.0	1.40	8.13	8.13	8.13	0.24	1.01	±12.1%
2100	39.8	1.49	8.14	8.14	8.14	0.24	1.04	±12.1%
2300	39.5	1.67	7.85	7.85	7.85	0.40	0.75	±12.1%
2450	39.2	1.80	7.57	7.57	7.57	0.50	0.75	±12.1%
2600	39.0	1.96	7.38	7.38	7.38	0.64	0.68	±12.1%
5250	35.9	4.71	5.33	5.33	5.33	0.45	1.30	±13.3%
5600	35.5	5.07	4.89	4.89	4.89	0.45	1.35	±13.3%
5750	35.4	5.22	4.92	4.92	4.92	0.45	1.45	±13.3%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 7396

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (k=2)
750	55.5	0.96	10.09	10.09	10.09	0.30	0.90	±12.1%
835	55.2	0.97	9.88	9.88	9.88	0.19	1.32	±12.1%
900	55.0	1.05	9.82	9.82	9.82	0.23	1.15	±12.1%
1750	53.4	1.49	8.24	8.24	8.24	0.24	1.06	±12.1%
1900	53.3	1.52	7.97	7.97	7.97	0.19	1.24	±12.1%
2100	53.2	1.62	8.18	8.18	8.18	0.19	1.39	±12.1%
2300	52.9	1.81	7.88	7.88	7.88	0.55	0.80	±12.1%
2450	52.7	1.95	7.53	7.53	7.53	0.46	0.89	±12.1%
2600	52.5	2.16	7.38	7.38	7.38	0.52	0.80	±12.1%
5250	48.9	5.36	4.93	4.93	4.93	0.45	1.80	±13.3%
5600	48.5	5.77	4.19	4.19	4.19	0.48	1.90	±13.3%
5750	48.3	5.94	4.52	4.52	4.52	0.48	1.95	±13.3%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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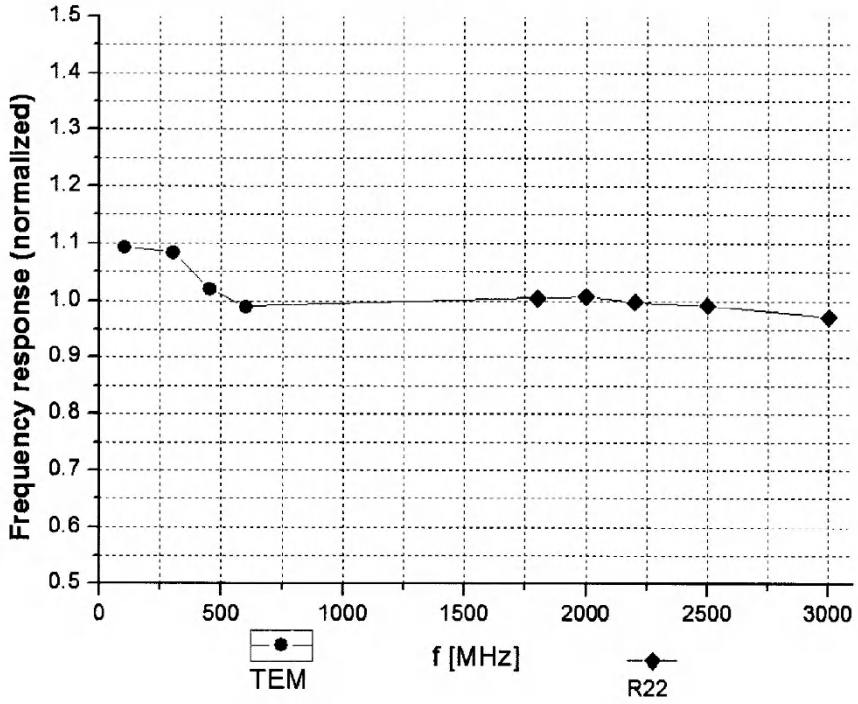
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (k=2)

