



Product Service

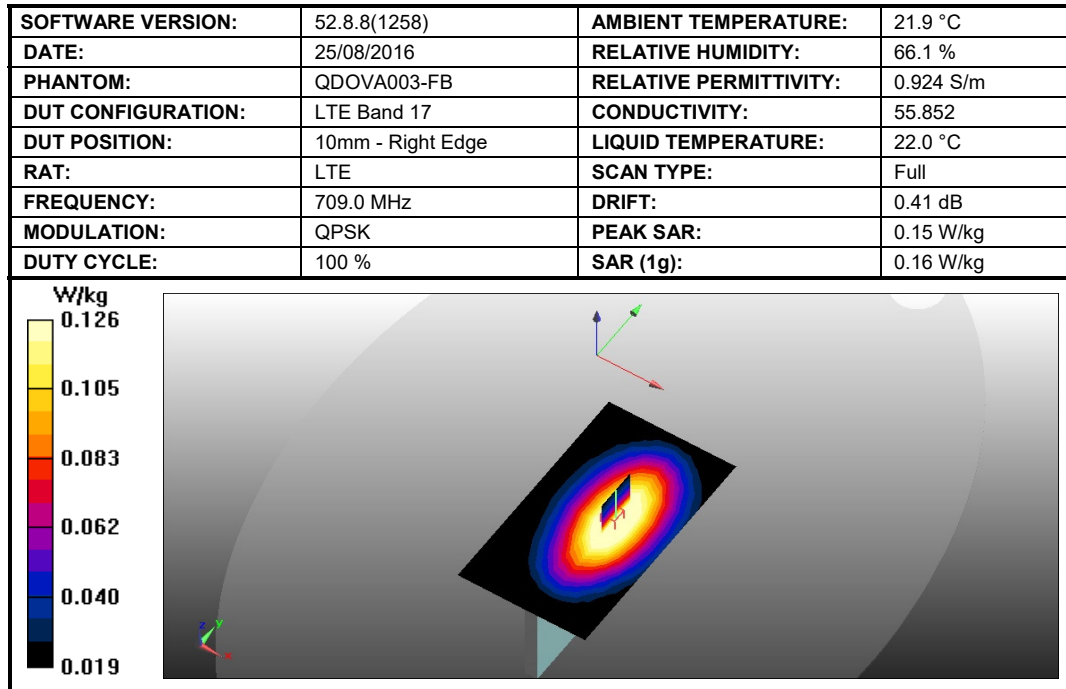


Figure 38: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.

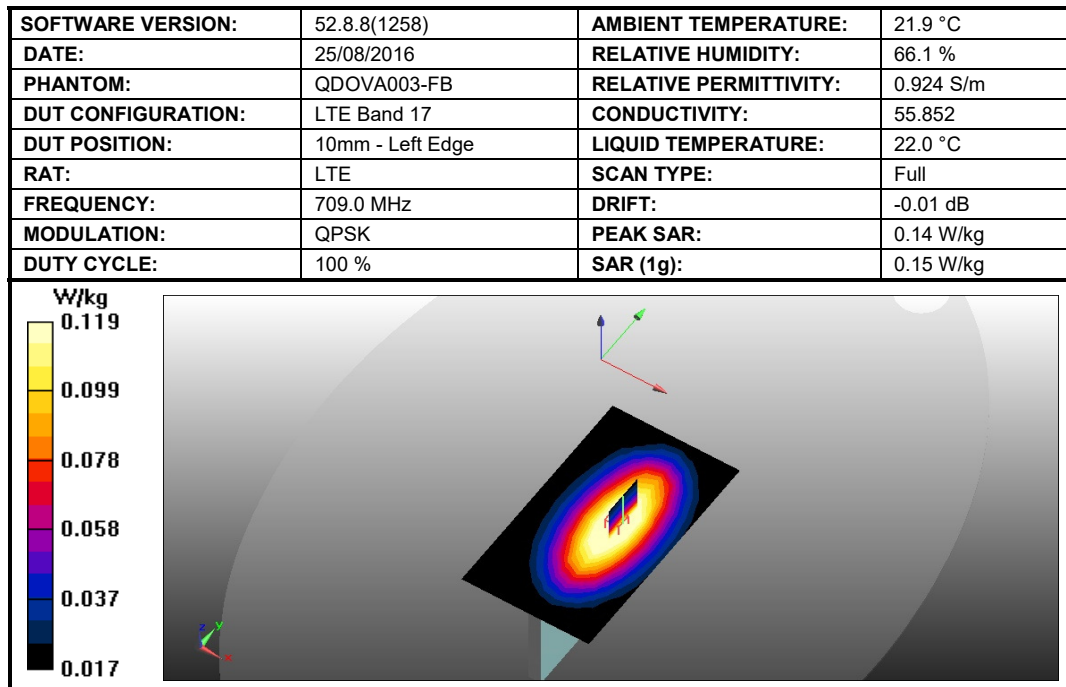


Figure 39: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.



Product Service

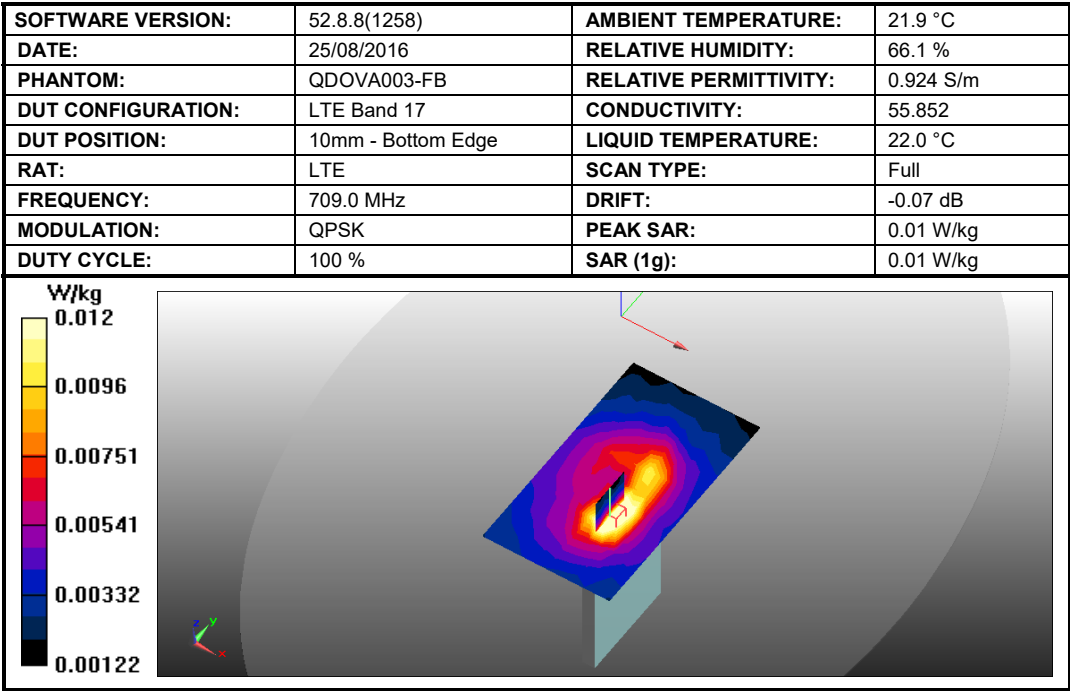


Figure 40: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.



## 2.10 LTE BAND 17 HEAD SAR TEST RESULTS

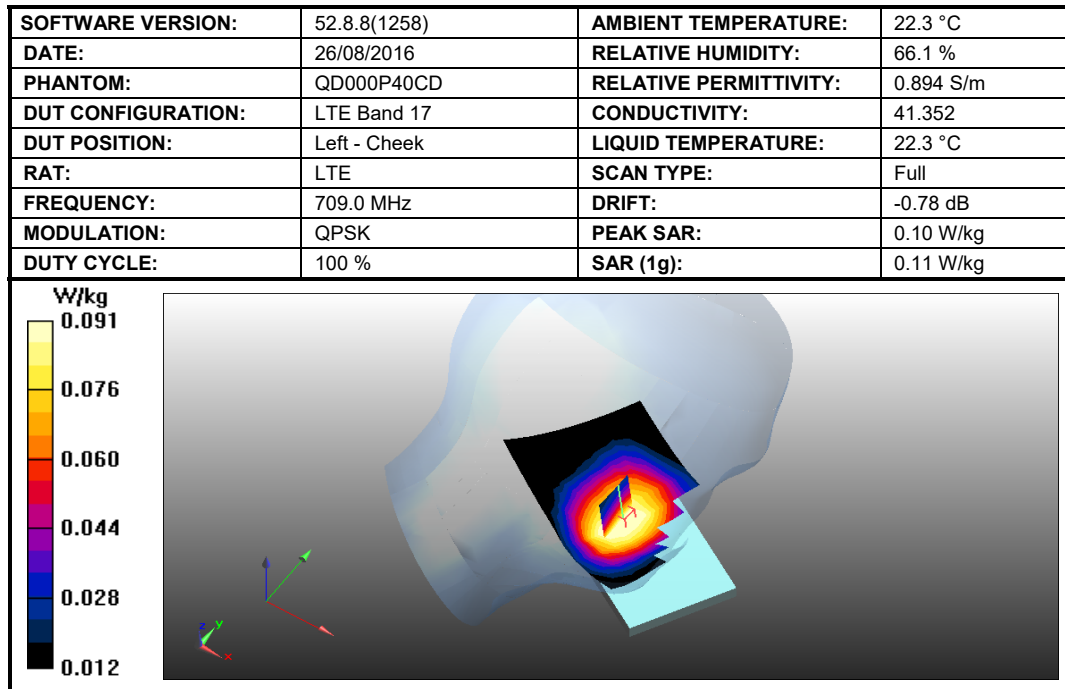


Figure 41: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.

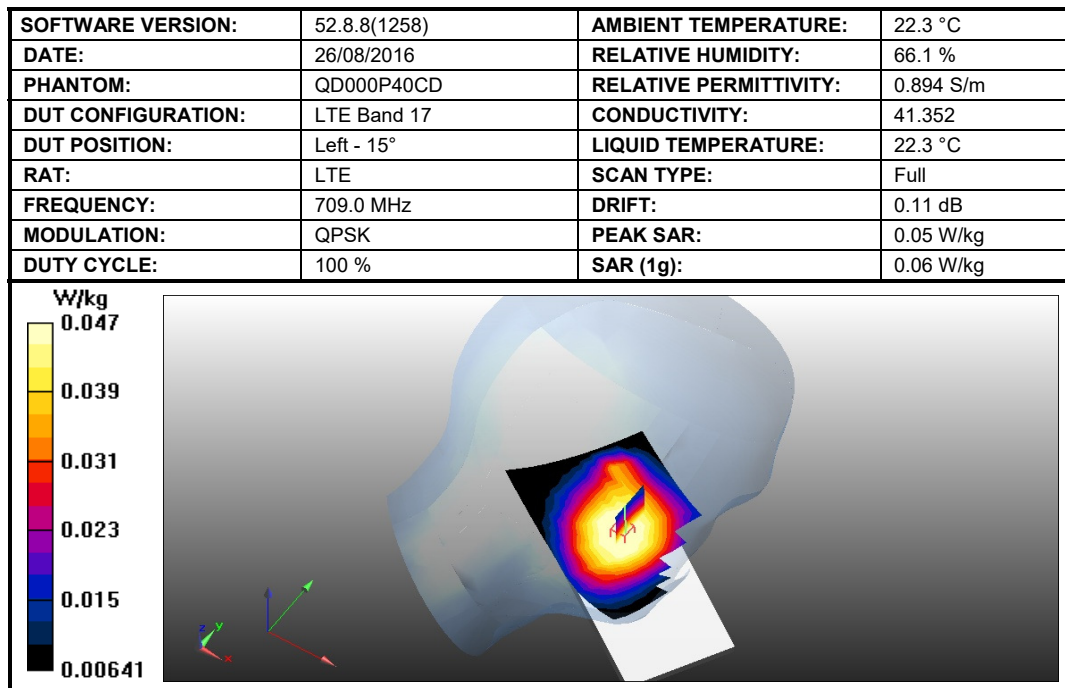


Figure 42 SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.



