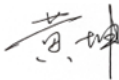


# FCC SAR Test Report

**Applicant:** Shenzhen Jumper Medical Equipment Co., Ltd.  
**EUT Description:** Pulse Oximeter  
**Model:** JPD-500D  
**FCC ID:** 2ADYL-JPD500D  
**Standards:** FCC 47CFR §2.1093  
**Date of Receipt:** 2024/06/14  
**Date of Test:** 2024/07/15  
**Date of Issue:** 2024/07/19

TOWE. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.



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**Huang Kun**  
**Approved By:**



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**Li Wei**  
**Reviewed By:**

## Revision History

<b>Rev.</b>	<b>Issue Date</b>	<b>Description</b>	<b>Revised by</b>
01	2024/07/19	Original	Li Wei

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## 1 Summary of Test Results

Band	Highest SAR <sub>10g</sub> (W/kg)
	Body 0mm
LTE Cat M1 Band 13	0.13
LTE Cat M1 Band 25/2	0.01
LTE Cat M1 Band 26/5	<b>0.23</b>
LTE Cat M1 Band 66/4	0.05
LTE Cat M1 Band 85/12	0.03
NB-IOT Band 5	0.19
NB-IOT Band 13	0.14
NB-IOT Band 25/2	0.02
NB-IOT Band 66/4	0.06
NB-IOT Band 71	0.01
NB-IOT Band 85/12	0.03
SAR Limited(W/kg)	4.0

**Remark:**

Band 2/4/5/12 SAR test was covered by Band 25/66/26/85; according to April 2015 TCB workshop, SAR test for overlapping bands can be reduced if:

- the maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion.
- the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

## 2 Guidance Applied

FCC 47CFR §2.1093  
ANSI/IEEE C95.1-1992  
IEEE 1528-2013  
FCC KDB 941225 D01 3G SAR Measurement Procedures v03r01  
FCC KDB 941225 D05 SAR for LTE Devices v02r05  
FCC KDB 447498 D01 General RF Exposure Guidance v06  
FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04  
FCC KDB 865664 D02 RF Exposure Reporting v01r02

## 3 Lab Information

### 3.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing (Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014  
Tel.: +86-755-27212361  
Contact Email: info@towewireless.com

### 3.2 Test Facility / Accreditations

#### A2LA (Certificate Number: 7088.01)

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

#### FCC Designation No.: CN1353

Sushi TOWE Wireless Testing (Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

#### ISED CAB identifier: CN0152

Sushi TOWE Wireless Testing (Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.  
CAB identifier: CN0152  
Company Number: 31000

### 3.3 Ambient Condition

Temperature: 18°C~25°C  
Relative Humidity: 30%~75%

## 4 Client Information

### 4.1 Applicant

Applicant:	Shenzhen Jumper Medical Equipment Co., Ltd.
Address:	D Building, No. 71, Xintian Road, Fuyong Street, Baoan, Shenzhen, Guangdong 518103, China

### 4.2 Manufacturer

Applicant:	Shenzhen Jumper Medical Equipment Co., Ltd.
Address:	D Building, No. 71, Xintian Road, Fuyong Street, Baoan, Shenzhen, Guangdong 518103, China

## 5 Product Information

EUT Description	Pulse Oximeter	
Model	JPD-500D	
Hardware Version	01.01.00	
Software Version	V2.12	
IMEI	864486065063121, 864486065082360, 864486065067528	
<b>Device Capabilities:</b>		
Band	Frequency Range (MHz)	Modulation Type
LTE Cat M1 Band 2	1850 ~1910	<input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input type="checkbox"/> 64QAM <input type="checkbox"/> 256QAM
LTE Cat M1 Band 4	1710~1755	
LTE Cat M1 Band 5	824~849	
LTE Cat M1 Band 12	699~716	
LTE Cat M1 Band 13	777~787	
LTE Cat M1 Band 25	1850~1915	
LTE Cat M1 Band 26	814~849	
LTE Cat M1 Band 66	1710~1780	
LTE Cat M1 Band 85	698~716	
NB-IOT Band 2	1850 ~ 1910	<input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> BPSK
NB-IOT Band 4	1710 ~ 1755	
NB-IOT Band 5	824 ~ 849	
NB-IOT Band 12	699 ~ 716	
NB-IOT Band 13	777 ~ 787	
NB-IOT Band 25	1850 ~ 1915	
NB-IOT Band 66	1710 ~ 1780	
NB-IOT Band 71	663 ~ 698	
NB-IOT Band 85	698 ~ 716	
Antenna Type	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated	
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user manual for more detailed description.		

## 5.1 Antenna Locations





## 6 RF Exposure Limits

Human Exposure	Uncontrolled Environment General Population (W/kg) or (mW/g)	Controlled Environment Occupational (W/kg) or (mW/g)
<b>Spatial Peak SAR<sup>1</sup></b> (Brain/Trunk)	1.6	8.0
<b>Spatial Average SAR<sup>2</sup></b> (Whole Body)	0.08	0.4
<b>Spatial Peak SAR<sup>3</sup></b> (Hands/Feet/Ankle/Wrist)	4.0	20.0

**Note:**

1, The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

2, The Spatial Average value of the SAR averaged over the whole body.

3, The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

**Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

**Controlled Environments** are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

## 7 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

### 7.1 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy ( $dW$ ) absorbed by (dissipated in) an incremental mass ( $dm$ ) contained in a volume element ( $dv$ ) of a given density ( $\rho$ ). The equation description is as below:

$$SAR = \frac{d}{dt} \left( \frac{dW}{dm} \right) = \frac{d}{dt} \left( \frac{dW}{\rho dv} \right)$$

SAR is expressed in units of Watts per kilogram (W/kg):

$$SAR = \frac{\sigma E^2}{\rho}$$

Where:

$\sigma$  is the conductivity of the tissue material (S/m)

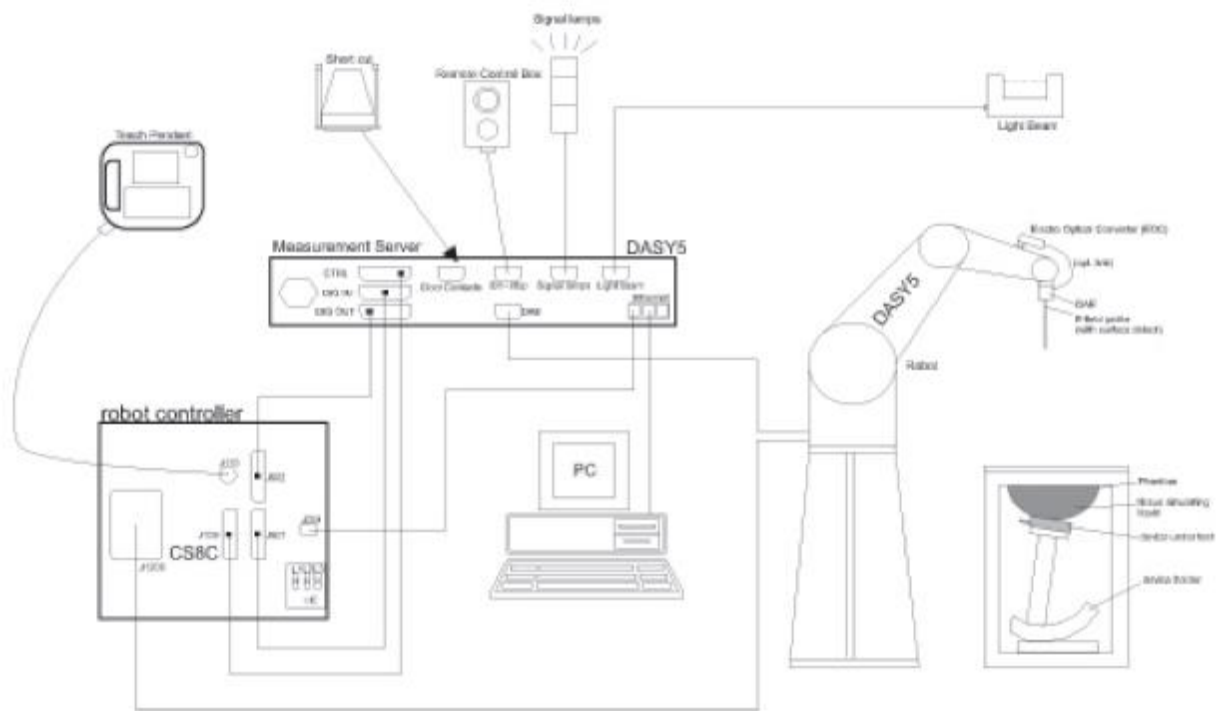
$\rho$  is the mass density of the tissue material (kg/m<sup>3</sup>)

$E$  is the RMS electrical field strength (V/m)

## 8 SAR Measurements System

### 8.1 The SAR Measurement Set-up

The DASY5 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Windows and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

## 8.2 Measurement procedure

### 8.2.1 Power reference measurement

The Power Reference Measurement and Power Drift Measurement jobs are useful jobs for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

### 8.2.2 Area scan

Measurement procedures for evaluating SAR from wireless handsets typically start with a coarse measurement grid to determine the approximate location of the local peak SAR values. This is known as the area-scan procedure. In addition, identify the positions of any local maxima with SAR values within 2 dB of the maximum value, and that will not be within the zoom scan of other peaks. Additional zoom scans shall be measured for such peaks only when the primary peak is within 2 dB of the SAR compliance limit.

Area scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

	$\leq 3$ GHz	$> 3$ GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1$ mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$	$\leq 2$ GHz: $\leq 15$ mm $2 - 3$ GHz: $\leq 12$ mm	$3 - 4$ GHz: $\leq 12$ mm $4 - 6$ GHz: $\leq 10$ mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

### 8.2.3 Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz.

		$\leq 3$ GHz	$> 3$ GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ mm
		$\Delta z_{Zoom}(n>1)$ : between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	

### 8.2.4 Power Drift Measurement

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test that must remain within a maximum variation of  $\pm 5\%$ . Detail power drift measurement refer to appendix B.