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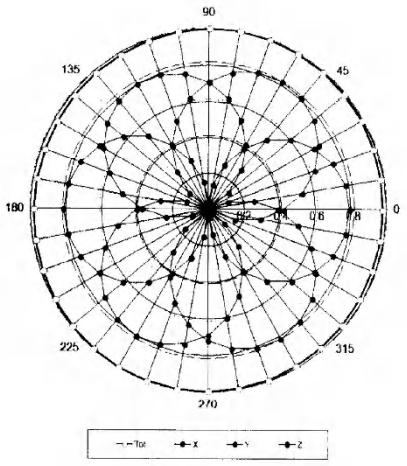
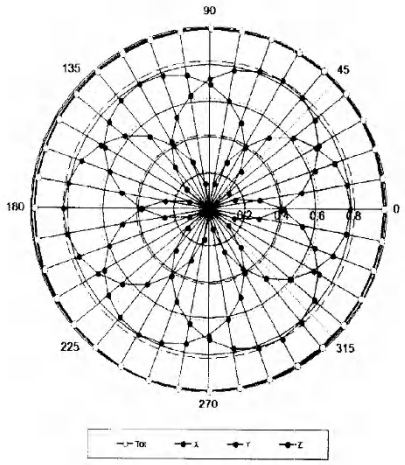
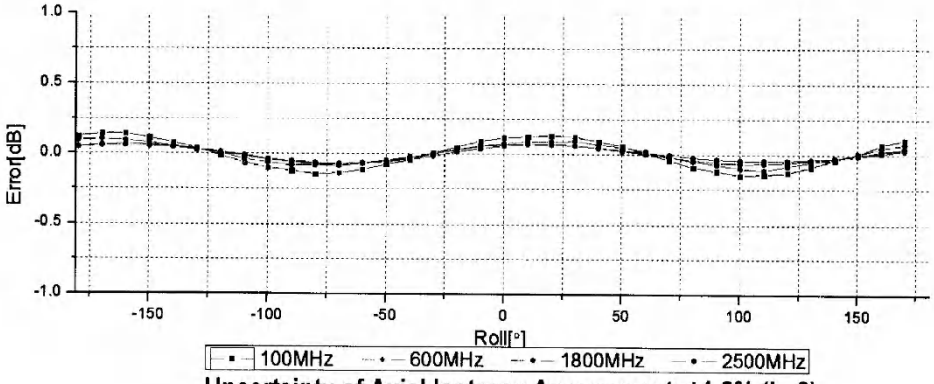
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





Uncertainty of Axial Isotropy Assessment: ±1.2% (k=2)

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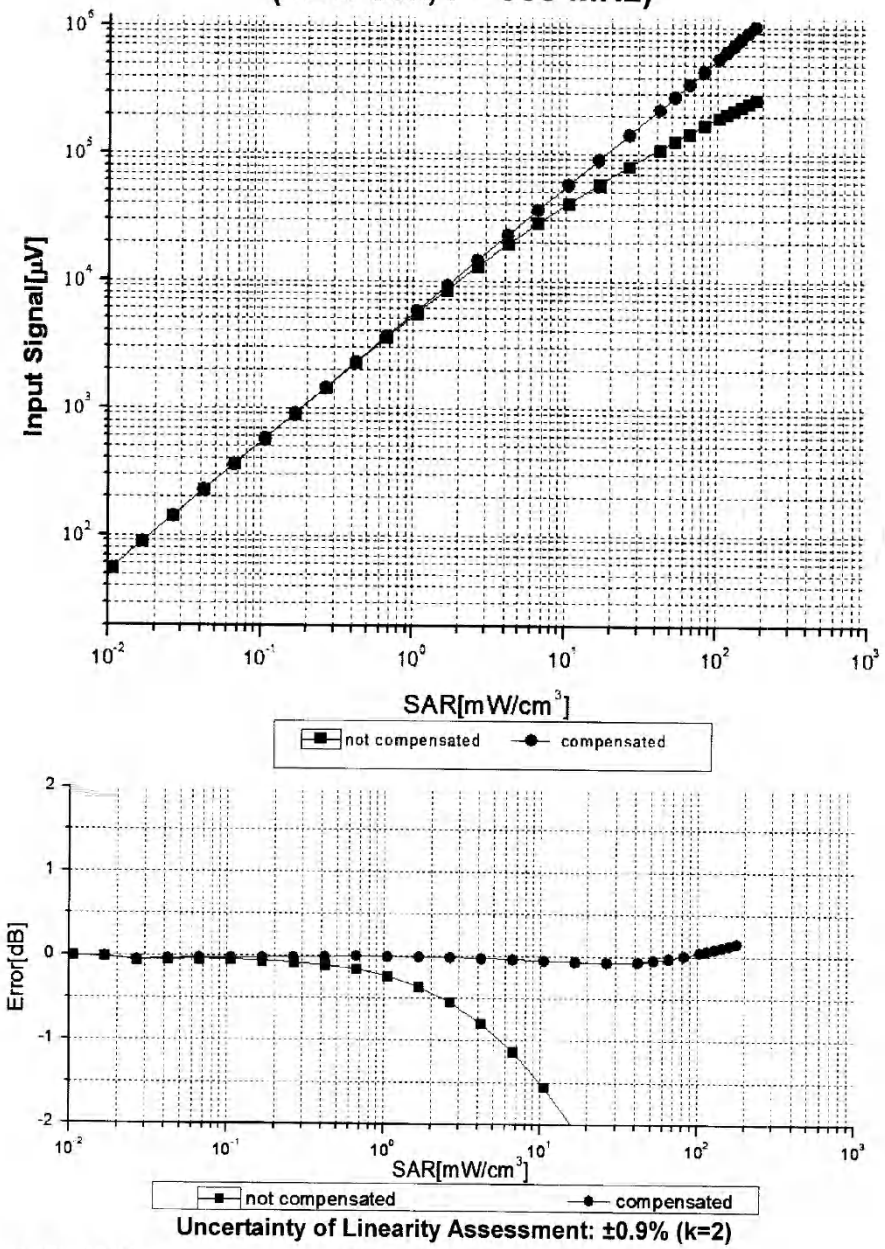
Dynamic Range f(SAR_{head})
(TEM cell, f = 900 MHz)