Product Service

|                    |               |                        |           |
|--------------------|---------------|------------------------|-----------|
| SOFTWARE VERSION:  | 52.8.8(1258)  | AMBIENT TEMPERATURE:   | 22.3 °C   |
| DATE:              | 26/08/2016    | RELATIVE HUMIDITY:     | 66.1 %    |
| PHANTOM:           | QD000P40CD    | RELATIVE PERMITTIVITY: | 0.894 S/m |
| DUT CONFIGURATION: | LTE Band 17   | CONDUCTIVITY:          | 41.352    |
| DUT POSITION:      | Right - Cheek | LIQUID TEMPERATURE:    | 22.3 °C   |
| RAT:               | LTE           | SCAN TYPE:             | Full      |
| FREQUENCY:         | 709.0 MHz     | DRIFT:                 | 0.26 dB   |
| MODULATION:        | QPSK          | PEAK SAR:              | 0.10 W/kg |
| DUTY CYCLE:        | 100 %         | SAR (1g):              | 0.11 W/kg |

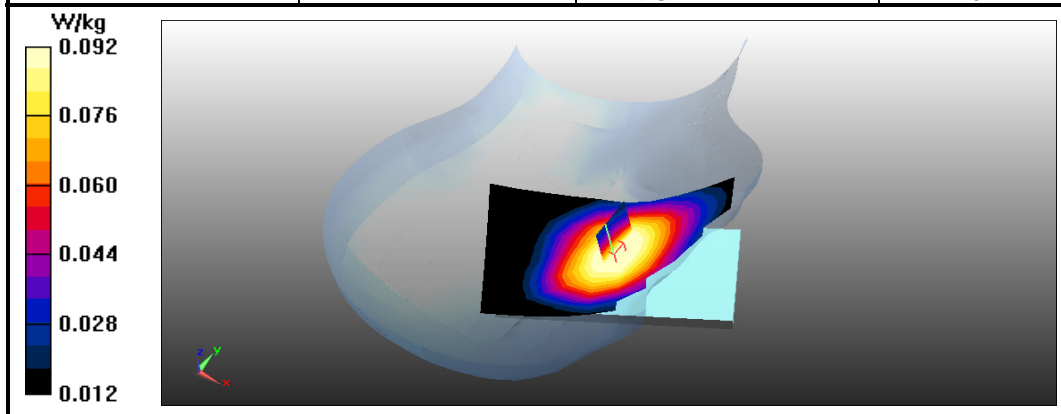


Figure 43: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.

|                    |              |                        |           |
|--------------------|--------------|------------------------|-----------|
| SOFTWARE VERSION:  | 52.8.8(1258) | AMBIENT TEMPERATURE:   | 22.3 °C   |
| DATE:              | 26/08/2016   | RELATIVE HUMIDITY:     | 66.1 %    |
| PHANTOM:           | QD000P40CD   | RELATIVE PERMITTIVITY: | 0.894 S/m |
| DUT CONFIGURATION: | LTE Band 17  | CONDUCTIVITY:          | 41.352    |
| DUT POSITION:      | Right - 15°  | LIQUID TEMPERATURE:    | 22.3 °C   |
| RAT:               | LTE          | SCAN TYPE:             | Full      |
| FREQUENCY:         | 709.0 MHz    | DRIFT:                 | 0.25 dB   |
| MODULATION:        | QPSK         | PEAK SAR:              | 0.06 W/kg |
| DUTY CYCLE:        | 100 %        | SAR (1g):              | 0.07 W/kg |

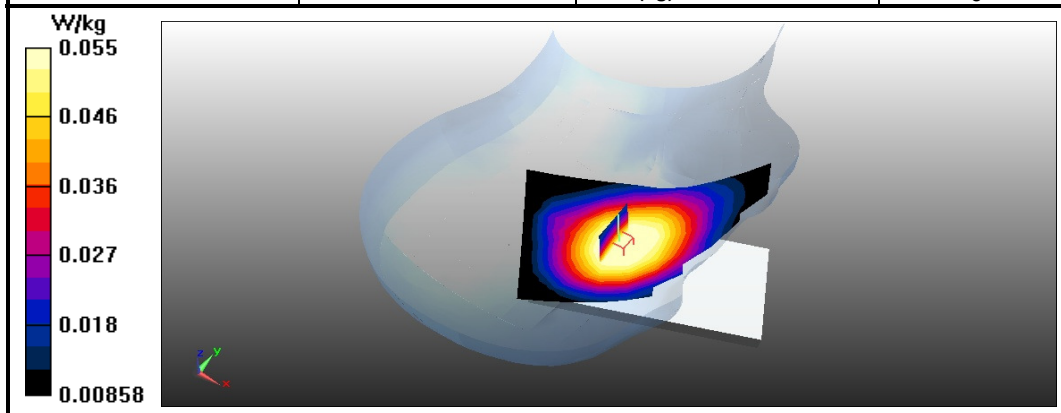


Figure 44: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.



## 2.11 LTE BAND 17 BODY SAR TEST RESULTS

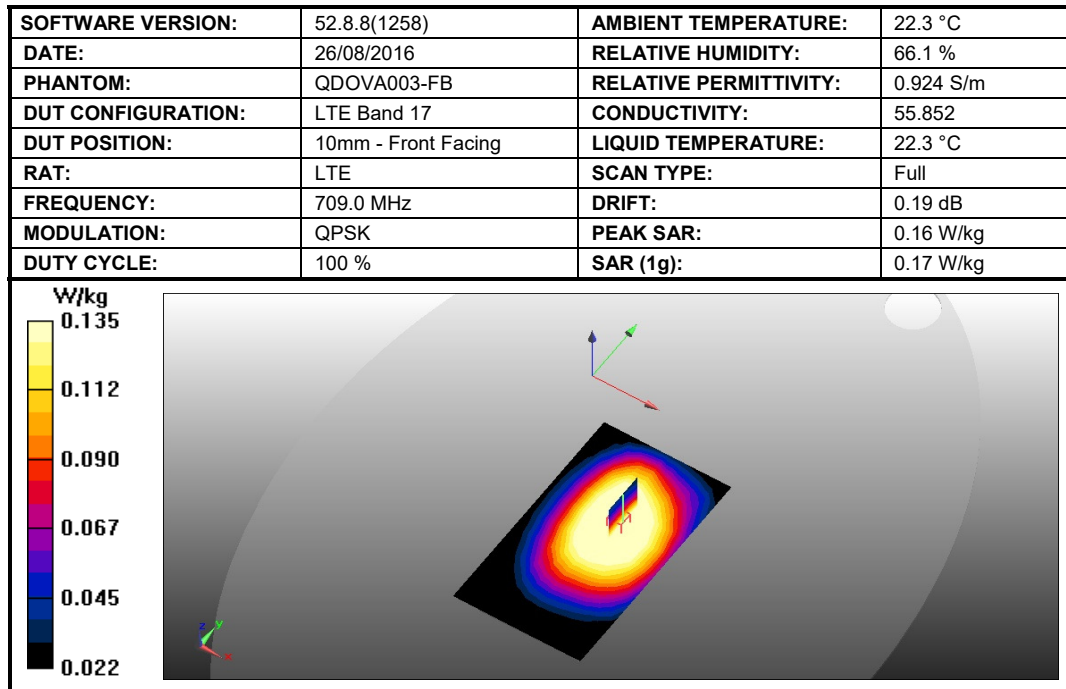


Figure 45: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.

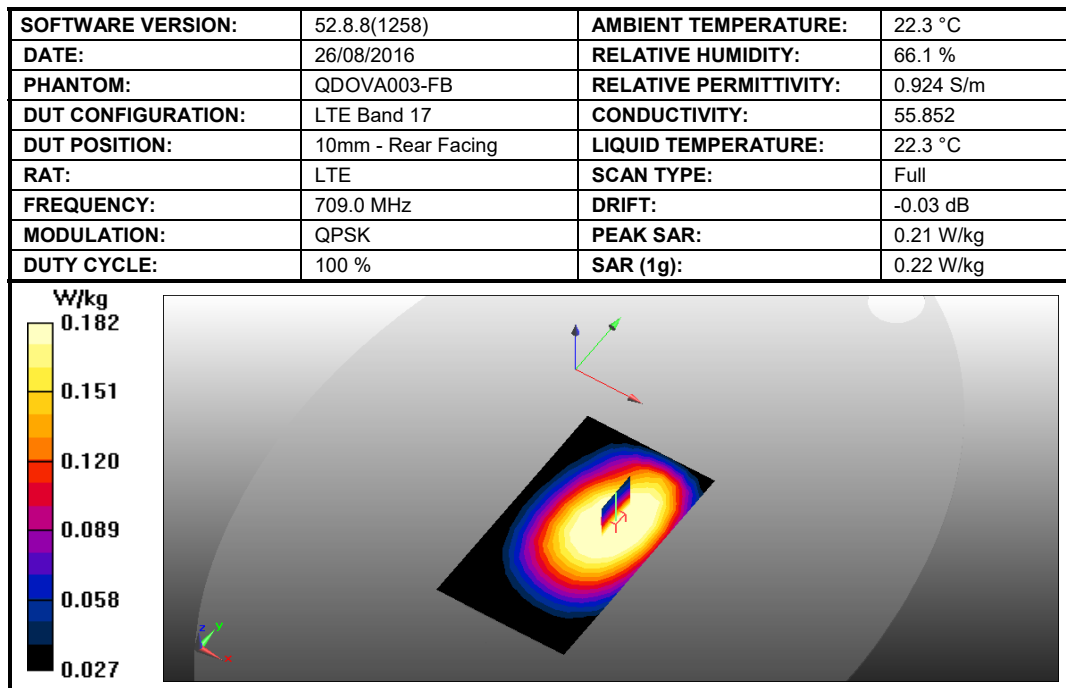


Figure 46: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.



Product Service

|                    |                   |                        |           |
|--------------------|-------------------|------------------------|-----------|
| SOFTWARE VERSION:  | 52.8.8(1258)      | AMBIENT TEMPERATURE:   | 22.3 °C   |
| DATE:              | 26/08/2016        | RELATIVE HUMIDITY:     | 66.1 %    |
| PHANTOM:           | QDOVA003-FB       | RELATIVE PERMITTIVITY: | 0.924 S/m |
| DUT CONFIGURATION: | LTE Band 17       | CONDUCTIVITY:          | 55.852    |
| DUT POSITION:      | 10mm - Right Edge | LIQUID TEMPERATURE:    | 22.3 °C   |
| RAT:               | LTE               | SCAN TYPE:             | Full      |
| FREQUENCY:         | 709.0 MHz         | DRIFT:                 | -0.09 dB  |
| MODULATION:        | QPSK              | PEAK SAR:              | 0.12 W/kg |
| DUTY CYCLE:        | 100 %             | SAR (1g):              | 0.12 W/kg |

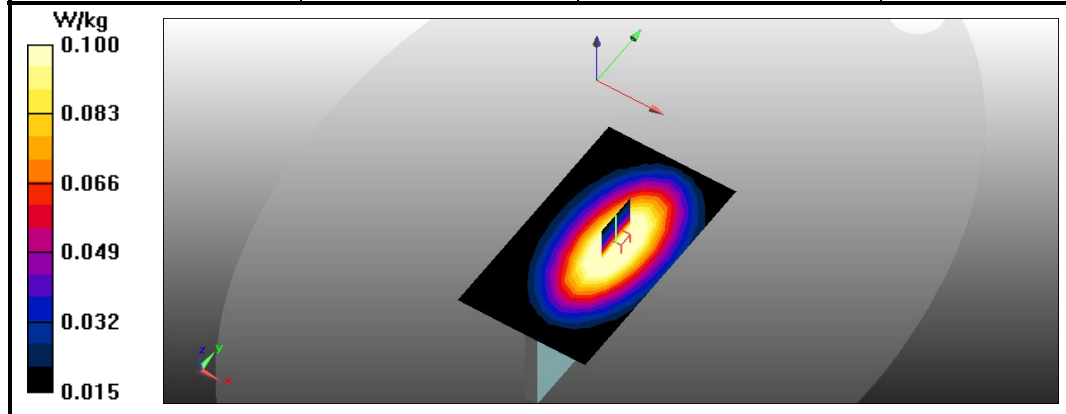


Figure 47: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.

|                    |                  |                        |           |
|--------------------|------------------|------------------------|-----------|
| SOFTWARE VERSION:  | 52.8.8(1258)     | AMBIENT TEMPERATURE:   | 22.3 °C   |
| DATE:              | 26/08/2016       | RELATIVE HUMIDITY:     | 66.1 %    |
| PHANTOM:           | QDOVA003-FB      | RELATIVE PERMITTIVITY: | 0.924 S/m |
| DUT CONFIGURATION: | LTE Band 17      | CONDUCTIVITY:          | 55.852    |
| DUT POSITION:      | 10mm - Left Edge | LIQUID TEMPERATURE:    | 22.3 °C   |
| RAT:               | LTE              | SCAN TYPE:             | Full      |
| FREQUENCY:         | 709.0 MHz        | DRIFT:                 | 0.03 dB   |
| MODULATION:        | QPSK             | PEAK SAR:              | 0.12 W/kg |
| DUTY CYCLE:        | 100 %            | SAR (1g):              | 0.12 W/kg |

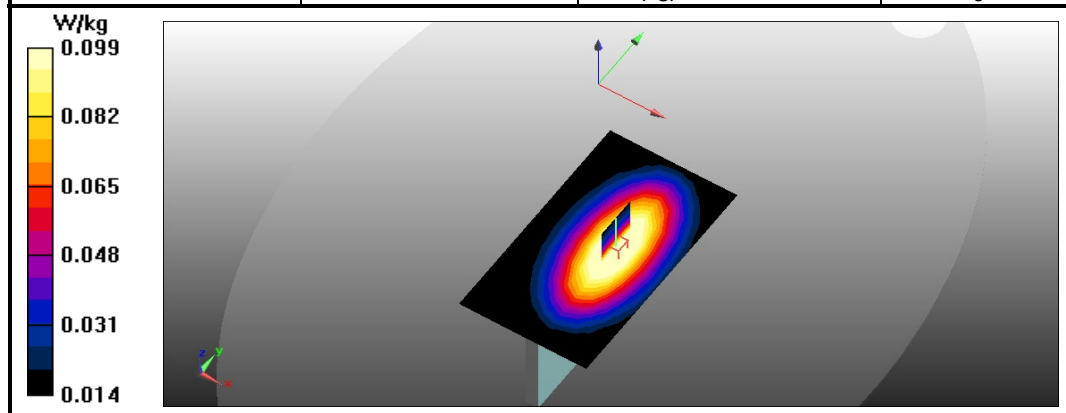


Figure 48: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.