## 9 Test Equipment list

Manufacturer	Equipment Name	Model	Serial Number	Calibration Date	Due Date of calibration
SPEAG	Twin Phantom	SAM	2173	NCR	NCR
SPEAG	Twin Phantom	SAM	2168	NCR	NCR
SPEAG	E-Field Probe	EX3DV4	7812	2024/06/25	2025/06/24
SPEAG	E-Field Probe	EX3DV4	7858	2024/01/09	2025/01/08
SPEAG	Data Acquisition Electronics	DAE4	1846	2023/11/29	2024/11/28
SPEAG	Data Acquisition Electronics	DAE4	1847	2024/01/04	2025/01/03
SPEAG	System Validation Kits	D750V3	1231	2023/05/04	2026/05/03
SPEAG	System Validation Kits	D835V2	4d302	2023/02/06	2026/02/05
SPEAG	System Validation Kits	D1750V2	1115	2023/03/23	2026/03/22
SPEAG	System Validation Kits	D1900V2	512	2023/03/24	2026/03/23
SPEAG	Dielectric parameter probes	DAKS-3.5	1001	2024/01/22	2025/01/21
SPEAG	Vector Network Analyzer	DAKS_VNA R140	0140417	2024/01/16	2025/01/15
Anritsu	Radio Communication Analyzer	MT8821C	6262170463	2024/03/25	2025/03/24
R&S	Wideband Radio Communication Tester	CMW500	153024	2024/03/25	2025/03/24
R&S	Wideband Radio Communication Tester	CMW500	150645	2024/03/25	2025/03/24
R&S	Signal Generator	SMR20	100621	2024/03/25	2025/03/24
R&S	AVG Power Sensor	NRP-Z21	101651	2024/03/25	2025/03/24
R&S	AVG Power Sensor	NRP-Z21	104189	2024/03/25	2025/03/24
HAISIDIKE	Thermometer	TP300	TOWE-EQ-SR-023	2024/03/27	2025/03/26
BingYu	Temperature and Humidity Indicator	HTC-1	TOWE-EQ-SR-024	2024/03/26	2025/03/25
BingYu	Temperature and Humidity Indicator	HTC-1	TOWE-EQ-SR-027	2024/06/03	2025/06/02
Talent Microwave	Directional Coupler	TC-05180-10S	220420003	NCR	NCR
QiJi	Amplifier	YX28982301	TOWE-EQ-SR-020	NCR	NCR
QiJi	Amplifier	YX28982302	TOWE-EQ-SR-021	NCR	NCR

Note:

1. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged or repaired during the interval.
2. The justification data of dipole can be found in Appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

## 10 SAR measurement variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

- 1) Repeated measurement is not required when the original highest measured SAR is  $< 0.80$  or  $2$  W/kg (1-g or 10-g respectively); steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is  $\geq 0.80$  or  $2$  W/kg (1-g or 10-g respectively), repeat that measurement once.
- 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  $\geq 1.45$  or  $3.6$  W/kg ( $\sim 10\%$  from the 1-g or 10-g respective SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is  $\geq 1.5$  or  $3.75$  W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is  $> 1.20$ .

## **11 Description of Test Position**

### **11.1 Body exposure conditions**

SAR can test the sides near the antenna, the surface of the device should be tested for SAR compliance with the device touching the phantom. The SAR Exclusion Threshold in KDB 447498 D01 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent device surface is used to determine if SAR testing is required for the adjacent surfaces, with the adjacent surface positioned against the phantom and the surface containing the antenna positioned perpendicular to the phantom.



## 12 System Verification

### 12.1 Tissue Verification

The Conductivity ( $\sigma$ ) and Permittivity ( $\rho$ ) are listed in bellow table. The temperature variation of the Tissue Simulate Liquids was  $22\pm 2^{\circ}\text{C}$ , the liquid depth of the ear reference point or the flat phantom was at least 15 cm (which is shown in Figure 12-1).

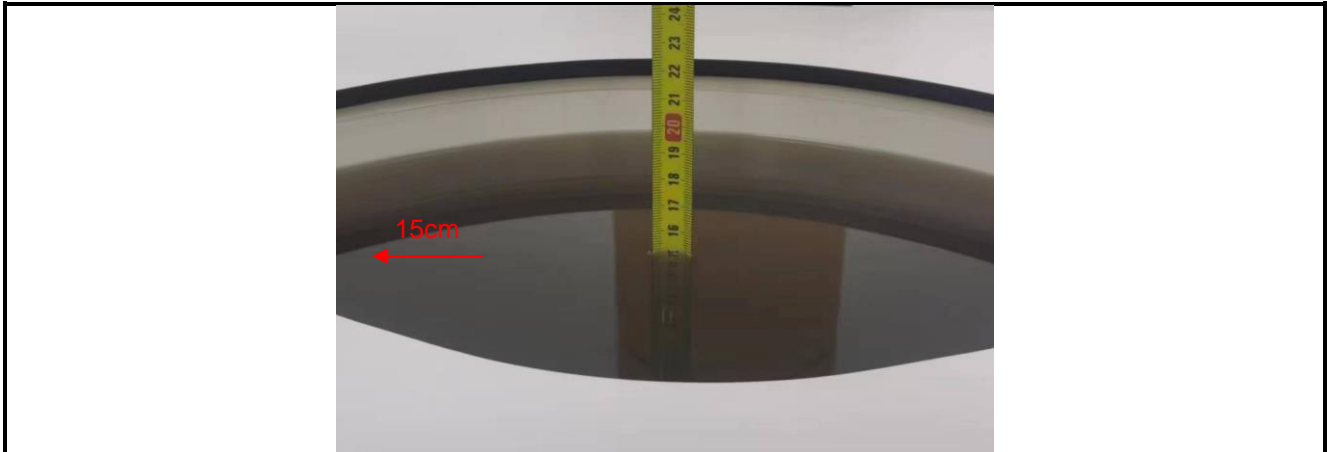


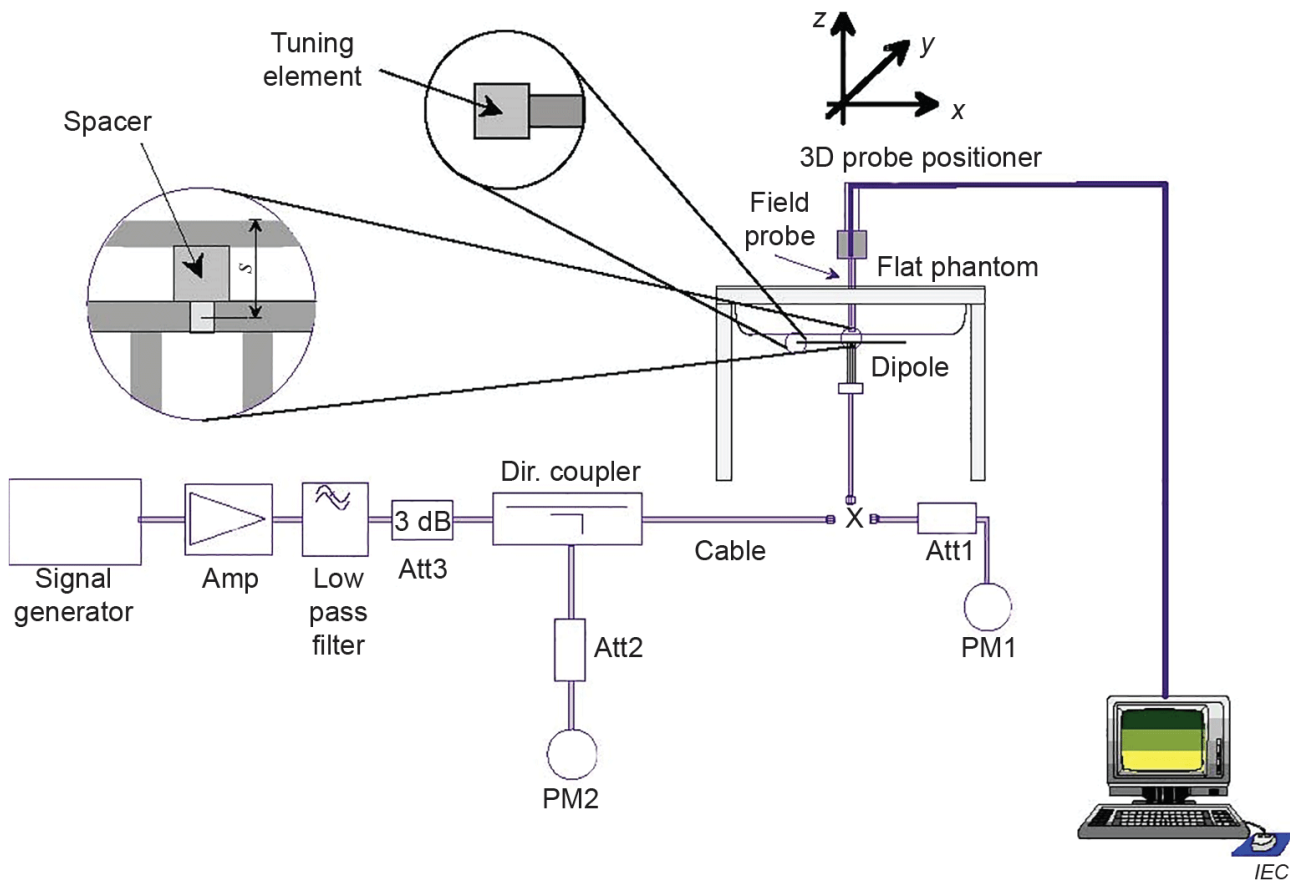
Figure 12-1 Liquid depth in the Flat Phantom

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Target Tissue		Measured Tissue		Deviation (Limit $\pm 5\%$ )		Date
			Permittivity $\epsilon_r$	Conductivity $\sigma(\text{S/m})$	Permittivity $\epsilon_r$	Conductivity $\sigma(\text{S/m})$	$\Delta\epsilon_r$	$\Delta\sigma$	
750	Head	22.5	41.90	0.89	42.700	0.894	1.91%	0.45%	2024/07/15
835	Head	22.3	41.50	0.90	42.100	0.898	1.45%	-0.22%	2024/07/15
1750	Head	21.9	40.10	1.37	40.200	1.380	0.25%	0.73%	2024/07/15
1900	Head	22.0	40.00	1.40	40.300	1.420	0.75%	1.43%	2024/07/15

Table 1: Measurement Tissue Parameters

## 12.2 SAR System Check

Prior to SAR assessment, a SAR system Check measurement was performed to see if the measured SAR was within  $\pm 10\%$  from the target SAR values. The System Performance Check Setup in Figure 12-3.



**Figure 12-3** System Performance Check Setup

### 12.2.1 System Check Result

Frequency (MHz)	Tissue Type	Dipole	S/N	Target SAR (1W)		Measured SAR (250mW)		Measured SAR (normalized to 1W)		Deviation (Limit ±10%)		Date
				1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	Δ1g	Δ10g	
750	Head	D750V3	1231	8.67	5.67	2.02	1.31	8.08	5.24	-6.81%	-7.58%	2024/07/15
835	Head	D835V2	4d302	9.78	6.37	2.34	1.51	9.36	6.04	-4.29%	-5.18%	2024/07/15
1750	Head	D1750V2	1115	36.90	19.50	9.39	5.03	37.56	20.12	1.79%	3.18%	2024/07/15
1900	Head	D1900V2	512	39.40	20.50	10.60	5.51	42.40	22.04	7.61%	7.51%	2024/07/15

Table 2: SAR System Check Result

### 12.2.2 Detailed System Check Result

Please see the Appendix A

## 13 SAR General Measurement Procedures

### 13.1 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is  $\leq 0.25$  dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is  $\leq 3.0$  W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

### 13.2 SAR Measurement Conditions for LTE Cat M1 and NB-IOT

LTE modes are tested according to FCC KDB 941225 D05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C/MT8821C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

#### 13.2.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

#### 13.2.2 Largest channel bandwidth standalone SAR test requirements

##### A. QPSK with 1 RB allocation

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. When the reported SAR is  $\leq 2.0$  W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is  $> 3.625$  W/kg, SAR is required for all three RB offset configurations for that required test channel.