Uncertainty of Linearity Assessment: ±0.9% (k=2)

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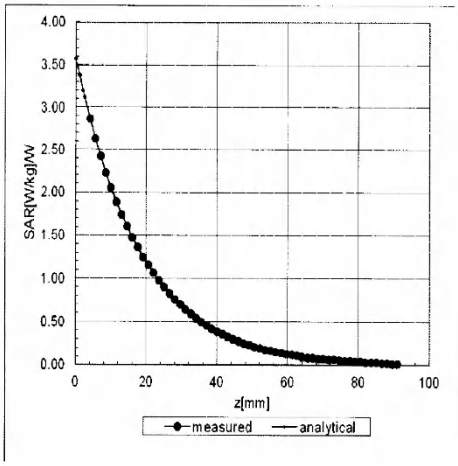
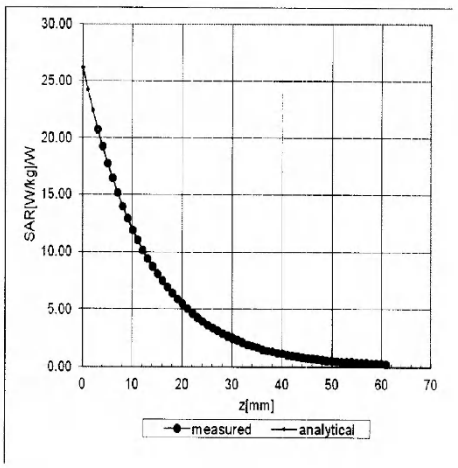
Conversion Factor Assessment

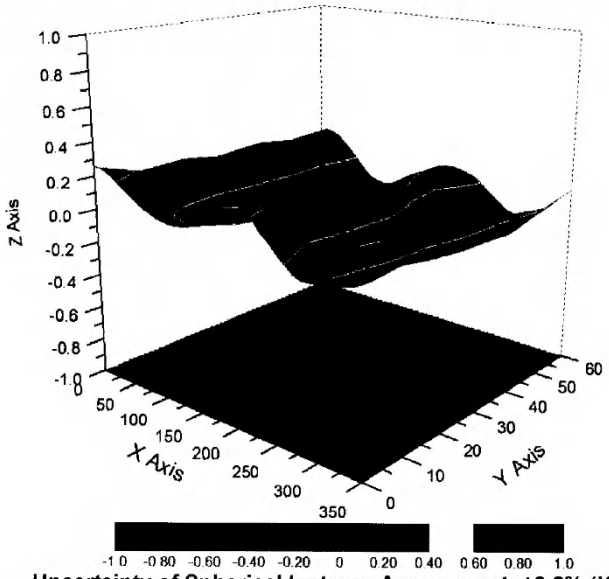
f=900 MHz, WGLS R9(H_convF)



f=1750 MHz, WGLS R22(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (K=2)

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 7396

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	156.9
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

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IMPORTANT NOTICE

USAGE OF THE DAE 4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

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TN_BR040315AD DAE4.doc 11.12.2009