Product Service

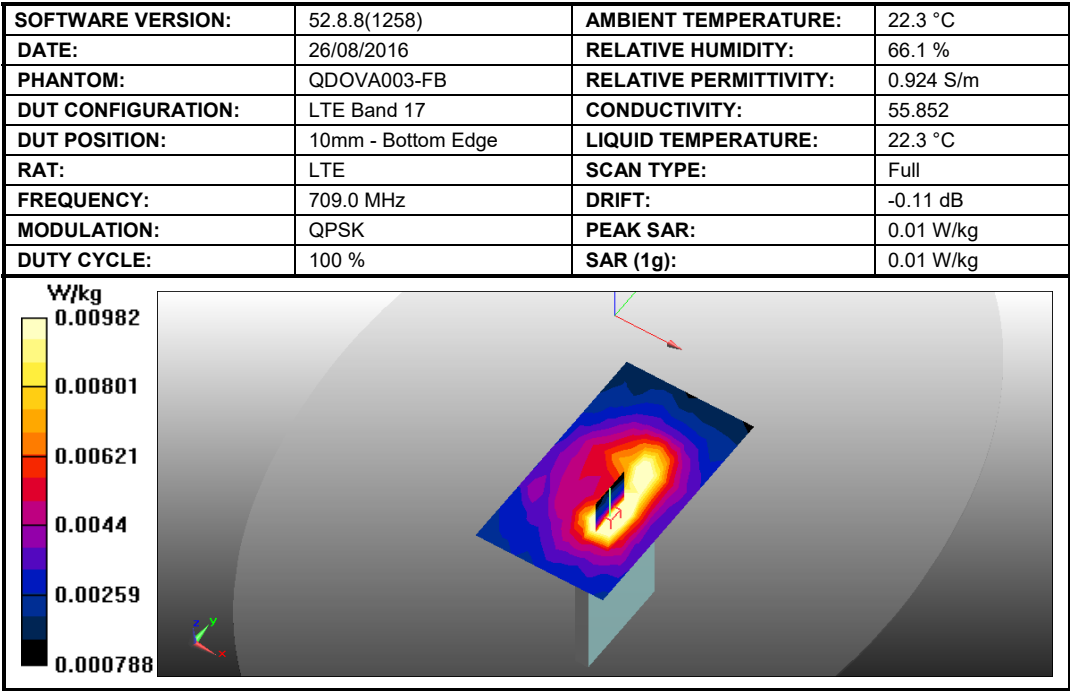


Figure 49: SAR Head Testing Results for the Sharp Smart phone at 709.0 MHz.



## 2.12 WCDMA FDDV HEAD SAR TEST RESULTS

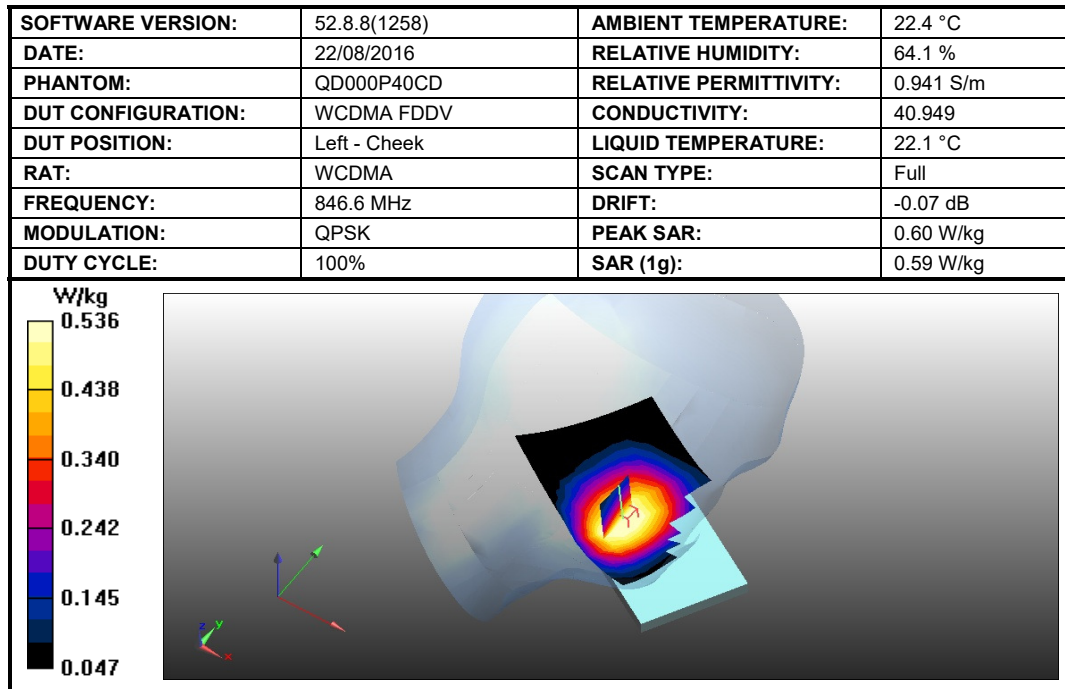


Figure 50: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.

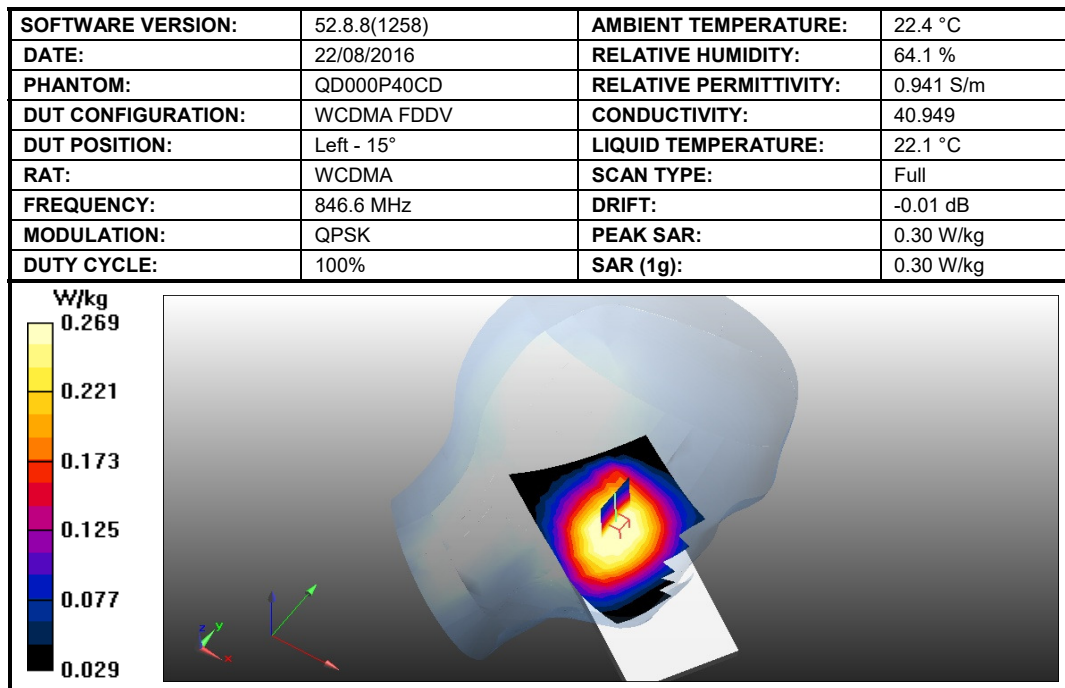


Figure 51 SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.





Product Service

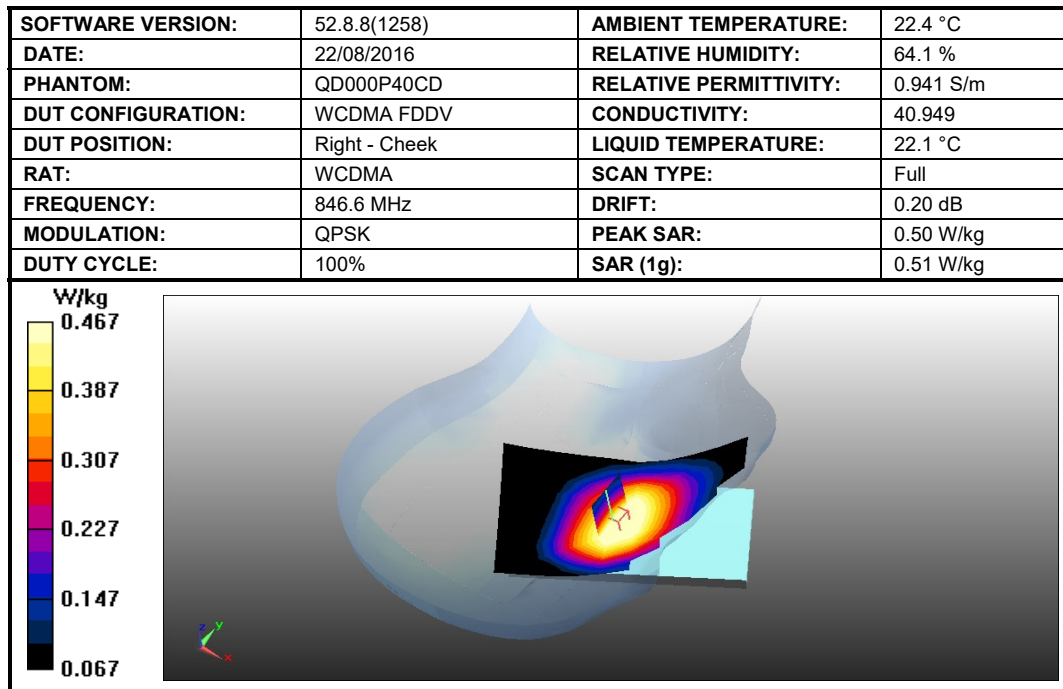


Figure 52: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.

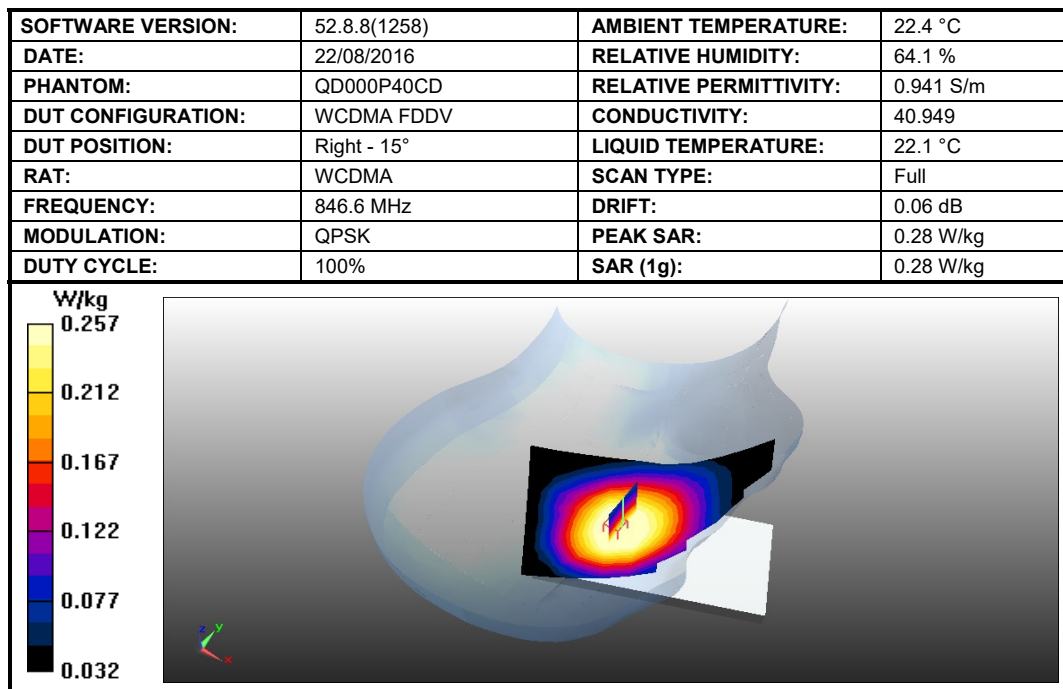


Figure 53: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.