##### B. QPSK with 50% RB allocation

The procedures required for 1 RB allocation in A are applied to measure the SAR for QPSK with 50% RB allocation.

##### C. QPSK with 100% RB allocation

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 in A and B are  $\leq 2.0$  W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is  $> 3.625$  W/kg, the remaining required test channels must also be tested.

##### D. Higher order modulations

For each modulation besides QPSK, e.g., 16-QAM, BPSK, apply the QPSK procedures in A, B, and C to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is  $> \frac{1}{2}$  dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is  $> 3.625$  W/kg.

### 13.2.3 Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in 13.4.4 to determine the channels and RB configurations that need SAR testing, then only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is  $> \frac{1}{2}$  dB higher than the equivalent channel configurations in the largest channel bandwidth configuration, or the reported SAR of a configuration for the largest channel bandwidth is  $> 3.625$  W/kg.

## 14 Conducted Power

### 14.1 Conducted Power of LTE Cat M1

LTE Cat M1 Band 2				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18607	18900	19193	
1.4MHz	QPSK	1	0	21.51	21.72	21.65	22.00
		1	2	21.54	21.56	21.66	22.00
		1	5	21.14	21.10	21.34	22.00
		3	0	20.35	20.41	20.64	22.00
		3	2	20.46	20.51	20.59	22.00
		3	3	20.43	20.39	20.48	22.00
	16QAM	6	0	20.15	20.11	20.06	22.00
		1	0	20.95	21.07	21.40	22.00
		1	2	20.95	21.17	21.27	22.00
		1	5	20.82	20.91	21.04	22.00
		3	0	20.28	20.24	20.30	22.00
		3	2	20.22	20.09	20.24	22.00
		3	3	20.09	20.01	20.24	22.00
		5	0	20.16	20.11	20.39	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18615	18900	19185	
3MHz	QPSK	1	0	21.55	21.66	21.78	22.00
		1	2	21.48	21.48	21.72	22.00
		1	5	21.20	21.03	21.40	22.00
		3	0	20.55	20.31	20.65	22.00
		3	2	20.39	20.26	20.61	22.00
		3	3	20.49	20.25	20.44	22.00
	16QAM	6	0	20.07	20.01	20.00	22.00
		1	0	21.13	21.07	20.83	22.00
		1	2	21.15	21.14	20.73	22.00
		1	5	20.88	20.91	20.58	22.00
		3	0	20.21	20.21	20.48	22.00
		3	2	20.18	20.17	20.41	22.00
		3	3	20.05	20.15	20.28	22.00
		5	0	20.01	20.07	20.08	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18625	18900	19175	
5MHz	QPSK	1	0	21.65	21.74	21.80	22.00
		1	2	21.61	21.58	21.79	22.00
		1	5	21.22	21.22	21.35	22.00
		3	0	21.50	21.41	21.72	22.00
		3	2	21.34	21.49	21.69	22.00
		3	3	21.23	21.27	21.51	22.00
	16QAM	6	0	20.32	20.36	20.60	22.00
		1	0	21.31	21.80	21.55	22.00
		1	2	21.29	21.21	21.39	22.00
		1	5	20.82	20.80	20.94	22.00
		3	0	20.98	21.08	21.29	22.00
		3	2	21.22	21.22	21.43	22.00
		3	3	21.17	21.12	21.38	22.00
		5	0	20.23	20.16	20.33	22.00

Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18650	18900	19150	
10MHz	QPSK	1	0	21.62	21.52	21.80	22.00
		1	2	21.55	21.52	21.76	22.00
		1	5	21.17	21.17	21.45	22.00
		3	0	21.44	21.34	21.73	22.00
		3	2	21.32	21.42	21.59	22.00
		3	3	21.30	21.33	21.57	22.00
		6	0	20.38	20.36	20.58	22.00
	16QAM	1	0	21.25	21.20	21.57	22.00
		1	2	21.11	21.14	21.37	22.00
		1	5	20.85	20.82	21.16	22.00
		3	0	21.00	21.01	21.39	22.00
		3	2	21.23	21.15	21.34	22.00
		3	3	21.13	21.26	21.23	22.00
		5	0	21.19	21.13	21.35	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18675	18900	19125	
15MHz	QPSK	1	0	21.52	21.69	21.78	22.00
		1	2	21.48	21.45	21.77	22.00
		1	5	21.13	21.12	21.42	22.00
		3	0	21.40	21.41	21.71	22.00
		3	2	21.35	21.36	21.66	22.00
		3	3	21.24	21.26	21.57	22.00
		6	0	21.31	21.34	21.67	22.00
	16QAM	1	0	21.22	21.24	21.77	22.00
		1	2	21.17	21.16	21.35	22.00
		1	5	20.84	20.77	21.06	22.00
		3	0	20.98	21.03	21.40	22.00
		3	2	21.09	21.11	21.45	22.00
		3	3	21.04	21.05	21.27	22.00
		5	0	21.23	21.15	21.36	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18700	18900	19100	
20MHz	QPSK	1	0	21.56	21.82	21.80	22.00
		1	2	21.56	21.47	21.79	22.00
		1	5	21.17	21.03	21.46	22.00
		3	0	21.49	21.74	21.74	22.00
		3	2	21.27	21.37	21.70	22.00
		3	3	21.17	21.16	21.60	22.00
		6	0	21.24	21.32	21.62	22.00
	16QAM	1	0	21.09	21.41	21.81	22.00
		1	2	21.17	21.17	21.23	22.00
		1	5	20.82	20.78	20.97	22.00
		3	0	21.02	20.98	21.42	22.00
		3	2	21.20	21.12	21.37	22.00
		3	3	21.09	21.01	21.26	22.00
		5	0	21.16	21.10	21.37	22.00

LTE Cat M1 Band 4				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19957	20175	20393	
1.4MHz	QPSK	1	0	21.51	21.71	21.82	22.00
		1	2	21.57	21.68	21.84	22.00
		1	5	21.22	21.37	21.49	22.00
		3	0	20.50	20.79	20.73	22.00
		3	2	20.43	20.71	20.68	22.00
		3	3	20.41	20.58	20.57	22.00
	16QAM	6	0	20.04	20.03	20.01	22.00
		1	0	20.37	20.76	21.22	22.00
		1	2	20.37	20.69	21.26	22.00
		1	5	20.72	20.64	21.02	22.00
		3	0	20.02	20.01	20.06	22.00
		3	2	20.06	20.03	20.02	22.00
		3	3	20.07	20.01	20.03	22.00
		5	0	20.01	20.04	20.02	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19965	20175	20385	
3MHz	QPSK	1	0	21.55	21.60	21.83	22.00
		1	2	21.50	21.77	21.83	22.00
		1	5	21.22	21.50	21.46	22.00
		3	0	20.45	20.54	20.76	22.00
		3	2	20.39	20.61	20.63	22.00
		3	3	20.28	20.50	20.52	22.00
	16QAM	6	0	20.05	20.06	20.04	22.00
		1	0	21.13	20.56	21.01	22.00
		1	2	21.20	20.74	20.86	22.00
		1	5	20.92	20.67	20.70	22.00
		3	0	20.22	20.38	20.10	22.00
		3	2	20.14	20.32	20.04	22.00
		3	3	20.02	20.11	20.03	22.00
		5	0	20.08	20.29	20.03	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19975	20175	20375	
5MHz	QPSK	1	0	21.54	21.58	21.80	22.00
		1	2	21.48	21.67	21.74	22.00
		1	5	21.20	21.28	21.49	22.00
		3	0	21.68	21.55	21.77	22.00
		3	2	21.31	21.55	21.64	22.00
		3	3	21.42	21.39	21.55	22.00
	16QAM	6	0	20.33	20.29	20.51	22.00
		1	0	21.37	21.81	21.79	22.00
		1	2	21.30	21.60	21.55	22.00
		1	5	20.94	21.13	21.21	22.00
		3	0	21.11	21.24	21.40	22.00
		3	2	21.30	21.72	21.53	22.00
		3	3	21.18	21.47	21.50	22.00
		5	0	20.29	20.28	20.45	22.00



Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20000	20175	20350	
10MHz	QPSK	1	0	21.69	21.61	21.77	22.00
		1	2	21.64	21.60	21.76	22.00
		1	5	21.39	21.27	21.49	22.00
		3	0	21.54	21.61	21.69	22.00
		3	2	21.25	21.53	21.63	22.00
		3	3	21.29	21.38	21.64	22.00
	16QAM	6	0	20.27	20.28	20.58	22.00
		1	0	21.21	21.82	21.78	22.00
		1	2	21.20	21.41	21.49	22.00
		1	5	20.92	20.99	21.19	22.00
		3	0	21.13	21.18	21.46	22.00
		3	2	21.54	21.51	21.58	22.00
		3	3	21.21	21.27	21.48	22.00
		5	0	21.28	21.32	21.66	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20025	20175	20325	
15MHz	QPSK	1	0	21.36	21.38	21.62	22.00
		1	2	21.43	21.43	21.69	22.00
		1	5	21.40	21.36	21.32	22.00
		3	0	21.31	21.54	21.85	22.00
		3	2	21.38	21.49	21.56	22.00
		3	3	21.29	21.38	21.46	22.00
	16QAM	6	0	21.29	21.48	21.56	22.00
		1	0	21.13	21.35	21.78	22.00
		1	2	21.09	21.27	21.50	22.00
		1	5	21.04	21.06	21.15	22.00
		3	0	21.01	21.14	21.35	22.00
		3	2	21.23	21.29	21.49	22.00
		3	3	21.12	21.17	21.47	22.00
		5	0	21.21	21.28	21.56	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20050	20175	20300	
20MHz	QPSK	1	0	21.67	21.87	21.51	22.00
		1	2	21.42	21.50	21.85	22.00
		1	5	21.36	21.27	21.42	22.00
		3	0	21.51	21.62	21.61	22.00
		3	2	21.48	21.43	21.57	22.00
		3	3	21.13	21.39	21.50	22.00
	16QAM	6	0	21.42	21.47	21.83	22.00
		1	0	21.34	21.76	21.86	22.00
		1	2	21.18	21.37	21.58	22.00
		1	5	20.88	20.96	21.12	22.00
		3	0	21.03	21.20	21.39	22.00
		3	2	21.56	21.30	21.52	22.00
		3	3	21.15	21.18	21.47	22.00
		5	0	21.12	21.29	21.60	22.00

LTE Cat M1 Band 5				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20407	20525	20643	
1.4MHz	QPSK	1	0	20.72	20.52	20.65	22.00
		1	2	20.62	20.34	20.62	22.00
		1	5	20.33	20.07	20.37	22.00
		3	0	19.77	19.54	19.61	21.00
		3	2	19.78	19.43	19.60	21.00
		3	3	19.76	19.41	19.56	21.00
	16QAM	6	0	19.14	19.10	19.04	21.00
		1	0	19.89	19.80	19.73	21.00
		1	2	19.79	19.67	19.60	21.00
		1	5	19.61	19.48	19.34	21.00
		3	0	19.04	18.85	18.76	20.00
		3	2	18.96	18.75	18.58	20.00
		3	3	18.92	18.62	18.65	20.00
		5	0	19.13	18.85	18.78	20.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20415	20525	20635	
3MHz	QPSK	1	0	20.70	20.89	20.83	22.00
		1	2	20.75	20.45	20.69	22.00
		1	5	20.32	20.13	20.28	22.00
		3	0	19.81	19.47	19.61	21.00
		3	2	19.81	19.47	19.54	21.00
		3	3	19.68	19.35	19.56	21.00
	16QAM	6	0	19.04	19.10	19.04	21.00
		1	0	19.89	20.13	19.83	21.00
		1	2	19.68	19.53	19.72	21.00
		1	5	19.44	19.34	19.46	21.00
		3	0	19.11	18.71	18.73	20.00
		3	2	19.01	18.25	18.65	20.00
		3	3	18.86	18.49	18.58	20.00
		5	0	19.08	18.73	18.83	20.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20425	20525	20625	
5MHz	QPSK	1	0	20.84	20.99	20.99	22.00
		1	2	20.78	20.65	20.86	22.00
		1	5	20.51	20.43	20.57	22.00
		3	0	20.76	20.76	20.92	21.00
		3	2	20.58	20.42	20.74	21.00
		3	3	20.46	20.50	20.56	21.00
	16QAM	6	0	19.53	19.36	19.68	21.00
		1	0	19.65	19.52	19.62	21.00
		1	2	19.67	19.46	19.62	21.00
		1	5	19.27	19.09	19.10	21.00
		3	0	19.40	19.35	19.44	20.00
		3	2	19.30	19.07	19.16	20.00
		3	3	19.27	19.03	19.02	20.00
		5	0	18.31	18.47	18.31	20.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20450	20525	20600	
10MHz	QPSK	1	0	20.85	21.08	20.90	22.00
		1	2	20.78	20.76	20.87	22.00
		1	5	20.37	20.24	20.58	22.00
		3	0	20.89	20.94	20.93	21.00
		3	2	20.62	20.63	20.65	21.00
		3	3	20.63	20.19	20.59	21.00
	16QAM	6	0	19.67	19.72	19.56	21.00
		1	0	19.66	20.02	19.54	21.00
		1	2	19.61	19.35	19.48	21.00
		1	5	19.21	19.01	19.24	21.00
		3	0	19.47	19.46	19.61	20.00
		3	2	19.27	19.09	19.12	20.00
		3	3	19.26	18.87	19.06	20.00
		5	0	19.49	19.22	19.32	20.00

LTE Cat M1 Band 12				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23017	23095	23173	
1.4MHz	QPSK	1	0	20.68	20.70	20.82	22.00
		1	2	20.73	20.66	20.59	22.00
		1	5	20.55	20.70	20.43	22.00
		3	0	20.11	20.41	20.22	21.00
		3	2	19.87	20.35	20.31	21.00
		3	3	19.76	20.32	20.13	21.00
	16QAM	6	0	19.03	19.51	19.56	21.00
		1	0	19.67	20.14	20.31	21.00
		1	2	19.59	20.02	20.09	21.00
		1	5	19.37	19.92	19.98	21.00
		3	0	19.10	19.50	19.57	21.00
		3	2	19.11	19.51	19.55	21.00
3MHz	QPSK	3	3	19.04	19.54	19.59	21.00
		5	0	19.05	19.54	19.66	21.00
		1	0	20.77	20.77	20.81	22.00
		1	2	20.77	20.67	20.67	22.00
		1	5	20.58	20.60	20.62	22.00
		3	0	20.15	20.40	20.49	21.00
	16QAM	3	2	19.87	20.21	20.36	21.00
		3	3	19.76	20.15	20.26	21.00
		6	0	19.14	19.42	19.45	21.00
		1	0	19.84	20.33	20.53	21.00
		1	2	19.73	20.20	20.19	21.00
		1	5	19.58	19.89	19.97	21.00
5MHz	QPSK	3	0	19.26	19.40	19.47	21.00
		3	2	19.20	19.23	19.50	21.00
		3	3	19.12	19.34	19.57	21.00
		5	0	19.29	19.59	19.69	21.00
		1	0	20.82	20.55	20.73	22.00
		1	2	20.66	20.27	20.45	22.00
	16QAM	1	5	20.79	20.03	20.12	22.00
		3	0	20.50	20.37	20.48	21.00
		3	2	20.70	20.16	20.35	21.00
		3	3	20.67	20.15	20.25	21.00
		6	0	20.08	19.36	19.42	21.00
		1	0	19.31	19.72	19.21	21.00
10MHz	QPSK	1	2	19.25	19.52	19.79	21.00
		1	5	19.00	19.30	19.41	21.00
		3	0	19.16	19.48	19.70	21.00
		3	2	19.17	19.51	19.64	21.00
		3	3	19.06	19.41	19.53	21.00
		5	0	19.00	19.02	19.12	21.00
	16QAM	1	0	20.30	20.83	20.79	22.00
		1	2	20.35	20.64	20.41	22.00
		1	5	20.17	20.47	20.15	22.00
		3	0	20.31	20.53	20.46	21.00
		3	2	20.30	20.44	20.31	21.00
		3	3	20.22	20.36	20.21	21.00
1.4MHz	QPSK	6	0	19.44	19.77	19.38	21.00
		1	0	19.25	19.49	19.96	21.00
		1	2	19.24	19.46	19.75	21.00
		1	5	19.11	19.20	19.48	21.00
		3	0	19.19	19.33	19.59	21.00
		3	2	19.24	19.29	19.52	21.00
	16QAM	3	3	19.19	19.28	19.48	21.00
		5	0	19.34	19.45	19.62	21.00

LTE Cat M1 Band 13				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23205	23230	23255	
5MHz	QPSK	1	0	20.65	20.58	20.16	22.00
		1	2	20.48	20.53	20.40	22.00
		1	5	20.11	20.08	20.06	22.00
		3	0	20.81	20.56	20.54	22.00
		3	2	20.33	20.24	20.46	22.00
		3	3	20.34	20.17	20.34	22.00
	16QAM	6	0	20.02	20.01	20.03	22.00
		1	0	20.69	20.70	20.54	22.00
		1	2	20.66	20.68	20.49	22.00
		1	5	20.41	20.36	20.32	22.00
		3	0	20.68	20.53	20.54	22.00
		3	2	20.44	20.34	20.45	22.00
		3	3	20.25	20.12	20.22	22.00
		5	0	20.02	20.11	20.03	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
10MHz	QPSK	1	0	/	<b>20.84</b>	/	22.00
		1	2	/	20.76	/	22.00
		1	5	/	20.36	/	22.00
		3	0	/	<b>20.76</b>	/	22.00
		3	2	/	20.27	/	22.00
		3	3	/	20.24	/	22.00
	16QAM	6	0	/	20.61	/	22.00
		1	0	/	20.44	/	22.00
		1	2	/	20.43	/	22.00
		1	5	/	20.00	/	22.00
		3	0	/	20.61	/	22.00
		3	2	/	20.29	/	22.00
		3	3	/	20.26	/	22.00
		5	0	/	20.01	/	22.00

LTE Cat M1 Band 25				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26047	26365	26683	
1.4MHz	QPSK	1	0	21.40	21.48	21.79	22.00
		1	2	21.41	21.45	21.82	22.00
		1	5	21.12	20.94	21.44	22.00
		3	0	20.42	20.35	20.82	22.00
		3	2	20.51	20.52	20.81	22.00
		3	3	20.40	20.33	20.75	22.00
		6	0	20.02	20.04	20.01	22.00
	16QAM	1	0	20.59	20.60	21.31	22.00
		1	2	20.46	20.78	21.16	22.00
		1	5	20.21	20.50	20.89	22.00
		3	0	20.06	20.05	20.25	22.00
		3	2	20.08	20.09	20.20	22.00
		3	3	20.05	20.04	20.07	22.00
		5	0	20.02	20.02	20.24	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26055	26365	26675	
3MHz	QPSK	1	0	21.47	21.43	21.82	22.00
		1	2	21.37	21.40	21.78	22.00
		1	5	21.08	21.06	21.42	22.00
		3	0	20.37	20.32	20.74	22.00
		3	2	20.57	20.38	20.90	22.00
		3	3	20.43	20.28	20.80	22.00
		6	0	20.05	20.08	20.02	22.00
	16QAM	1	0	20.43	20.38	20.82	22.00
		1	2	20.39	20.51	21.03	22.00
		1	5	20.57	20.46	20.80	22.00
		3	0	20.05	20.06	20.16	22.00
		3	2	20.07	20.02	20.20	22.00
		3	3	20.03	20.06	20.14	22.00
		5	0	20.03	20.04	20.23	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26065	26365	26665	
5MHz	QPSK	1	0	21.47	21.44	21.78	22.00
		1	2	21.50	21.41	21.85	22.00
		1	5	21.17	21.07	21.52	22.00
		3	0	21.40	21.42	21.80	22.00
		3	2	21.32	21.38	21.84	22.00
		3	3	21.20	21.27	21.64	22.00
		6	0	20.35	20.42	20.75	22.00
	16QAM	1	0	21.33	21.65	21.82	22.00
		1	2	21.24	21.28	21.76	22.00
		1	5	20.96	20.96	21.32	22.00
		3	0	21.09	21.12	21.63	22.00
		3	2	21.28	21.30	21.75	22.00
		3	3	21.15	21.17	21.54	22.00
		5	0	20.28	20.27	20.42	22.00

Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26090	26365	26640	
10MHz	QPSK	1	0	21.43	21.45	21.83	22.00
		1	2	21.49	21.39	21.80	22.00
		1	5	21.17	21.05	21.60	22.00
		3	0	21.39	21.31	21.82	22.00
		3	2	21.31	21.27	21.81	22.00
		3	3	21.19	21.18	21.69	22.00
		6	0	20.33	20.33	20.72	22.00
	16QAM	1	0	21.28	21.55	21.84	22.00
		1	2	21.21	21.20	21.77	22.00
		1	5	21.02	20.89	21.54	22.00
		3	0	21.08	21.05	21.64	22.00
		3	2	21.26	21.19	21.63	22.00
		3	3	21.23	21.18	21.51	22.00
		5	0	21.27	21.25	21.66	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26115	26365	26615	
15MHz	QPSK	1	0	21.40	21.42	21.86	22.00
		1	2	21.49	21.32	21.85	22.00
		1	5	21.19	21.00	21.55	22.00
		3	0	21.33	21.35	21.83	22.00
		3	2	21.21	21.30	21.78	22.00
		3	3	21.11	21.19	21.69	22.00
		6	0	21.22	21.26	21.79	22.00
	16QAM	1	0	21.39	21.40	21.84	22.00
		1	2	21.24	21.19	21.46	22.00
		1	5	20.92	20.83	21.42	22.00
		3	0	21.11	21.08	21.52	22.00
		3	2	21.21	21.21	21.67	22.00
		3	3	21.08	21.10	21.57	22.00
		5	0	21.24	21.19	21.65	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26140	26365	26590	
20MHz	QPSK	1	0	21.38	<b>21.87</b>	21.81	22.00
		1	2	21.41	21.35	21.81	22.00
		1	5	21.07	21.00	21.55	22.00
		3	0	21.36	<b>21.83</b>	21.79	22.00
		3	2	21.30	21.23	21.80	22.00
		3	3	21.11	21.13	21.67	22.00
		6	0	21.17	21.21	21.86	22.00
	16QAM	1	0	21.22	21.61	21.81	22.00
		1	2	21.15	21.11	21.79	22.00
		1	5	20.89	20.80	21.33	22.00
		3	0	21.07	21.11	21.47	22.00
		3	2	21.30	21.14	21.82	22.00
		3	3	21.24	21.09	21.70	22.00
		5	0	21.28	21.17	21.54	22.00

LTE Cat M1 Band 26				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26697	26865	27033	
1.4MHz	QPSK	1	0	20.78	20.95	20.78	22.00
		1	2	20.80	20.76	20.65	22.00
		1	5	20.40	20.45	20.28	22.00
		3	0	20.22	20.13	19.81	21.00
		3	2	20.36	20.18	20.12	21.00
		3	3	20.23	20.24	20.01	21.00
		6	0	19.87	19.78	19.41	21.00
	16QAM	1	0	19.43	19.50	19.60	21.00
		1	2	19.38	19.40	19.35	21.00
		1	5	19.21	19.20	19.14	21.00
		3	0	19.04	19.12	19.05	21.00
		3	2	19.03	19.06	19.02	21.00
		3	3	19.07	19.06	19.03	21.00
		5	0	19.02	19.09	19.07	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26705	26865	27025	
3MHz	QPSK	1	0	20.75	20.94	20.74	22.00
		1	2	20.83	20.91	20.77	22.00
		1	5	20.46	20.65	20.38	22.00
		3	0	20.26	20.48	20.21	21.00
		3	2	20.17	20.36	20.35	21.00
		3	3	19.93	20.13	20.27	21.00
		6	0	20.01	20.22	19.75	21.00
	16QAM	1	0	19.64	19.62	19.47	21.00
		1	2	19.43	19.38	19.40	21.00
		1	5	19.22	19.16	19.28	21.00
		3	0	19.10	19.09	19.05	21.00
		3	2	19.06	19.02	19.15	21.00
		3	3	19.04	19.03	19.03	21.00
		5	0	19.05	19.08	19.07	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26715	26865	27015	
5MHz	QPSK	1	0	20.70	20.65	20.56	22.00
		1	2	20.65	20.61	20.53	22.00
		1	5	20.30	20.21	20.25	22.00
		3	0	20.72	20.90	20.78	21.00
		3	2	20.55	20.60	20.41	21.00
		3	3	20.42	20.50	20.39	21.00
		6	0	19.51	19.83	19.49	21.00
	16QAM	1	0	19.72	19.94	19.30	21.00
		1	2	19.73	19.82	19.11	21.00
		1	5	19.36	19.27	19.03	21.00
		3	0	19.74	19.66	19.02	21.00
		3	2	19.45	19.39	19.11	21.00
		3	3	19.21	19.26	19.15	21.00
		5	0	19.13	19.13	19.10	21.00

Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26740	26865	26990	
10MHz	QPSK	1	0	20.85	20.84	20.71	22.00
		1	2	20.72	20.68	20.52	22.00
		1	5	20.34	20.31	20.36	22.00
		3	0	20.68	20.76	20.63	21.00
		3	2	20.47	20.61	20.42	21.00
		3	3	20.40	20.41	20.30	21.00
	16QAM	6	0	19.59	19.86	19.78	21.00
		1	0	19.72	20.00	19.82	21.00
		1	2	19.75	19.67	19.63	21.00
		1	5	19.41	19.49	19.32	21.00
		3	0	19.58	19.60	19.50	21.00
		3	2	19.37	19.32	19.31	21.00
		3	3	19.26	19.31	19.09	21.00
		5	0	19.39	19.48	19.35	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26765	26865	26965	
15MHz	QPSK	1	0	20.79	<b>20.96</b>	20.64	22.00
		1	2	20.71	20.55	20.64	22.00
		1	5	20.52	20.25	20.36	22.00
		3	0	20.75	<b>20.90</b>	20.77	21.00
		3	2	20.72	20.47	20.53	21.00
		3	3	20.58	20.40	20.43	21.00
	16QAM	6	0	20.71	20.52	20.55	21.00
		1	0	19.99	20.21	20.21	21.00
		1	2	19.88	19.68	19.69	21.00
		1	5	19.57	19.38	19.40	21.00
		3	0	19.74	19.62	19.60	21.00
		3	2	19.62	19.33	19.37	21.00
		3	3	19.52	19.16	19.25	21.00
		5	0	19.74	19.37	19.39	21.00



LTE Cat M1 Band 66				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				131979	132322	132665	
1.4MHz	QPSK	1	0	21.66	21.54	21.36	22.00
		1	2	21.59	21.52	21.36	22.00
		1	5	21.27	21.26	21.03	22.00
		3	0	20.68	20.58	20.29	22.00
		3	2	20.62	20.51	20.38	22.00
		3	3	20.52	20.37	20.24	22.00
	16QAM	6	0	20.03	20.06	20.01	22.00
		1	0	20.65	20.34	20.43	22.00
		1	2	20.41	20.62	20.27	22.00
		1	5	20.41	20.46	20.01	22.00
		3	0	20.13	20.08	20.03	22.00
		3	2	20.08	20.01	20.03	22.00
		3	3	20.07	20.02	20.05	22.00
		5	0	20.14	20.05	20.01	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				131987	132322	132657	
3MHz	QPSK	1	0	21.61	21.52	21.37	22.00
		1	2	21.71	21.51	21.33	22.00
		1	5	21.43	21.36	20.94	22.00
		3	0	20.70	20.57	20.38	22.00
		3	2	20.62	20.63	20.33	22.00
		3	3	20.49	20.41	20.21	22.00
	16QAM	6	0	20.04	20.04	20.05	22.00
		1	0	20.45	20.69	20.39	22.00
		1	2	20.60	20.35	20.18	22.00
		1	5	20.51	20.43	20.01	22.00
		3	0	20.08	20.05	20.02	22.00
		3	2	20.12	20.03	20.04	22.00
		3	3	20.15	20.08	20.00	22.00
		5	0	20.12	20.20	20.03	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				131997	132322	132647	
5MHz	QPSK	1	0	21.70	21.69	21.48	22.00
		1	2	21.77	21.60	21.32	22.00
		1	5	21.42	21.24	21.04	22.00
		3	0	21.73	21.60	21.40	22.00
		3	2	21.59	21.36	21.30	22.00
		3	3	21.45	21.24	21.20	22.00
	16QAM	6	0	20.55	20.22	20.23	22.00
		1	0	21.53	21.79	21.47	22.00
		1	2	21.51	21.28	21.42	22.00
		1	5	21.21	20.80	21.06	22.00
		3	0	21.42	21.18	21.25	22.00
		3	2	21.41	21.38	21.19	22.00
		3	3	21.33	21.28	20.98	22.00
		5	0	20.43	20.14	20.02	22.00

Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132022	132322	132622	
10MHz	QPSK	1	0	21.67	21.54	21.51	22.00
		1	2	21.78	21.49	21.37	22.00
		1	5	21.47	21.22	21.06	22.00
		3	0	21.73	21.60	21.43	22.00
		3	2	21.60	21.49	21.25	22.00
		3	3	21.39	21.45	21.12	22.00
		6	0	20.50	20.55	20.24	22.00
	16QAM	1	0	21.49	21.05	21.57	22.00
		1	2	21.50	21.05	21.48	22.00
		1	5	21.09	20.88	21.19	22.00
		3	0	21.26	21.22	21.17	22.00
		3	2	21.43	21.40	21.18	22.00
		3	3	21.33	21.33	20.95	22.00
		5	0	21.64	21.47	21.15	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132047	132322	132597	
15MHz	QPSK	1	0	21.33	21.75	21.52	22.00
		1	2	21.66	21.71	21.37	22.00
		1	5	21.42	21.31	21.00	22.00
		3	0	21.65	21.57	21.28	22.00
		3	2	21.55	21.42	21.33	22.00
		3	3	21.40	21.20	21.10	22.00
		6	0	21.60	21.38	21.20	22.00
	16QAM	1	0	21.46	21.74	21.42	22.00
		1	2	21.39	21.25	21.50	22.00
		1	5	21.08	20.82	21.11	22.00
		3	0	21.27	21.13	21.20	22.00
		3	2	21.32	21.40	21.15	22.00
		3	3	21.37	21.28	21.04	22.00
		5	0	21.56	21.38	21.13	22.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				132072	132322	132572	
20MHz	QPSK	1	0	21.55	<b>21.80</b>	21.45	22.00
		1	2	21.56	21.72	21.46	22.00
		1	5	21.29	21.28	21.03	22.00
		3	0	21.69	<b>21.75</b>	21.39	22.00
		3	2	21.75	21.56	21.34	22.00
		3	3	21.57	21.40	21.13	22.00
		6	0	21.60	21.56	21.21	22.00
	16QAM	1	0	21.45	21.67	21.53	22.00
		1	2	21.42	21.24	21.49	22.00
		1	5	21.06	20.91	21.24	22.00
		3	0	21.28	21.01	21.33	22.00
		3	2	21.36	21.46	21.26	22.00
		3	3	21.24	21.31	21.04	22.00
		5	0	21.57	21.40	21.15	22.00