## 2.13 WCDMA FDDV BODY SAR TEST RESULTS

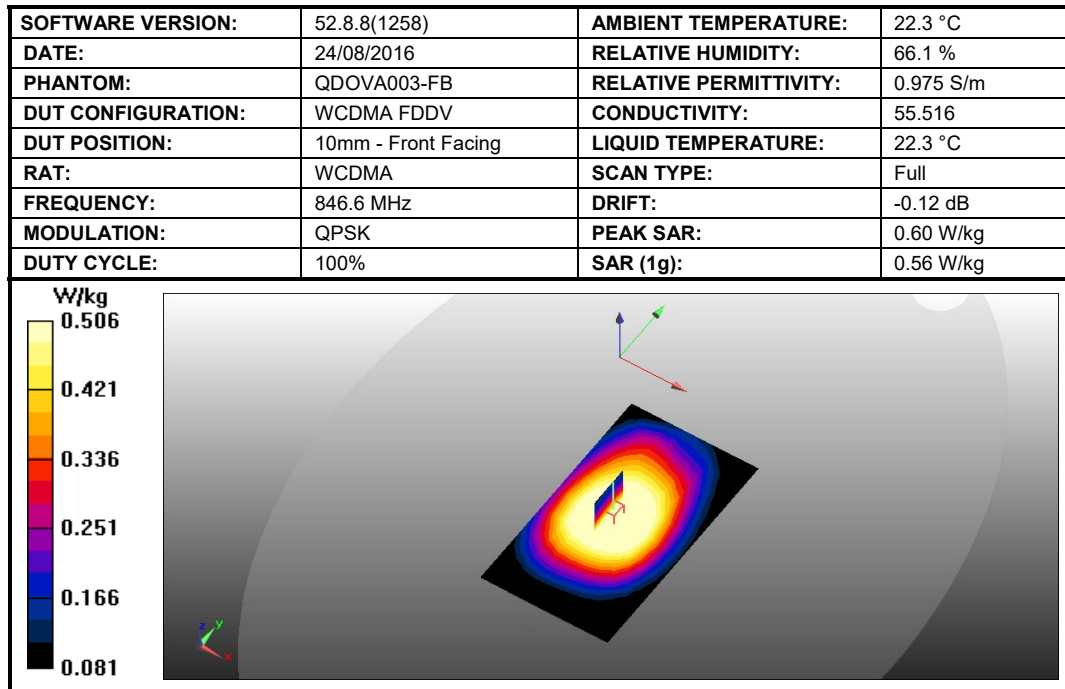


Figure 54: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.

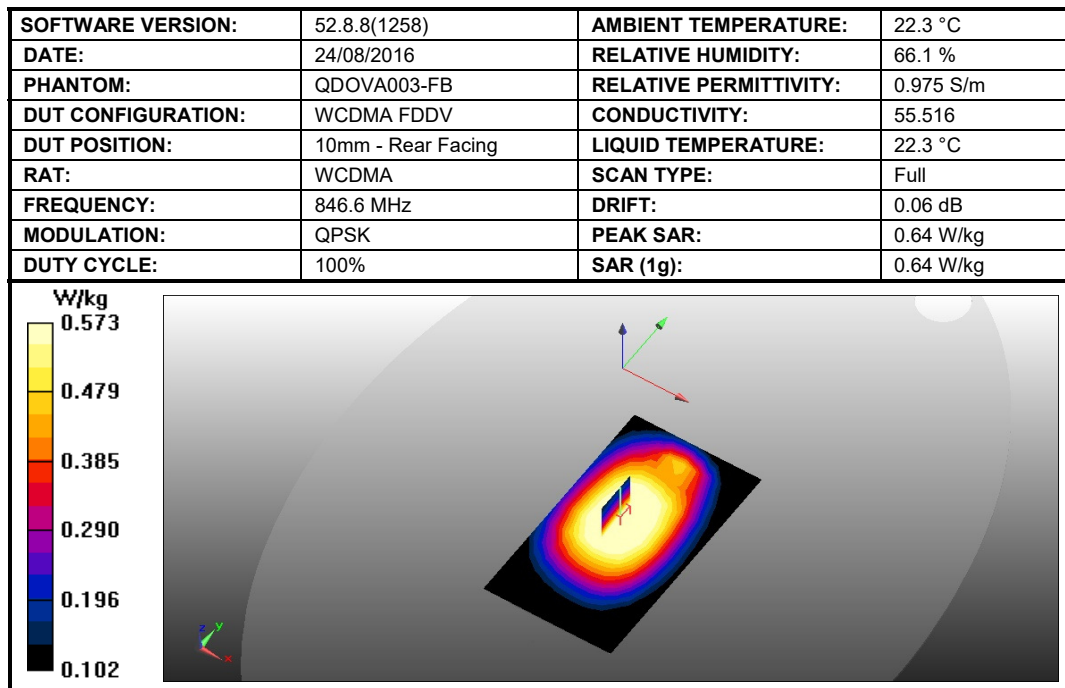


Figure 55: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.



Product Service

|                    |                   |                        |           |
|--------------------|-------------------|------------------------|-----------|
| SOFTWARE VERSION:  | 52.8.8(1258)      | AMBIENT TEMPERATURE:   | 22.3 °C   |
| DATE:              | 24/08/2016        | RELATIVE HUMIDITY:     | 66.1 %    |
| PHANTOM:           | QDOVA003-FB       | RELATIVE PERMITTIVITY: | 0.975 S/m |
| DUT CONFIGURATION: | WCDMA FDDV        | CONDUCTIVITY:          | 55.516    |
| DUT POSITION:      | 10mm - Right Edge | LIQUID TEMPERATURE:    | 22.3 °C   |
| RAT:               | WCDMA             | SCAN TYPE:             | Full      |
| FREQUENCY:         | 846.6 MHz         | DRIFT:                 | 0.03 dB   |
| MODULATION:        | QPSK              | PEAK SAR:              | 0.56 W/kg |
| DUTY CYCLE:        | 100%              | SAR (1g):              | 0.50 W/kg |

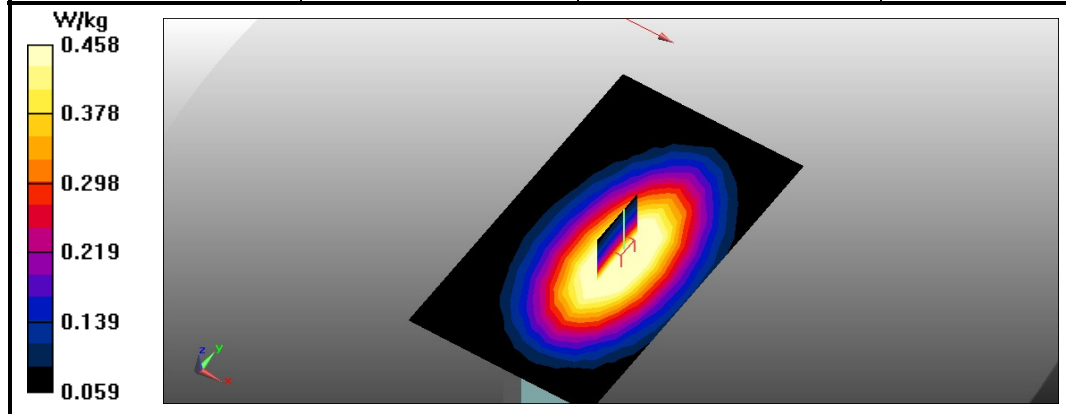


Figure 56: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.

|                    |                  |                        |           |
|--------------------|------------------|------------------------|-----------|
| SOFTWARE VERSION:  | 52.8.8(1258)     | AMBIENT TEMPERATURE:   | 22.3 °C   |
| DATE:              | 24/08/2016       | RELATIVE HUMIDITY:     | 66.1 %    |
| PHANTOM:           | QDOVA003-FB      | RELATIVE PERMITTIVITY: | 0.975 S/m |
| DUT CONFIGURATION: | WCDMA FDDV       | CONDUCTIVITY:          | 55.516    |
| DUT POSITION:      | 10mm - Left Edge | LIQUID TEMPERATURE:    | 22.3 °C   |
| RAT:               | WCDMA            | SCAN TYPE:             | Full      |
| FREQUENCY:         | 846.6 MHz        | DRIFT:                 | -0.11 dB  |
| MODULATION:        | QPSK             | PEAK SAR:              | 0.39 W/kg |
| DUTY CYCLE:        | 100%             | SAR (1g):              | 0.35 W/kg |

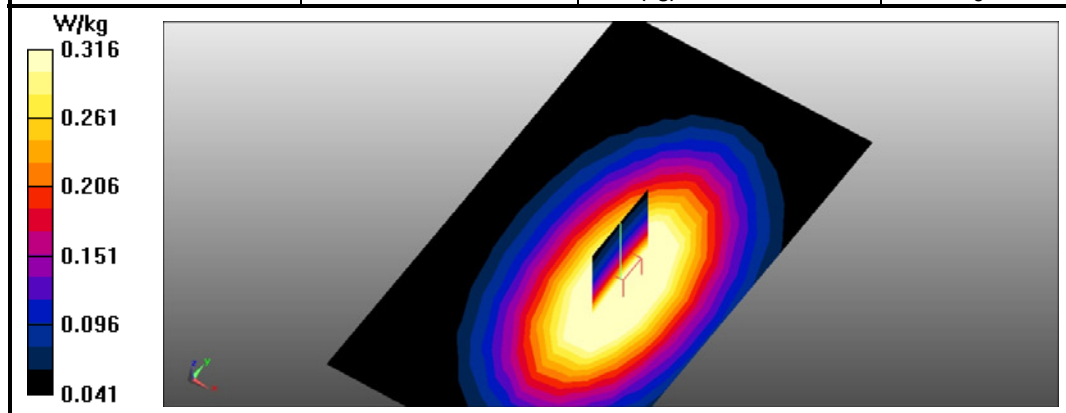


Figure 57: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.



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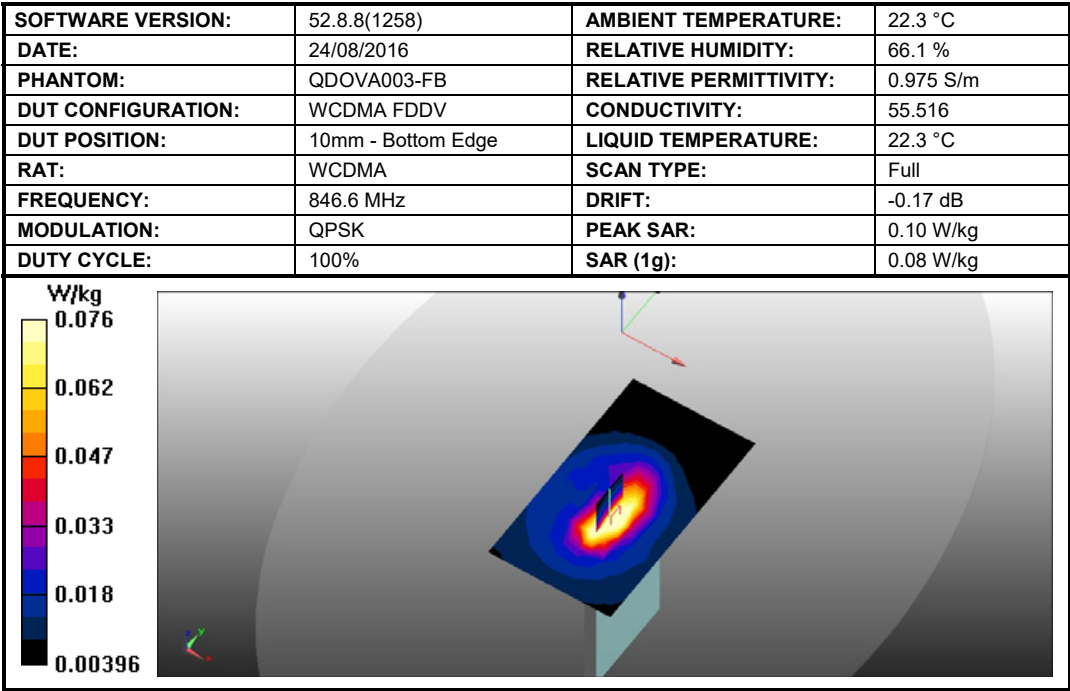


Figure 58: SAR Head Testing Results for the Sharp Smart phone at 846.6 MHz.



## 2.14 WLAN 2437 MHz HEAD SAR TEST RESULTS

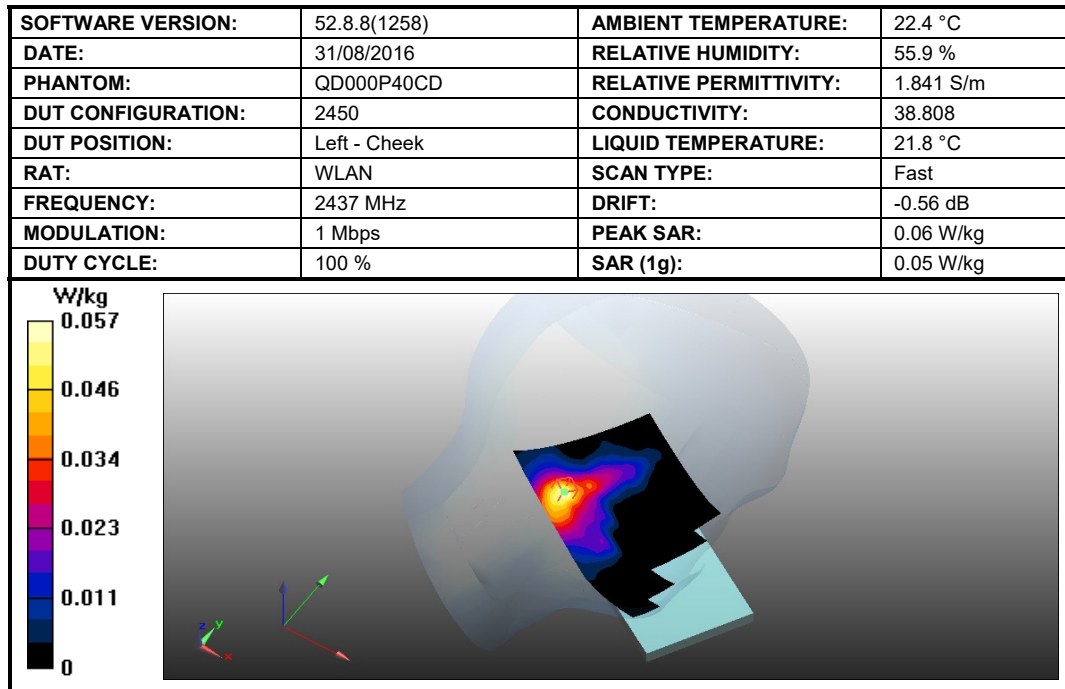


Figure 59: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.