LTE Cat M1 Band 85				Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				134027	134092	134157	
5MHz	QPSK	1	0	20.61	21.39	20.99	22.00
		1	2	20.74	21.42	20.95	22.00
		1	5	20.57	21.16	20.68	22.00
		3	0	20.71	21.50	21.13	22.00
		3	2	20.61	21.37	20.91	22.00
		3	3	20.51	21.26	20.80	22.00
		6	0	19.81	20.36	19.99	21.00
	16QAM	1	0	19.46	20.04	19.68	21.00
		1	2	19.59	19.82	19.58	21.00
		1	5	19.43	20.12	19.68	21.00
		3	0	19.52	20.05	19.63	21.00
		3	2	19.54	19.95	19.54	21.00
		3	3	19.39	19.01	19.00	21.00
		5	0	19.68	19.46	20.10	21.00
Bandwidth	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				134052	134092	134132	
10MHz	QPSK	1	0	20.71	<b>21.53</b>	21.13	22.00
		1	2	20.74	21.42	20.95	22.00
		1	5	20.57	21.16	20.68	22.00
		3	0	20.66	<b>21.45</b>	21.06	22.00
		3	2	20.61	21.37	20.91	22.00
		3	3	20.51	21.26	20.80	22.00
		6	0	19.81	20.36	19.99	21.00
	16QAM	1	0	19.18	19.98	19.56	21.00
		1	2	19.05	19.96	19.53	21.00
		1	5	19.04	19.67	19.34	21.00
		3	0	19.14	19.95	19.52	21.00
		3	2	19.01	19.97	19.52	21.00
		3	3	19.01	19.85	19.40	21.00
		5	0	19.04	19.03	19.04	21.00

## 14.2 Conducted Power of NB-IOT

NB-IOT Band 2				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				18601	18900	19199	
3.75	QPSK	1	0	20.81	20.76	20.86	22.00
		1	23	20.77	20.68	20.85	22.00
		1	47	20.77	20.66	20.80	22.00
	BPSK	1	0	20.51	20.73	20.85	22.00
		1	23	20.43	20.72	20.80	22.00
		1	47	20.70	20.74	20.78	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				18601	18900	19199	
15	QPSK	1	0	20.81	20.90	20.42	22.00
		1	5	20.75	20.89	20.38	22.00
		1	11	20.78	20.80	20.34	22.00
		3	0	20.72	20.79	20.26	22.00
		3	3	20.20	20.40	20.39	22.00
		3	6	20.13	20.32	20.36	22.00
		3	9	20.17	20.36	20.35	22.00
		6	0	20.14	20.38	20.34	22.00
		6	6	20.12	20.39	20.38	22.00
	12	0	20.12	20.38	20.38	22.00	
	BPSK	1	0	20.41	20.26	20.42	22.00
		1	5	20.40	20.19	20.34	22.00
		1	11	20.38	20.13	20.32	22.00

NB-IOT Band 4				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				19951	20175	20399	
3.75	QPSK	1	0	20.52	20.27	20.27	22.00
		1	23	20.49	20.21	20.19	22.00
		1	47	20.45	20.20	20.34	22.00
	BPSK	1	0	20.50	20.25	20.25	22.00
		1	23	20.48	20.21	20.19	22.00
		1	47	20.40	20.17	20.17	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				19951	20175	20399	
15	QPSK	1	0	20.87	20.92	20.85	22.00
		1	5	20.81	20.83	20.78	22.00
		1	11	20.64	20.77	20.64	22.00
		3	0	20.88	20.76	20.61	22.00
		3	3	20.60	20.43	20.57	22.00
		3	6	20.58	20.37	20.49	22.00
		3	9	20.53	20.35	20.53	22.00
		6	0	20.52	20.38	20.54	22.00
		6	6	20.59	20.37	20.53	22.00
	12	0	20.53	20.35	20.54	22.00	
	BPSK	1	0	20.79	20.91	20.68	22.00
		1	5	20.74	20.84	20.66	22.00
		1	11	20.80	20.77	20.58	22.00

NB-IOT Band 5				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				20401	20525	20649	
3.75	QPSK	1	0	20.33	20.35	20.46	22.00
		1	23	20.24	20.33	20.41	22.00
		1	47	20.18	20.26	20.42	22.00
	BPSK	1	0	20.29	20.45	20.31	22.00
		1	23	20.24	20.41	20.26	22.00
		1	47	20.26	20.48	20.33	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				20401	20525	20649	
15	QPSK	1	0	20.48	<b>20.55</b>	20.33	22.00
		1	5	20.44	20.50	20.29	22.00
		1	11	20.34	20.35	20.18	22.00
		3	0	20.50	<b>20.52</b>	20.46	22.00
		3	3	20.47	20.27	20.41	22.00
		3	6	20.44	20.24	20.36	22.00
		3	9	20.46	20.26	20.40	22.00
		6	0	20.45	20.21	20.37	22.00
		6	6	20.44	20.21	20.39	22.00
	12	0	20.40	20.24	20.38	22.00	
	BPSK	1	0	20.49	20.36	20.34	22.00
		1	5	20.48	20.32	20.28	22.00
		1	11	20.43	20.36	20.20	22.00

NB-IOT Band 12				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				23011	23095	23179	
3.75	QPSK	1	0	20.71	20.68	20.57	22.00
		1	23	20.67	20.62	20.56	22.00
		1	47	20.63	20.57	20.42	22.00
	BPSK	1	0	20.65	20.57	20.41	22.00
		1	23	20.59	20.53	20.40	22.00
		1	47	20.62	20.70	20.33	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23011	23095	23179	
15	QPSK	1	0	20.71	20.72	20.49	22.00
		1	5	20.66	20.39	20.44	22.00
		1	11	20.63	20.57	20.70	22.00
		3	0	20.43	20.62	20.60	22.00
		3	3	20.42	20.56	20.58	22.00
		3	6	20.36	20.51	20.51	22.00
		3	9	20.41	20.51	20.53	22.00
		6	0	20.36	20.51	20.51	22.00
		6	6	20.36	20.52	20.56	22.00
	12	0	20.37	20.48	20.55	22.00	
	BPSK	1	0	20.65	20.35	20.69	22.00
		1	5	20.64	20.31	20.68	22.00
		1	11	20.62	20.51	20.60	22.00

NB-IOT Band 13				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				23181	23230	23279	
3.75	QPSK	1	0	20.66	20.37	20.39	22.00
		1	23	20.69	20.33	20.36	22.00
		1	47	20.59	20.33	20.41	22.00
	BPSK	1	0	20.74	20.42	20.35	22.00
		1	23	20.66	20.38	20.28	22.00
		1	47	20.52	20.34	20.23	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				23181	23230	23279	
15	QPSK	1	0	20.33	<b>20.75</b>	20.61	22.00
		1	5	20.26	20.64	20.58	22.00
		1	11	20.23	20.63	20.42	22.00
		3	0	20.41	<b>20.72</b>	20.56	22.00
		3	3	20.31	20.63	20.51	22.00
		3	6	20.28	20.62	20.45	22.00
		3	9	20.20	20.60	20.47	22.00
		6	0	20.25	20.61	20.44	22.00
		6	6	20.21	20.59	20.45	22.00
		12	0	20.26	20.62	20.50	22.00
	BPSK	1	0	20.70	20.31	20.42	22.00
		1	5	20.66	20.30	20.40	22.00
		1	11	20.61	20.22	20.45	22.00

NB-IOT Band 25				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				26041	26365	26689	
3.75	QPSK	1	0	20.60	20.49	20.78	22.00
		1	23	20.56	20.47	20.76	22.00
		1	47	20.34	20.47	20.73	22.00
	BPSK	1	0	20.54	20.53	20.73	22.00
		1	23	20.53	20.50	20.77	22.00
		1	47	20.50	20.44	20.74	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				26041	26365	26689	
15	QPSK	1	0	20.69	<b>20.80</b>	20.69	22.00
		1	5	20.64	20.72	20.66	22.00
		1	11	20.64	20.64	20.55	22.00
		3	0	20.58	<b>20.78</b>	20.62	22.00
		3	3	20.55	20.76	20.53	22.00
		3	6	20.48	20.74	20.51	22.00
		3	9	20.51	20.73	20.45	22.00
		6	0	20.49	20.73	20.46	22.00
		6	6	20.54	20.70	20.46	22.00
		12	0	20.54	20.69	20.49	22.00
	BPSK	1	0	20.72	20.68	20.70	22.00
		1	5	20.70	20.62	20.68	22.00
		1	11	20.62	20.63	20.57	22.00

NB-IOT Band 66				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				131973	132322	132671	
3.75	QPSK	1	0	20.61	20.53	20.55	22.00
		1	23	20.55	20.47	20.50	22.00
		1	47	20.50	20.70	20.55	22.00
	BPSK	1	0	20.58	20.46	20.62	22.00
		1	23	20.57	20.38	20.54	22.00
		1	47	20.56	20.62	20.47	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				131973	132322	132671	
15	QPSK	1	0	20.71	<b>20.76</b>	20.53	22.00
		1	5	20.63	20.40	20.39	22.00
		1	11	20.67	20.43	20.43	22.00
		3	0	20.52	<b>20.72</b>	20.66	22.00
		3	3	20.48	20.65	20.63	22.00
		3	6	20.40	20.62	20.57	22.00
		3	9	20.44	20.58	20.56	22.00
		6	0	20.42	20.62	20.60	22.00
		6	6	20.46	20.59	20.60	22.00
	12	0	20.42	20.59	20.57	22.00	
	BPSK	1	0	20.56	20.66	20.45	22.00
		1	5	20.52	20.55	20.37	22.00
		1	11	20.51	20.52	20.32	22.00

NB-IOT Band 71				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				133123	133297	133471	
3.75	QPSK	1	0	20.74	20.76	20.72	22.00
		1	23	20.67	20.73	20.70	22.00
		1	47	20.61	20.77	20.60	22.00
	BPSK	1	0	20.74	20.77	20.73	22.00
		1	23	20.69	20.74	20.66	22.00
		1	47	20.64	20.72	20.65	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				133123	133297	133471	
15	QPSK	1	0	20.65	<b>20.81</b>	20.74	22.00
		1	5	20.62	20.73	20.70	22.00
		1	11	20.70	20.72	20.64	22.00
		3	0	20.60	<b>20.72</b>	20.64	22.00
		3	3	20.55	20.58	20.61	22.00
		3	6	20.52	20.53	20.60	22.00
		3	9	20.52	20.51	20.59	22.00
		6	0	20.50	20.50	20.53	22.00
		6	6	20.47	20.56	20.55	22.00
	12	0	20.49	20.54	20.60	22.00	
	BPSK	1	0	20.66	20.76	20.71	22.00
		1	5	20.63	20.69	20.64	22.00
		1	11	20.68	20.72	20.64	22.00

NB-IOT Band 85				Conducted Power(dBm)			
Subcarrier Spacing kHz SC Spacing	Modulation	SCs	Start SC	Channel	Channel	Channel	Tune up
				134003	134092	134181	
3.75	QPSK	1	0	20.56	20.63	20.45	22.00
		1	23	20.54	20.56	20.41	22.00
		1	47	20.44	20.55	20.63	22.00
	BPSK	1	0	20.61	20.59	20.35	22.00
		1	23	20.58	20.54	20.29	22.00
		1	47	20.48	20.51	20.60	22.00
Subcarrier Spacing kHz SC Spacing	Modulation	RB size	RB offset	Channel	Channel	Channel	Tune up
				134003	134092	134181	
15	QPSK	1	0	20.80	<b>20.84</b>	20.74	22.00
		1	5	20.78	20.76	20.71	22.00
		1	11	20.57	20.54	20.67	22.00
		3	0	20.80	<b>20.82</b>	20.69	22.00
		3	3	20.79	20.80	20.62	22.00
		3	6	20.77	20.74	20.55	22.00
		3	9	20.78	20.74	20.54	22.00
		6	0	20.78	20.72	20.58	22.00
		6	6	20.75	20.79	20.54	22.00
		12	0	20.71	20.77	20.56	22.00
	BPSK	1	0	20.65	20.65	20.68	22.00
		1	5	20.67	20.61	20.61	22.00
		1	11	20.45	20.54	20.61	22.00



## 15 SAR Data Summary

### General Notes:

- 1) The Highest Reported SAR Plot refer to Appendix B.
- 2) Per KDB 447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1g or 10g SAR for the mid-band or highest output power channel is:
  - $\leq 0.8\text{W/kg}$  for 1g or  $2.0\text{W/kg}$  for 10g respectively, when the transmission band is  $\leq 100\text{MHz}$ .
  - $\leq 0.6\text{ W/kg}$  or  $1.5\text{ W/kg}$ , for 1g or 10g respectively, when the transmission band is between 100 MHz and 200MHz.
  - $\leq 0.4\text{ W/kg}$  or  $1.0\text{ W/kg}$ , for 1g or 10g respectively, when the transmission band is  $\geq 200\text{MHz}$ .

### 15.1 SAR Measurement Result of LTE Cat M1 Band 13

Test position	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm (1RB)										
Front side	10	QPSK 1_0	23230/782	0.204	0.101	-0.03	20.84	22.00	1.306	<b>0.132</b>
Back side	10	QPSK 1_0	23230/782	0.031	0.020	-0.02	20.84	22.00	1.306	0.026
Left side	10	QPSK 1_0	23230/782	0.022	0.013	-0.01	20.84	22.00	1.306	0.017
Right side	10	QPSK 1_0	23230/782	0.020	0.014	0.06	20.84	22.00	1.306	0.018
Top side	10	QPSK 1_0	23230/782	0.018	0.010	0.09	20.84	22.00	1.306	0.013
Bottom side	10	QPSK 1_0	23230/782	< 0.001	< 0.001	0.00	20.84	22.00	1.306	< 0.001
Body 0mm (50%RB)										
Front side	10	QPSK 3_0	23230/782	0.116	0.077	0.05	20.76	22.00	1.330	0.102
Back side	10	QPSK 3_0	23230/782	0.023	0.015	0.01	20.76	22.00	1.330	0.020
Left side	10	QPSK 3_0	23230/782	0.017	0.010	-0.02	20.76	22.00	1.330	0.013
Right side	10	QPSK 3_0	23230/782	0.016	0.011	0.06	20.76	22.00	1.330	0.015
Top side	10	QPSK 3_0	23230/782	0.014	0.008	0.05	20.76	22.00	1.330	0.011
Bottom side	10	QPSK 3_0	23230/782	< 0.001	< 0.001	0.00	20.76	22.00	1.330	< 0.001

Table 3: SAR of LTE Cat M1 Band 13.

## 15.2 SAR Measurement Result of LTE Cat M1 Band 25

Test position	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm (1RB)										
Front side	20	QPSK 1_0	26365/1882.5	0.033	0.013	0.08	21.87	22.00	1.030	<b>0.013</b>
Back side	20	QPSK 1_0	26365/1882.5	0.012	0.012	0.11	21.87	22.00	1.030	0.012
Left side	20	QPSK 1_0	26365/1882.5	0.024	0.013	0.06	21.87	22.00	1.030	0.013
Right side	20	QPSK 1_0	26365/1882.5	0.014	0.007	-0.02	21.87	22.00	1.030	0.007
Top side	20	QPSK 1_0	26365/1882.5	0.027	0.014	0.01	21.87	22.00	1.030	0.014
Bottom side	20	QPSK 1_0	26365/1882.5	< 0.001	< 0.001	0.00	21.87	22.00	1.030	< 0.001
Body 0mm (50%RB)										
Front side	20	QPSK 3_0	26365/1882.5	0.019	0.010	0.03	21.83	22.00	1.040	0.010
Back side	20	QPSK 3_0	26365/1882.5	0.020	0.012	0.14	21.83	22.00	1.040	0.012
Left side	20	QPSK 3_0	26365/1882.5	0.018	0.010	0.02	21.83	22.00	1.040	0.010
Right side	20	QPSK 3_0	26365/1882.5	0.012	0.006	-0.08	21.83	22.00	1.040	0.006
Top side	20	QPSK 3_0	26365/1882.5	0.025	0.013	0.05	21.83	22.00	1.040	0.014
Bottom side	20	QPSK 3_0	26365/1882.5	0.000	< 0.001	0.00	21.83	22.00	1.040	< 0.001

Table 4: SAR of LTE Cat M1 Band 25.

### 15.3 SAR Measurement Result of LTE Cat M1 Band 26

Test position	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm (1RB)										
Front side	15	QPSK 1_0	26865/831.5	0.350	0.179	0.00	20.96	22.00	1.271	<b>0.227</b>
Back side	15	QPSK 1_0	26865/831.5	0.121	0.079	0.01	20.96	22.00	1.271	0.100
Left side	15	QPSK 1_0	26865/831.5	0.085	0.051	0.00	20.96	22.00	1.271	0.065
Right side	15	QPSK 1_0	26865/831.5	0.104	0.068	-0.12	20.96	22.00	1.271	0.086
Top side	15	QPSK 1_0	26865/831.5	0.073	0.039	0.05	20.96	22.00	1.271	0.050
Bottom side	15	QPSK 1_0	26865/831.5	< 0.001	< 0.001	0.00	20.96	22.00	1.271	< 0.001
Body 0mm (50%RB)										
Front side	15	QPSK 3_0	26865/831.5	0.272	0.175	0.02	20.90	22.00	1.288	0.225
Back side	15	QPSK 3_0	26865/831.5	0.092	0.056	0.06	20.90	22.00	1.288	0.072
Left side	15	QPSK 3_0	26865/831.5	0.082	0.050	-0.09	20.90	22.00	1.288	0.064
Right side	15	QPSK 3_0	26865/831.5	0.084	0.049	0.06	20.90	22.00	1.288	0.063
Top side	15	QPSK 3_0	26865/831.5	0.060	0.033	-0.04	20.90	22.00	1.288	0.043
Bottom side	15	QPSK 3_0	26865/831.5	< 0.001	< 0.001	0.00	20.90	22.00	1.288	< 0.001

Table 5: SAR of LTE Cat M1 Band 26.

### 15.4 SAR Measurement Result of LTE Cat M1 Band 66

Test position	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm(1RB)										
Front side	20	QPSK 1_0	132322/1745	0.089	0.051	0.09	21.80	22.00	1.047	<b>0.053</b>
Back side	20	QPSK 1_0	132322/1745	0.059	0.035	0.04	21.80	22.00	1.047	0.037
Left side	20	QPSK 1_0	132322/1745	0.049	0.027	-0.13	21.80	22.00	1.047	0.028
Right side	20	QPSK 1_0	132322/1745	0.011	0.006	0.09	21.80	22.00	1.047	0.006
Top side	20	QPSK 1_0	132322/1745	0.050	0.027	0.03	21.80	22.00	1.047	0.028
Bottom side	20	QPSK 1_0	132322/1745	< 0.001	< 0.001	0.00	21.80	22.00	1.047	< 0.001
Body 0mm(50%RB)										
Front side	20	QPSK 3_0	132322/1745	0.072	0.039	0.05	21.75	22.00	1.059	0.041
Back side	20	QPSK 3_0	132322/1745	0.054	0.033	0.02	21.75	22.00	1.059	0.035
Left side	20	QPSK 3_0	132322/1745	0.049	0.027	0.00	21.75	22.00	1.059	0.029
Right side	20	QPSK 3_0	132322/1745	0.011	0.006	0.01	21.75	22.00	1.059	0.006
Top side	20	QPSK 3_0	132322/1745	0.049	0.026	-0.06	21.75	22.00	1.059	0.028
Bottom side	20	QPSK 3_0	132322/1745	< 0.001	< 0.001	0.00	21.75	22.00	1.059	< 0.001

Table 6: SAR of LTE Cat M1 Band 66.

### 15.5 SAR Measurement Result of LTE Cat M1 Band 85

Test position	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm(1RB)										
Front side	10	QPSK 1_0	134092/707	0.065	0.028	0.03	21.53	22.00	1.114	<b>0.031</b>
Back side	10	QPSK 1_0	134092/707	0.007	0.005	0.10	21.53	22.00	1.114	0.006
Left side	10	QPSK 1_0	134092/707	0.007	0.004	-0.07	21.53	22.00	1.114	0.004
Right side	10	QPSK 1_0	134092/707	0.007	0.004	0.02	21.53	22.00	1.114	0.004
Top side	10	QPSK 1_0	134092/707	0.006	0.003	0.11	21.53	22.00	1.114	0.003
Bottom side	10	QPSK 1_0	134092/707	< 0.001	< 0.001	0.00	21.53	22.00	1.114	< 0.001
Body 0mm(50%RB)										
Front side	10	QPSK 3_0	134092/707	0.051	0.022	0.15	21.45	22.00	1.135	0.025
Back side	10	QPSK 3_0	134092/707	0.005	0.003	-0.04	21.45	22.00	1.135	0.003
Left side	10	QPSK 3_0	134092/707	0.007	0.004	0.12	21.45	22.00	1.135	0.005
Right side	10	QPSK 3_0	134092/707	0.005	0.003	0.09	21.45	22.00	1.135	0.003
Top side	10	QPSK 3_0	134092/707	0.005	0.003	0.13	21.45	22.00	1.135	0.003
Bottom side	10	QPSK 3_0	134092/707	< 0.001	< 0.001	0.00	21.45	22.00	1.135	< 0.001

Table 7: SAR of LTE Cat M1 Band 85.