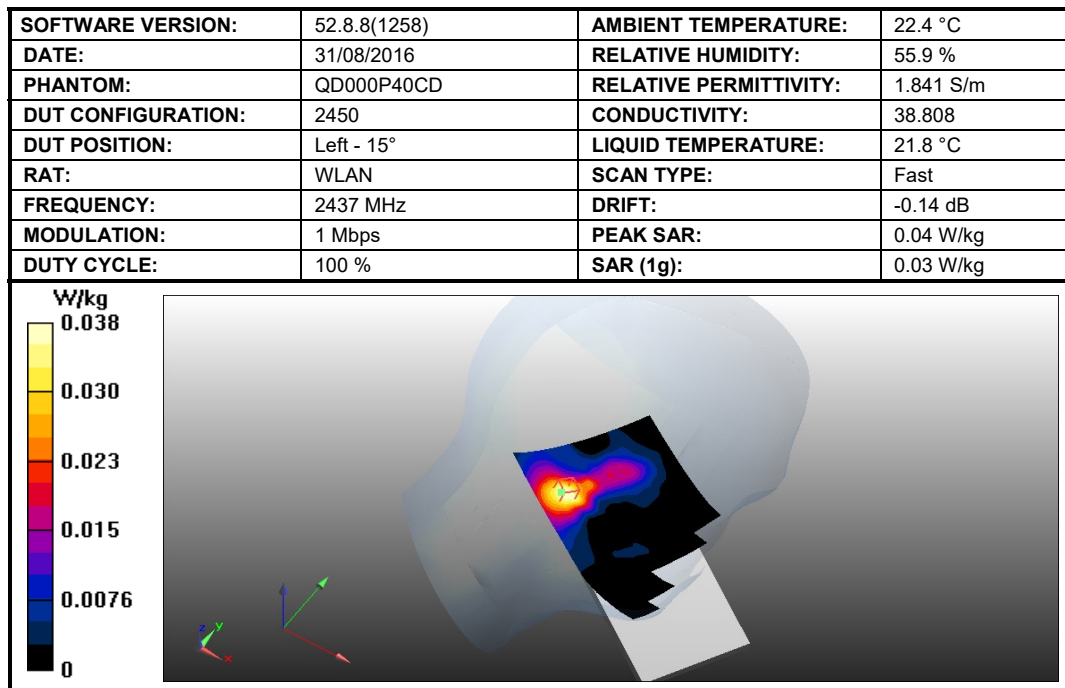


Figure 60: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.



Product Service

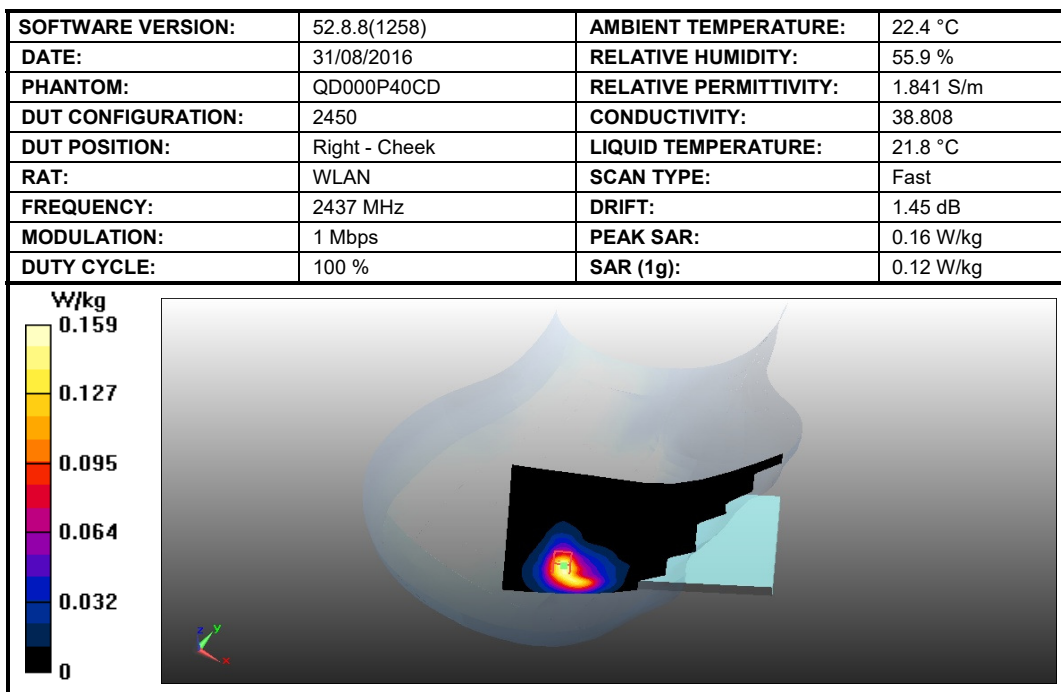


Figure 61: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.

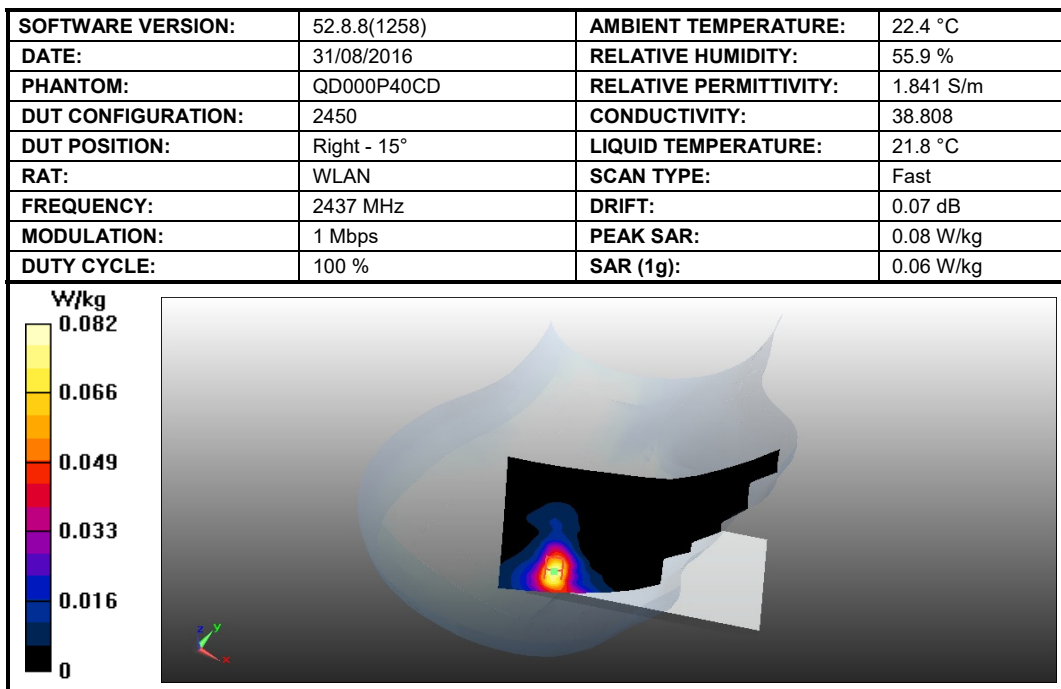


Figure 62: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.



Product Service

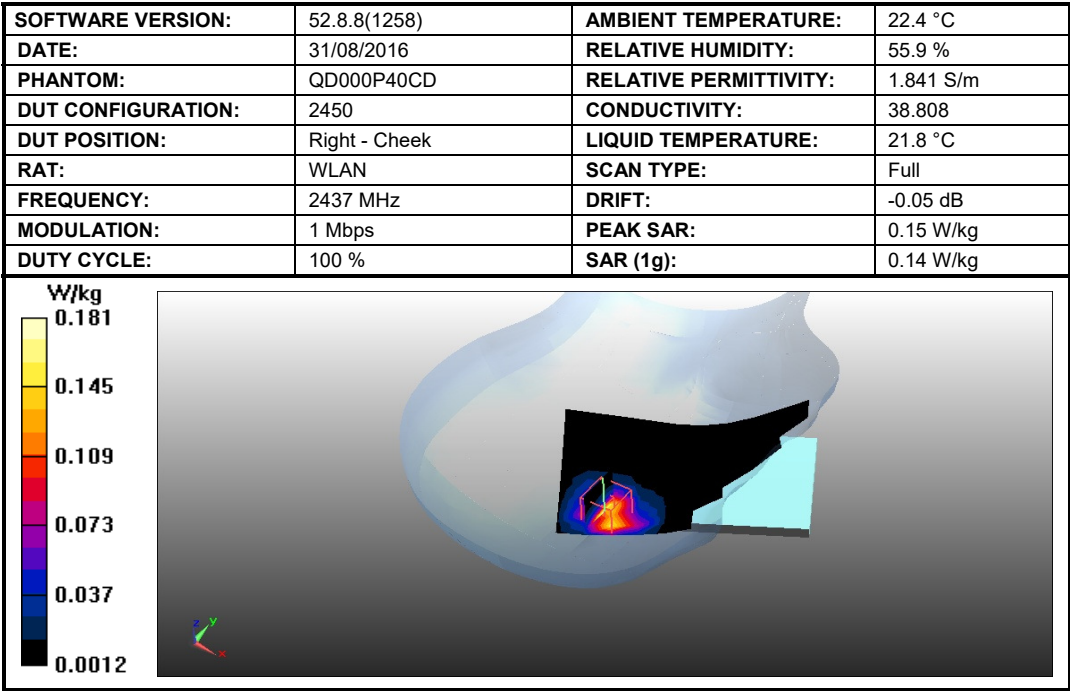


Figure 63: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.



## 2.15 WLAN 2437 MHz BODY SAR TEST RESULTS

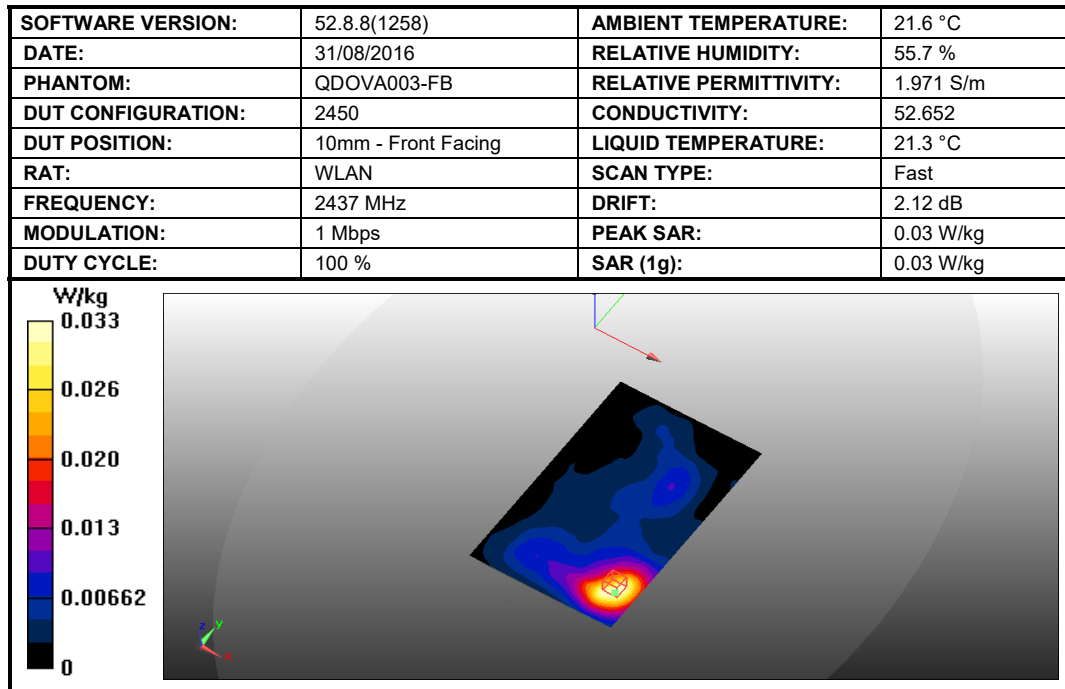


Figure 64: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.