## 15.6 SAR Measurement Result of NB-IOT Band 5

Test position	Subcarrier Spacing kHz SC Spacing	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm (1RB)										
Front side	15	QPSK 1_0	20525/836.5	0.302	0.139	0.10	20.55	22.00	1.396	<b>0.194</b>
Back side	15	QPSK 1_0	20525/836.5	0.118	0.056	0.02	20.55	22.00	1.396	0.078
Left side	15	QPSK 1_0	20525/836.5	0.158	0.077	0.07	20.55	22.00	1.396	0.108
Right side	15	QPSK 1_0	20525/836.5	0.191	0.083	0.00	20.55	22.00	1.396	0.116
Top side	15	QPSK 1_0	20525/836.5	0.012	0.006	-0.04	20.55	22.00	1.396	0.008
Bottom side	15	QPSK 1_0	20525/836.5	< 0.001	< 0.001	0.00	20.55	22.00	1.396	< 0.001
Body 0mm (50%RB)										
Front side	15	QPSK 3_0	20525/836.5	0.234	0.119	0.01	20.52	22.00	1.406	0.167
Back side	15	QPSK 3_0	20525/836.5	0.114	0.055	0.06	20.52	22.00	1.406	0.077
Left side	15	QPSK 3_0	20525/836.5	0.158	0.066	-0.02	20.52	22.00	1.406	0.093
Right side	15	QPSK 3_0	20525/836.5	0.156	0.093	0.07	20.52	22.00	1.406	0.131
Top side	15	QPSK 3_0	20525/836.5	0.007	0.005	-0.10	20.52	22.00	1.406	0.007
Bottom side	15	QPSK 3_0	20525/836.5	< 0.001	< 0.001	0.00	20.52	22.00	1.406	< 0.001

Table 8: SAR of NB-IOT Band 5.

### 15.7 SAR Measurement Result of NB-IOT Band 13

Test position	Subcarrier Spacing kHz SC Spacing	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm (1RB)										
Front side	15	QPSK 1_0	23230/782	0.207	0.103	-0.06	20.75	22.00	1.334	<b>0.137</b>
Back side	15	QPSK 1_0	23230/782	0.041	0.023	-0.05	20.75	22.00	1.334	0.031
Left side	15	QPSK 1_0	23230/782	0.033	0.015	0.02	20.75	22.00	1.334	0.020
Right side	15	QPSK 1_0	23230/782	0.048	0.025	0.04	20.75	22.00	1.334	0.033
Top side	15	QPSK 1_0	23230/782	0.007	0.004	-0.12	20.75	22.00	1.334	0.005
Bottom side	15	QPSK 1_0	23230/782	< 0.001	< 0.001	0.00	20.75	22.00	1.334	< 0.001
Body 0mm (50%RB)										
Front side	15	QPSK 3_0	23230/782	0.227	0.101	0.02	20.72	22.00	1.343	0.136
Back side	15	QPSK 3_0	23230/782	0.047	0.024	0.03	20.72	22.00	1.343	0.032
Left side	15	QPSK 3_0	23230/782	0.021	0.012	-0.07	20.72	22.00	1.343	0.016
Right side	15	QPSK 3_0	23230/782	0.034	0.021	0.00	20.72	22.00	1.343	0.028
Top side	15	QPSK 3_0	23230/782	0.005	0.003	0.11	20.72	22.00	1.343	0.004
Bottom side	15	QPSK 3_0	23230/782	< 0.001	< 0.001	0.00	20.72	22.00	1.343	< 0.001

Table 9: SAR of NB-IOT Band 13.



## 15.8 SAR Measurement Result of NB-IOT Band 25

Test position	Subcarrier Spacing kHz SC Spacing	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm (1RB)										
Front side	15	QPSK 1_0	26365/1882.5	0.029	0.012	0.01	20.80	22.00	1.318	<b>0.016</b>
Back side	15	QPSK 1_0	26365/1882.5	0.021	0.010	-0.06	20.80	22.00	1.318	0.013
Left side	15	QPSK 1_0	26365/1882.5	0.017	0.008	0.04	20.80	22.00	1.318	0.011
Right side	15	QPSK 1_0	26365/1882.5	0.013	0.007	0.07	20.80	22.00	1.318	0.009
Top side	15	QPSK 1_0	26365/1882.5	0.015	0.007	0.02	20.80	22.00	1.318	0.009
Bottom side	15	QPSK 1_0	26365/1882.5	< 0.001	< 0.001	0.00	20.80	22.00	1.318	< 0.001
Body 0mm (50%RB)										
Front side	15	QPSK 3_0	26365/1882.5	0.022	0.011	0.06	20.78	22.00	1.324	0.015
Back side	15	QPSK 3_0	26365/1882.5	0.016	0.007	0.02	20.78	22.00	1.324	0.009
Left side	15	QPSK 3_0	26365/1882.5	0.011	0.006	-0.10	20.78	22.00	1.324	0.008
Right side	15	QPSK 3_0	26365/1882.5	0.008	0.004	0.12	20.78	22.00	1.324	0.005
Top side	15	QPSK 3_0	26365/1882.5	0.020	0.008	0.01	20.78	22.00	1.324	0.011
Bottom side	15	QPSK 3_0	26365/1882.5	< 0.001	< 0.001	0.00	20.78	22.00	1.324	< 0.001

Table 10: SAR of NB-IOT Band 25.

### 15.9 SAR Measurement Result of NB-IOT Band 66

Test position	Subcarrier Spacing kHz SC Spacing	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm(1RB)										
Front side	15	QPSK 1_0	132322/1745	0.082	0.046	-0.03	20.76	22.00	1.330	<b>0.061</b>
Back side	15	QPSK 1_0	132322/1745	0.047	0.027	0.08	20.76	22.00	1.330	0.036
Left side	15	QPSK 1_0	132322/1745	0.040	0.024	0.00	20.76	22.00	1.330	0.032
Right side	15	QPSK 1_0	132322/1745	0.028	0.013	-0.15	20.76	22.00	1.330	0.017
Top side	15	QPSK 1_0	132322/1745	0.069	0.033	0.03	20.76	22.00	1.330	0.044
Bottom side	15	QPSK 1_0	132322/1745	< 0.001	< 0.001	0.00	20.76	22.00	1.330	< 0.001
Body 0mm(50%RB)										
Front side	15	QPSK 3_0	132322/1745	0.083	0.042	0.07	20.72	22.00	1.343	0.056
Back side	15	QPSK 3_0	132322/1745	0.036	0.018	0.02	20.72	22.00	1.343	0.024
Left side	15	QPSK 3_0	132322/1745	0.053	0.022	-0.05	20.72	22.00	1.343	0.030
Right side	15	QPSK 3_0	132322/1745	0.028	0.013	0.09	20.72	22.00	1.343	0.017
Top side	15	QPSK 3_0	132322/1745	0.044	0.019	0.03	20.72	22.00	1.343	0.026
Bottom side	15	QPSK 3_0	132322/1745	< 0.001	< 0.001	0.00	20.72	22.00	1.343	< 0.001

Table 11: SAR of NB-IOT Band 66.

### 15.10 SAR Measurement Result of NB-IOT Band 71

Test position	Subcarrier Spacing kHz SC Spacing	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm(1RB)										
Front side	15	QPSK 1_0	133297/680.5	0.020	0.008	0.00	20.81	22.00	1.315	<b>0.011</b>
Back side	15	QPSK 1_0	133297/680.5	0.003	0.002	0.05	20.81	22.00	1.315	0.003
Left side	15	QPSK 1_0	133297/680.5	0.003	0.002	0.01	20.81	22.00	1.315	0.003
Right side	15	QPSK 1_0	133297/680.5	0.003	0.002	-0.04	20.81	22.00	1.315	0.003
Top side	15	QPSK 1_0	133297/680.5	< 0.001	< 0.001	0.00	20.81	22.00	1.315	< 0.001
Bottom side	15	QPSK 1_0	133297/680.5	< 0.001	< 0.001	0.00	20.81	22.00	1.315	< 0.001
Body 0mm(50%RB)										
Front side	15	QPSK 3_0	133297/680.5	0.014	0.006	-0.05	20.72	22.00	1.343	0.008
Back side	15	QPSK 3_0	133297/680.5	0.002	0.001	0.06	20.72	22.00	1.343	0.001
Left side	15	QPSK 3_0	133297/680.5	0.004	0.002	-0.03	20.72	22.00	1.343	0.003
Right side	15	QPSK 3_0	133297/680.5	0.005	0.002	0.01	20.72	22.00	1.343	0.003
Top side	15	QPSK 3_0	133297/680.5	< 0.001	< 0.001	0.00	20.72	22.00	1.343	< 0.001
Bottom side	15	QPSK 3_0	133297/680.5	< 0.001	< 0.001	0.00	20.72	22.00	1.343	< 0.001

Table 12: SAR of NB-IOT Band 71.

### 15.11 SAR Measurement Result of NB-IOT Band 85

Test position	Subcarrier Spacing kHz SC Spacing	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 10g SAR (W/kg)
Body 0mm(1RB)										
Front side	15	QPSK 1_0	134092/707	0.045	0.021	0.04	20.84	22.00	1.306	<b>0.027</b>
Back side	15	QPSK 1_0	134092/707	0.006	0.003	-0.05	20.84	22.00	1.306	0.004
Left side	15	QPSK 1_0	134092/707	0.004	0.003	0.02	20.84	22.00	1.306	0.004
Right side	15	QPSK 1_0	134092/707	0.006	0.003	0.03	20.84	22.00	1.306	0.004
Top side	15	QPSK 1_0	134092/707	< 0.001	< 0.001	0.00	20.84	22.00	1.306	< 0.001
Bottom side	15	QPSK 1_0	134092/707	< 0.001	< 0.001	0.00	20.84	22.00	1.306	< 0.001
Body 0mm(50%RB)										
Front side	15	QPSK 3_0	134092/707	0.027	0.014	0.01	20.82	22.00	1.312	0.018
Back side	15	QPSK 3_0	134092/707	0.005	0.003	0.08	20.82	22.00	1.312	0.004
Left side	15	QPSK 3_0	134092/707	0.005	0.002	0.07	20.82	22.00	1.312	0.003
Right side	15	QPSK 3_0	134092/707	0.006	0.003	-0.09	20.82	22.00	1.312	0.004
Top side	15	QPSK 3_0	134092/707	< 0.001	< 0.001	0.00	20.82	22.00	1.312	< 0.001
Bottom side	15	QPSK 3_0	134092/707	< 0.001	< 0.001	0.00	20.82	22.00	1.312	< 0.001

Table 13: SAR of NB-IOT Band 85.

## **16 Measurement Uncertainty**

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be  $\leq 30\%$ , for a confidence interval of  $k = 2$ . If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

## **17 Calibration Certificate**

Please see the Appendix C

## **18 Test Setup Photos**

Please see the Appendix D

## **Appendix A: System Check Plots**

## **Appendix B: SAR Test Plots**

## **Appendix C: Calibration certificate**

## **Appendix D: Test Setup Photos**

**--- The End ---**

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