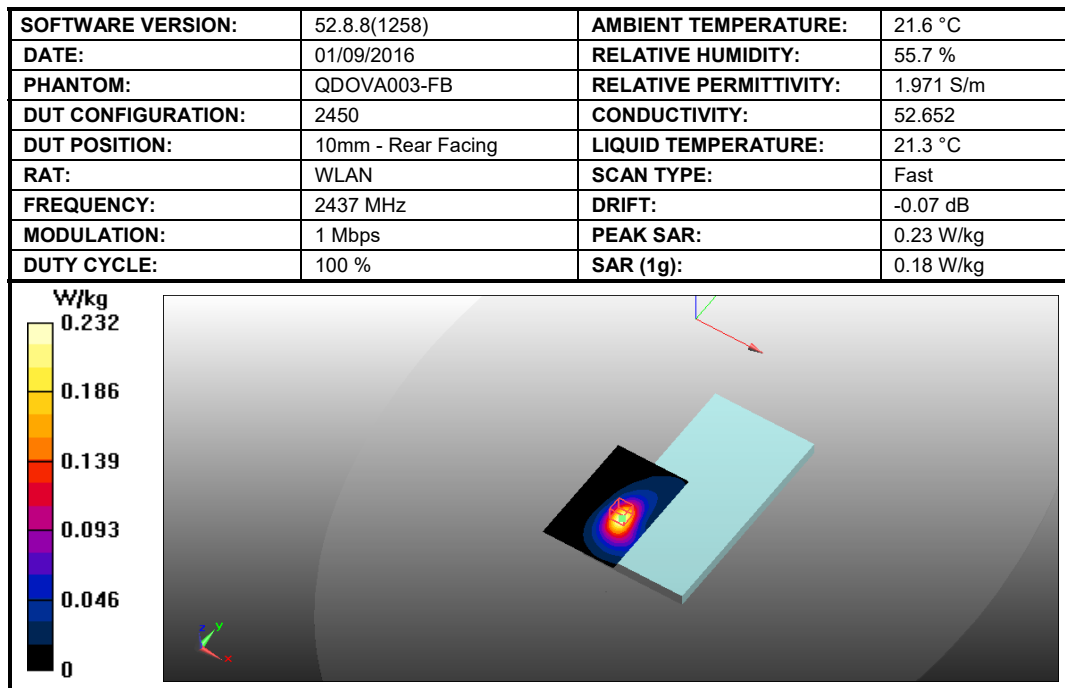


Figure 65: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.





Product Service

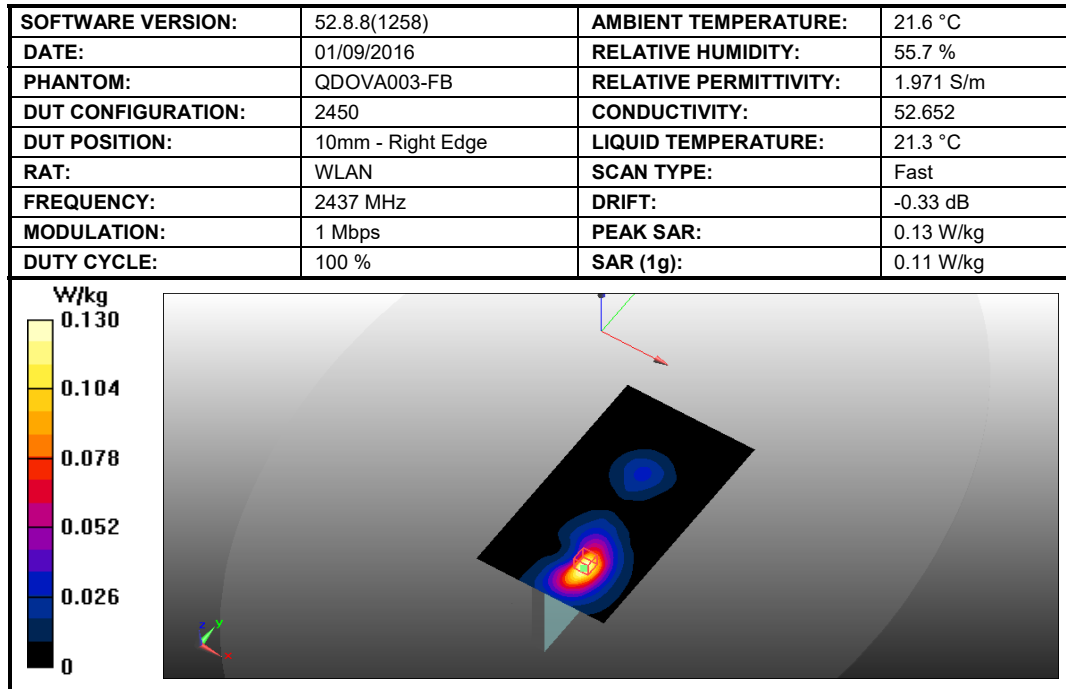


Figure 66: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.

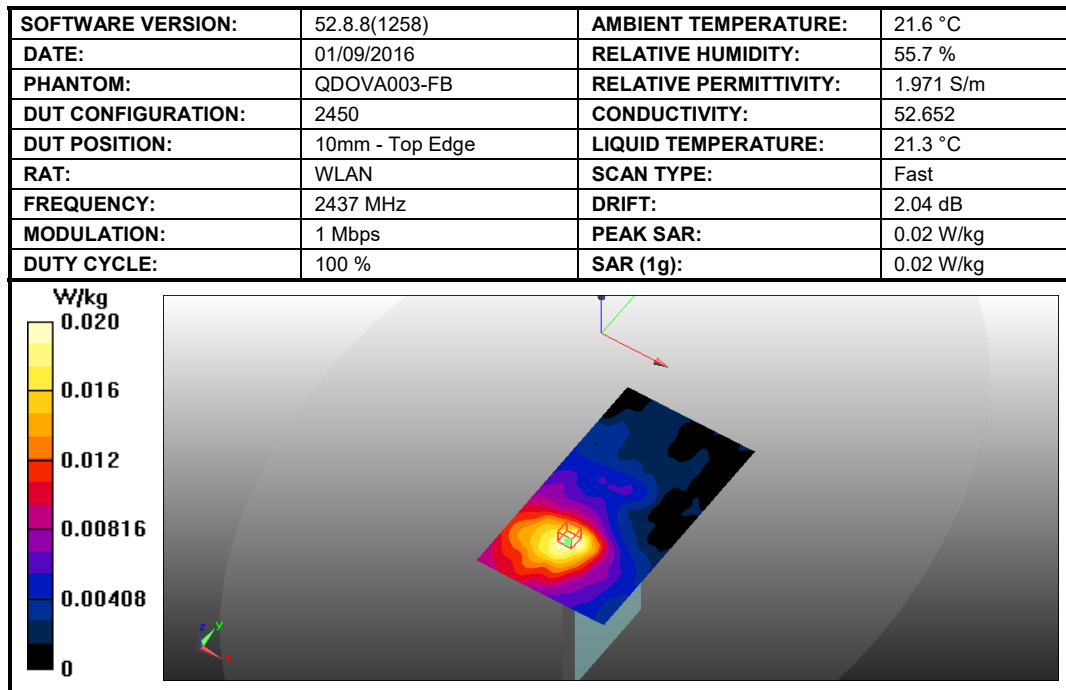


Figure 67: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.



Product Service

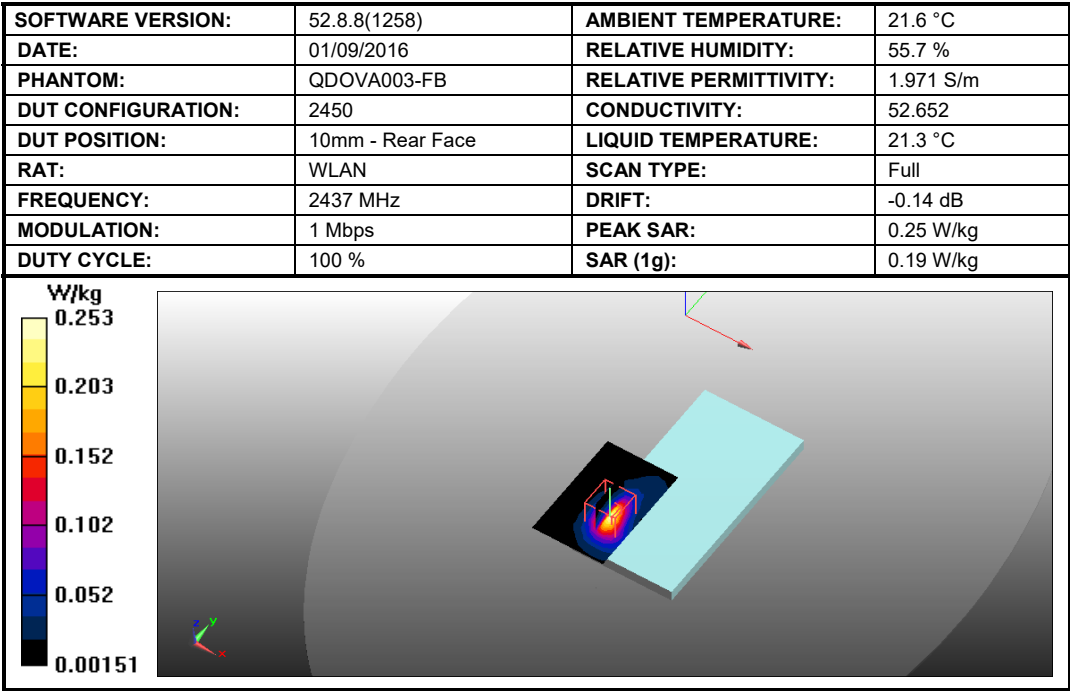


Figure 68: SAR Head Testing Results for the Sharp Smart phone at 2437 MHz.



Product Service

### **SECTION 3**

#### **TEST EQUIPMENT USED**



### 3.1 TEST EQUIPMENT USED

The following test equipment was used at TÜV SÜD Product Service:

| Instrument Description                          | Manufacturer         | Model Type                             | TE Number | Cal Period (months) | Calibration Due Date |
|-------------------------------------------------|----------------------|----------------------------------------|-----------|---------------------|----------------------|
| 10MHz - 2.5GHz, 3W, Amplifier                   | Vectawave Technology | VTL5400                                | 51        | -                   | TU                   |
| Power Sensor                                    | Rohde & Schwarz      | NRV-Z1                                 | 60        | 12                  | 16-Jun-2017          |
| Signal Generator                                | Hewlett Packard      | ESG4000A                               | 61        | 12                  | 12-Jul-2017          |
| Radio Communications Test Set                   | Rohde & Schwarz      | CMU 200                                | 442       | 12                  | 18-Jan-2017          |
| Attenuator (20dB, 10W)                          | Weinschel            | 37-20-34                               | 482       | 12                  | 23-Oct-2016          |
| Bi-directional Coupler                          | IndexSar Ltd         | 7401 (VDC0830-20)                      | 2414      | -                   | TU                   |
| Hygrometer                                      | Rotronic             | I-1000                                 | 2784      | 12                  | 26-Apr-2017          |
| Power Sensor                                    | Rohde & Schwarz      | NRV- Z5                                | 2878      | 12                  | 16-Jun-2017          |
| Dual Channel Power Meter                        | Rohde & Schwarz      | NRVD                                   | 3259      | 12                  | 16-Jun-2017          |
| Wideband Radio Communication Tester             | Rohde & Schwarz      | CMW 500                                | 4144      | 12                  | 16-Nov-2016          |
| Wideband Radio Test Set                         | Rohde & Schwarz      | CMW500                                 | 4546      | 12                  | 3-Feb-2017           |
| ANT Wideband Communication Antenna              | Speag                | SE UMS 176 C                           | 4688      | -                   | TU                   |
| Data Acquisition Electronics                    | Speag                | DAE 4 - SD 000 D04 BM                  | 4689      | 12                  | 8-Dec-2016           |
| Measurement Server                              | Speag                | DASY 5 Measurement Server              | 4692      | -                   | TU                   |
| Body Phantom                                    | Speag                | ELI Phantom                            | 4699      | -                   | TU                   |
| Dosimetric SAR Probe                            | Speag                | EX3DV4                                 | 4700      | 12                  | 15-Dec-2016          |
| Mounting Platform for TX90XL Robot and Phantoms | Speag                | MP6C-TX90XL Mounting Platform Extended | 4702      | -                   | TU                   |
| Head Phantom                                    | Speag                | Twin Sam Phantom                       | 4703      | -                   | TU                   |
| Robot                                           | Speag                | TX90 XLspeag Robot                     | 4704      | -                   | TU                   |
| HBBL Head Fluid                                 | Speag                | Batch 1                                | N/A       | 1                   | 30-Sep-2016          |
| MBBL Body Fluid                                 | Speag                | Batch 2                                | N/A       | 1                   | 30-Sep-2016          |



### 3.2 TEST SOFTWARE

The following software was used to control the TÜV SÜD Product Service DASY System.

|             |                |
|-------------|----------------|
| Instrument  | Version Number |
| DASY system | 52.8.8(1258)   |

### 3.3 DIELECTRIC PROPERTIES OF SIMULANT LIQUIDS

The fluid properties of the simulant fluids used during routine SAR evaluation meet the dielectric properties required KDB 865664 D01.

The dielectric properties of the tissue simulant liquids used for the SAR testing at TÜV SÜD Product Service are as follows:-

| Fluid Frequency | Relative Permittivity Target | Relative Permittivity Measured | Conductivity Target | Conductivity Measured |
|-----------------|------------------------------|--------------------------------|---------------------|-----------------------|
| 750 MHz Head    | 41.9                         | 41.26                          | 0.89                | 0.90                  |
| 750 MHz Body    | 55.3                         | 55.78                          | 0.96                | 0.94                  |
| 835 MHz Head    | 41.5                         | 40.97                          | 0.90                | 0.93                  |
| 835 MHz Body    | 55.2                         | 55.65                          | 0.97                | 0.96                  |
| 1900 MHz Head   | 40.0                         | 38.98                          | 1.40                | 1.45                  |
| 1900 MHz Body   | 53.3                         | 53.88                          | 1.52                | 1.57                  |
| 2450 MHz Head   | 39.2                         | 38.19                          | 1.80                | 1.84                  |
| 2450 MHz Body   | 52.7                         | 53.16                          | 1.95                | 2.04                  |



Product Service

### 3.4 TEST CONDITIONS

#### 3.4.1 Test Laboratory Conditions

Ambient temperature: Within +15°C to +35°C.

The actual temperature during the testing ranged from 21.6°C to 22.7°C.

The actual humidity during the testing ranged from 46.7% to 66.1% RH.

#### 3.4.2 Test Fluid Temperature Range

| Frequency   | Body / Head Fluid | Min Temperature °C | Max Temperature °C |
|-------------|-------------------|--------------------|--------------------|
| PCS 1900    | Head              | 22.2               | 22.2               |
| PCS 1900    | Body              | 22.2               | 22.2               |
| PCS 1900    | Head              | 22.2               | 22.3               |
| GSM 850     | Head              | 22.1               | 22.1               |
| GSM 850     | Body              | 22.3               | 22.3               |
| GSM 850     | Head              | 22.1               | 22.1               |
| WCDMA FDD V | Body              | 21.5               | 22.3               |
| WCDMA FDD V | Head              | 22.1               | 22.1               |
| LTE Band 17 | Head              | 21.1               | 21.1               |
| LTE Band 17 | Body              | 22.0               | 22.0               |
| LTE Band 17 | Head              | 22.3               | 22.3               |
| LTE Band 17 | Body              | 22.3               | 22.3               |
| WLAN 2450   | Head              | 21.8               | 21.8               |
| WLAN 2450   | Body              | 21.3               | 21.3               |



### 3.5 MEASUREMENT UNCERTAINTY

Fast SAR Measurements, 300 MHz to 3 GHz Using Probe EX3DV4 - SN3759

| Source of Uncertainty         | Uncertainty $\pm$ % | Probability distribution | Div  | $c_i$ (1g) | Standard Uncertainty $\pm$ % (1g) | $V_i$ ( $V_{eff}$ ) |
|-------------------------------|---------------------|--------------------------|------|------------|-----------------------------------|---------------------|
| <b>Measurement System</b>     |                     |                          |      |            |                                   |                     |
| Probe calibration             | 6.0                 | N                        | 1.00 | 0.00       | 0.0                               |                     |
| Axial Isotropy                | 4.7                 | R                        | 1.73 | 0.70       | 1.9                               | Infinity            |
| Hemispherical Isotropy        | 9.6                 | R                        | 1.73 | 0.70       | 3.9                               | Infinity            |
| Boundary effect               | 1.0                 | R                        | 1.73 | 1.00       | 0.6                               | Infinity            |
| Linearity                     | 4.7                 | R                        | 1.73 | 1.00       | 2.7                               | Infinity            |
| System Detection limits       | 1.0                 | R                        | 1.73 | 1.00       | 0.6                               | Infinity            |
| Modulation response           | 2.4                 | R                        | 1.73 | 1.00       | 1.4                               | Infinity            |
| Readout electronics           | 0.3                 | N                        | 1.00 | 0.00       | 0.0                               |                     |
| Response time                 | 0.8                 | R                        | 1.73 | 0.00       | 0.0                               |                     |
| Integration time              | 2.6                 | R                        | 1.73 | 1.00       | 1.5                               | Infinity            |
| RF ambient noise              | 3.0                 | R                        | 1.73 | 1.00       | 1.7                               | Infinity            |
| RF ambient reflections        | 3.0                 | R                        | 1.73 | 0.00       | 0.0                               |                     |
| Probe positioner              | 0.4                 | R                        | 1.73 | 1.00       | 0.2                               | Infinity            |
| Probe positioning             | 2.9                 | R                        | 1.73 | 1.00       | 1.7                               | Infinity            |
| Spatial x-y-Resolution        | 10.0                | R                        | 1.73 | 1.00       | 5.8                               | Infinity            |
| Fast SAR z-Approximation      | 7.0                 | R                        | 1.73 | 1.00       | 4.0                               | Infinity            |
| <b>Test sample related</b>    |                     |                          |      |            |                                   |                     |
| Device Positioning            | 2.9                 | N                        | 1.00 | 1.00       | 2.9                               | 145                 |
| Device Holder                 | 3.6                 | N                        | 1.00 | 1.00       | 3.6                               | 5                   |
| Input Power and SAR Drift     | 5.0                 | R                        | 1.73 | 1.00       | 2.9                               | Infinity            |
| <b>Phantom and Setup</b>      |                     |                          |      |            |                                   |                     |
| Phantom uncertainty           | 6.1                 | R                        | 1.73 | 1.00       | 3.5                               | Infinity            |
| SAR Correction                | 1.9                 | R                        | 1.73 | 0.00       | 0.0                               |                     |
| Liquid conductivity Meas.     | 2.5                 | R                        | 1.73 | 0.00       | 0.0                               |                     |
| Liquid Permittivity Meas.     | 2.5                 | R                        | 1.73 | 0.00       | 0.0                               |                     |
| Temp. Unc. Conductivity       | 3.4                 | R                        | 1.73 | 0.00       | 0.0                               |                     |
| Temp. Unc. Permittivity       | 0.4                 | R                        | 1.73 | 0.00       | 0.0                               |                     |
| Combined Standard Uncertainty |                     | RSS                      |      |            | 11.4                              |                     |
| Expanded Standard Uncertainty |                     | K=2                      |      |            | 22.7                              |                     |



## Full SAR Measurements, 300 MHz to 3 GHz Using Probe EX3DV4 - SN3759

| Source of Uncertainty         | Uncertainty $\pm$ % | Probability distribution | Div  | $c_i$ (1g) | Standard Uncertainty $\pm$ % (1g) | $v_i$ ( $v_{eff}$ ) |
|-------------------------------|---------------------|--------------------------|------|------------|-----------------------------------|---------------------|
| <b>Measurement System</b>     |                     |                          |      |            |                                   |                     |
| Probe calibration             | 6.0                 | N                        | 1.00 | 1.00       | 6.0                               | Infinity            |
| Axial Isotropy                | 4.7                 | R                        | 1.73 | 0.70       | 1.9                               | Infinity            |
| Hemispherical Isotropy        | 9.6                 | R                        | 1.73 | 0.70       | 3.9                               | Infinity            |
| Boundary effect               | 1.0                 | R                        | 1.73 | 1.00       | 0.6                               | Infinity            |
| Linearity                     | 4.7                 | R                        | 1.73 | 1.00       | 2.7                               | Infinity            |
| System Detection limits       | 1.0                 | R                        | 1.73 | 1.00       | 0.6                               | Infinity            |
| Modulation response           | 2.4                 | R                        | 1.73 | 1.00       | 1.4                               | Infinity            |
| Readout electronics           | 0.3                 | N                        | 1.00 | 1.00       | 0.3                               | Infinity            |
| Response time                 | 0.8                 | R                        | 1.73 | 1.00       | 0.5                               | Infinity            |
| Integration time              | 2.6                 | R                        | 1.73 | 1.00       | 1.5                               | Infinity            |
| RF ambient noise              | 3.0                 | R                        | 1.73 | 1.00       | 1.7                               | Infinity            |
| RF ambient reflections        | 3.0                 | R                        | 1.73 | 1.00       | 1.7                               | Infinity            |
| Probe positioner              | 0.4                 | R                        | 1.73 | 1.00       | 0.2                               | Infinity            |
| Probe positioning             | 2.9                 | R                        | 1.73 | 1.00       | 1.7                               | Infinity            |
| Max SAR Evaluation            | 2.0                 | R                        | 1.73 | 1.00       | 1.2                               | Infinity            |
| <b>Test sample related</b>    |                     |                          |      |            |                                   |                     |
| Device Positioning            | 2.9                 | N                        | 1.00 | 1.00       | 2.9                               | 145                 |
| Device Holder                 | 3.6                 | N                        | 1.00 | 1.00       | 3.6                               | 5                   |
| Input Power and SAR Drift     | 5.0                 | R                        | 1.73 | 1.00       | 2.9                               | Infinity            |
| <b>Phantom and Setup</b>      |                     |                          |      |            |                                   |                     |
| Phantom uncertainty           | 6.1                 | R                        | 1.73 | 1.00       | 3.5                               | Infinity            |
| SAR Correction                | 1.9                 | R                        | 1.73 | 1.00       | 1.1                               | Infinity            |
| Liquid conductivity Meas.     | 2.5                 | R                        | 1.73 | 0.78       | 1.1                               | Infinity            |
| Liquid Permittivity Meas.     | 2.5                 | R                        | 1.73 | 0.23       | 0.3                               | Infinity            |
| Temp. Unc. Conductivity       | 3.4                 | R                        | 1.73 | 0.78       | 1.5                               | Infinity            |
| Temp. Unc. Permittivity       | 0.4                 | R                        | 1.73 | 0.23       | 0.1                               | Infinity            |
| Combined Standard Uncertainty |                     | RSS                      |      |            | 11.1                              | 361                 |
| Expanded Standard Uncertainty |                     | K=2                      |      |            | 22.2                              |                     |





Product Service

## **SECTION 4**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



Product Service

#### 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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Product Service

## **ANNEX A**

### **PROBE CALIBRATION REPORT**



Product Service

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)  
The Swiss Accreditation Service is one of the signatories to the EA  
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**Client **TÜV SÜD UK**Certificate No: **EX3-3759\_Dec15****CALIBRATION CERTIFICATE**Object **EX3DV4 - SN:3759**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5,  
QA CAL-25.v6  
Calibration procedure for dosimetric E-field probes**

Calibration date: **December 15, 2015**

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  $(22 \pm 3)^{\circ}\text{C}$  and humidity  $< 70\%$ .

Calibration Equipment used (M&amp;TE critical for calibration)

| Primary Standards          | ID              | Cal Date (Certificate No.)        | Scheduled Calibration  |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B         | GB41293874      | 01-Apr-15 (No. 217-02128)         | Mar-16                 |
| Power sensor E4412A        | MY41498087      | 01-Apr-15 (No. 217-02128)         | Mar-16                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 01-Apr-15 (No. 217-02129)         | Mar-16                 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 01-Apr-15 (No. 217-02132)         | Mar-16                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 01-Apr-15 (No. 217-02133)         | Mar-16                 |
| Reference Probe ES3DV2     | SN: 3013        | 30-Dec-14 (No. ES3-3013_Dec14)    | Dec-15                 |
| DAE4                       | SN: 660         | 14-Jan-15 (No. DAE4-660_Jan15)    | Jan-16                 |
| Secondary Standards        | ID              | Check Date (in house)             | Scheduled Check        |
| RF generator HP B648C      | US3642U01700    | 4-Aug-99 (in house check Apr-13)  | In house check: Apr-16 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

|                                                                                                                 | Name           | Function              | Signature |
|-----------------------------------------------------------------------------------------------------------------|----------------|-----------------------|-----------|
| Calibrated by:                                                                                                  | Jeton Kastrati | Laboratory Technician |           |
| Approved by:                                                                                                    | Katja Pokovic  | Technical Manager     |           |
| This calibration certificate shall not be reproduced except in full without written approval of the laboratory. |                |                       |           |
| Issued: December 15, 2015                                                                                       |                |                       |           |



Product Service

**Calibration Laboratory of**  
**Schmid & Partner**  
**Engineering AG**  
 Zeughausstrasse 43, 8004 Zurich, Switzerland



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**S** Servizio svizzero di taratura  
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA  
 Multilateral Agreement for the recognition of calibration certificates

#### Glossary:

|                       |                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| TSL                   | tissue simulating liquid                                                                                                                          |
| NORM <sub>x,y,z</sub> | sensitivity in free space                                                                                                                         |
| ConvF                 | sensitivity in TSL / NORM <sub>x,y,z</sub>                                                                                                        |
| DCP                   | diode compression point                                                                                                                           |
| CF                    | crest factor (1/duty_cycle) of the RF signal                                                                                                      |
| A, B, C, D            | modulation dependent linearization parameters                                                                                                     |
| Polarization $\phi$   | $\phi$ rotation around probe axis                                                                                                                 |
| Polarization $\theta$ | $\theta$ rotation around an axis that is in the plane normal to probe axis (at measurement center),<br>i.e., $\theta = 0$ 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:

- 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
- 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 300 MHz to 3 GHz)", February 2005
- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

#### Methods Applied and Interpretation of Parameters:

- NORM<sub>x,y,z</sub>**: Assessed for E-field polarization  $\theta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the  $E^2$ -field uncertainty inside TSL (see below ConvF).
- NORM(f)<sub>x,y,z</sub> = NORM<sub>x,y,z</sub> \* 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.
- DCP<sub>x,y,z</sub>**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (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
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; D<sub>x,y,z</sub>; VR<sub>x,y,z</sub>**: A, B, C, D 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  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* 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  $\pm 50$  MHz to  $\pm 100$  MHz.
- 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 NORM<sub>x</sub> (no uncertainty required).



Product Service

EX3DV4 – SN:3759

December 15, 2015

# Probe EX3DV4

## SN:3759

|               |                   |
|---------------|-------------------|
| Manufactured: | March 16, 2010    |
| Repaired:     | December 10, 2015 |
| Calibrated:   | December 15, 2015 |

Calibrated for DASY/EASY Systems  
(Note: non-compatible with DASY2 system!)





EX3DV4- SN:3759

December 15, 2015

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3759

### Basic Calibration Parameters

|                                       | Sensor X | Sensor Y | Sensor Z | Unc (k=2)    |
|---------------------------------------|----------|----------|----------|--------------|
| Norm ( $\mu V/(V/m)^2$ ) <sup>A</sup> | 0.49     | 0.46     | 0.47     | $\pm 10.1\%$ |
| DCP (mV) <sup>B</sup>                 | 101.8    | 101.0    | 100.0    |              |

### Sensor Model Parameters

|   | C1<br>fF | C2<br>fF | $\alpha$<br>V <sup>-1</sup> | T1<br>ms.V <sup>-2</sup> | T2<br>ms.V <sup>-1</sup> | T3<br>ms | T4<br>V <sup>-2</sup> | T5<br>V <sup>-1</sup> | T6    |
|---|----------|----------|-----------------------------|--------------------------|--------------------------|----------|-----------------------|-----------------------|-------|
| X | 41.28    | 306.2    | 35.05                       | 12.52                    | 0.734                    | 4.994    | 0.677                 | 0.253                 | 1.005 |
| Y | 42.65    | 317.1    | 35.18                       | 10.52                    | 0.844                    | 4.984    | 1.558                 | 0.202                 | 1.008 |
| Z | 42.8     | 317.1    | 34.69                       | 9.763                    | 1.004                    | 4.978    | 1.769                 | 0.118                 | 1.007 |

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%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter; uncertainty not required.



EX3DV4- SN:3759

December 15, 2015

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3759

### Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) <sup>c</sup> | Relative Permittivity <sup>f</sup> | Conductivity (S/m) <sup>f</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>g</sup> | Depth <sup>g</sup> (mm) | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 450                  | 43.5                               | 0.87                            | 10.35   | 10.35   | 10.35   | 0.18               | 1.30                    | ± 13.3 %  |
| 750                  | 41.9                               | 0.89                            | 9.60    | 9.60    | 9.60    | 0.46               | 0.92                    | ± 12.0 %  |
| 835                  | 41.5                               | 0.90                            | 9.14    | 9.14    | 9.14    | 0.40               | 0.93                    | ± 12.0 %  |
| 900                  | 41.5                               | 0.97                            | 8.93    | 8.93    | 8.93    | 0.29               | 1.21                    | ± 12.0 %  |
| 1640                 | 40.3                               | 1.29                            | 7.98    | 7.98    | 7.98    | 0.36               | 0.85                    | ± 12.0 %  |
| 1750                 | 40.1                               | 1.37                            | 7.88    | 7.88    | 7.88    | 0.34               | 0.91                    | ± 12.0 %  |
| 1900                 | 40.0                               | 1.40                            | 7.58    | 7.58    | 7.58    | 0.38               | 0.80                    | ± 12.0 %  |
| 2100                 | 39.8                               | 1.49                            | 7.73    | 7.73    | 7.73    | 0.37               | 0.84                    | ± 12.0 %  |
| 2450                 | 39.2                               | 1.80                            | 6.98    | 6.98    | 6.98    | 0.34               | 0.94                    | ± 12.0 %  |
| 2600                 | 39.0                               | 1.96                            | 6.76    | 6.76    | 6.76    | 0.39               | 0.85                    | ± 12.0 %  |
| 5200                 | 36.0                               | 4.66                            | 5.04    | 5.04    | 5.04    | 0.35               | 1.80                    | ± 13.1 %  |
| 5300                 | 35.9                               | 4.76                            | 4.84    | 4.84    | 4.84    | 0.35               | 1.80                    | ± 13.1 %  |
| 5500                 | 35.6                               | 4.96                            | 4.69    | 4.69    | 4.69    | 0.40               | 1.80                    | ± 13.1 %  |
| 5600                 | 35.5                               | 5.07                            | 4.32    | 4.32    | 4.32    | 0.50               | 1.80                    | ± 13.1 %  |
| 5800                 | 35.3                               | 5.27                            | 4.48    | 4.48    | 4.48    | 0.50               | 1.80                    | ± 13.1 %  |

<sup>c</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the 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.

<sup>f</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) 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 ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>g</sup> 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 frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.





EX3DV4- SN:3759

December 15, 2015

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3759

### Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) <sup>C</sup> | Relative Permittivity <sup>F</sup> | Conductivity (S/m) <sup>F</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>G</sup> | Depth (mm) <sup>G</sup> | Unc (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|-----------|
| 450                  | 56.7                               | 0.94                            | 10.63   | 10.63   | 10.63   | 0.10               | 1.30                    | ± 13.3 %  |
| 750                  | 55.5                               | 0.96                            | 9.31    | 9.31    | 9.31    | 0.27               | 1.31                    | ± 12.0 %  |
| 835                  | 55.2                               | 0.97                            | 9.17    | 9.17    | 9.17    | 0.44               | 0.90                    | ± 12.0 %  |
| 900                  | 55.0                               | 1.05                            | 9.14    | 9.14    | 9.14    | 0.25               | 1.30                    | ± 12.0 %  |
| 1640                 | 53.8                               | 1.40                            | 7.88    | 7.88    | 7.88    | 0.34               | 1.00                    | ± 12.0 %  |
| 1750                 | 53.4                               | 1.49                            | 7.49    | 7.49    | 7.49    | 0.36               | 0.92                    | ± 12.0 %  |
| 1900                 | 53.3                               | 1.52                            | 7.31    | 7.31    | 7.31    | 0.39               | 0.85                    | ± 12.0 %  |
| 2100                 | 53.2                               | 1.62                            | 7.61    | 7.61    | 7.61    | 0.44               | 0.80                    | ± 12.0 %  |
| 2450                 | 52.7                               | 1.95                            | 7.03    | 7.03    | 7.03    | 0.36               | 0.86                    | ± 12.0 %  |
| 2600                 | 52.5                               | 2.16                            | 6.78    | 6.78    | 6.78    | 0.36               | 0.95                    | ± 12.0 %  |
| 5200                 | 49.0                               | 5.30                            | 4.45    | 4.45    | 4.45    | 0.50               | 1.90                    | ± 13.1 %  |
| 5300                 | 48.9                               | 5.42                            | 4.29    | 4.29    | 4.29    | 0.50               | 1.90                    | ± 13.1 %  |
| 5500                 | 48.6                               | 5.65                            | 3.73    | 3.73    | 3.73    | 0.60               | 1.90                    | ± 13.1 %  |
| 5600                 | 48.5                               | 5.77                            | 3.59    | 3.59    | 3.59    | 0.60               | 1.90                    | ± 13.1 %  |
| 5800                 | 48.2                               | 6.00                            | 3.87    | 3.87    | 3.87    | 0.60               | 1.90                    | ± 13.1 %  |

<sup>C</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the 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.

<sup>F</sup> At frequencies below 3 GHz, the validity of tissue parameters ( $\epsilon$  and  $\sigma$ ) 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 ( $\epsilon$  and  $\sigma$ ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>G</sup> 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 frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

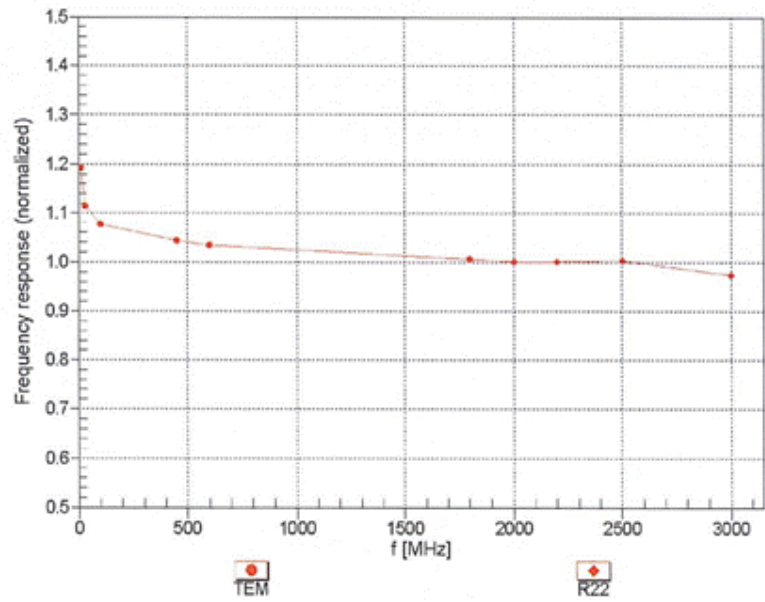


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**Frequency Response of E-Field**  
(TEM-Cell:ifi110 EXX, Waveguide: R22)

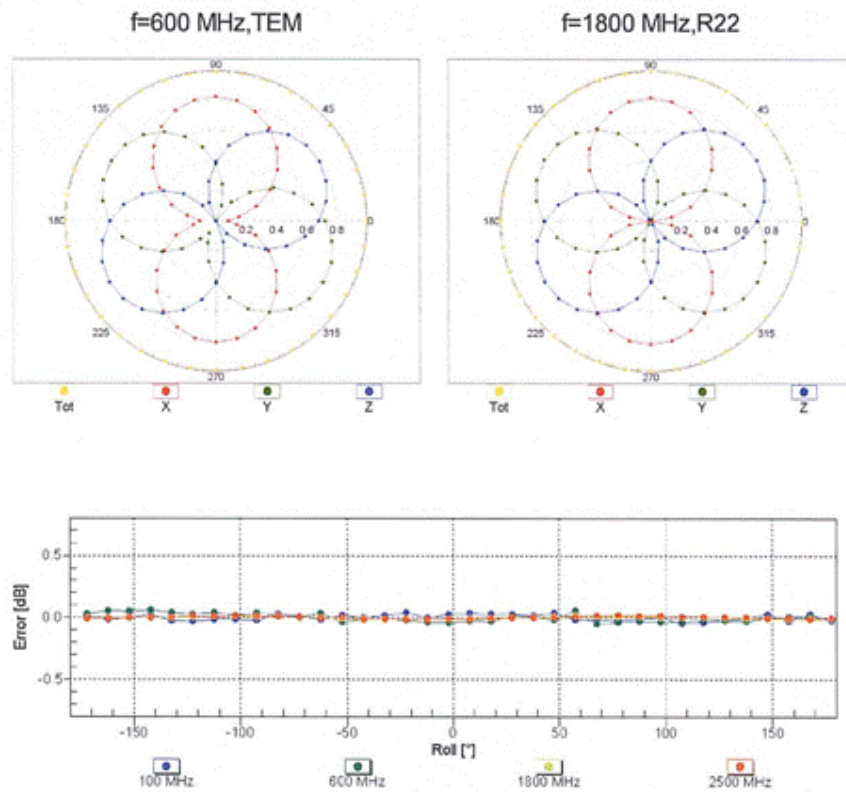


Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )



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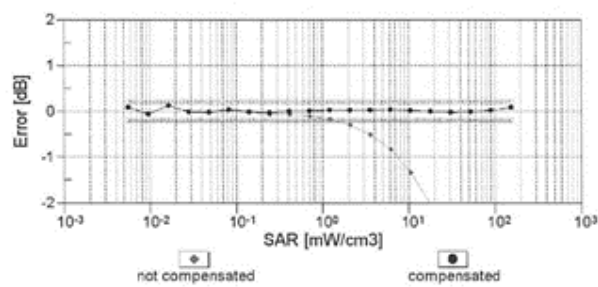
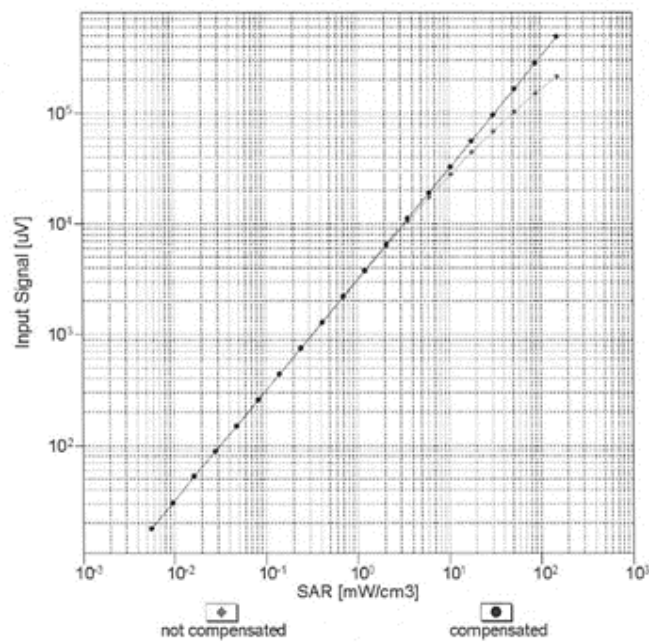
**Receiving Pattern ( $\phi$ ),  $\theta = 0^\circ$** Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )



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### Dynamic Range f(SAR<sub>head</sub>) (TEM cell , f<sub>eval</sub>= 1900 MHz)

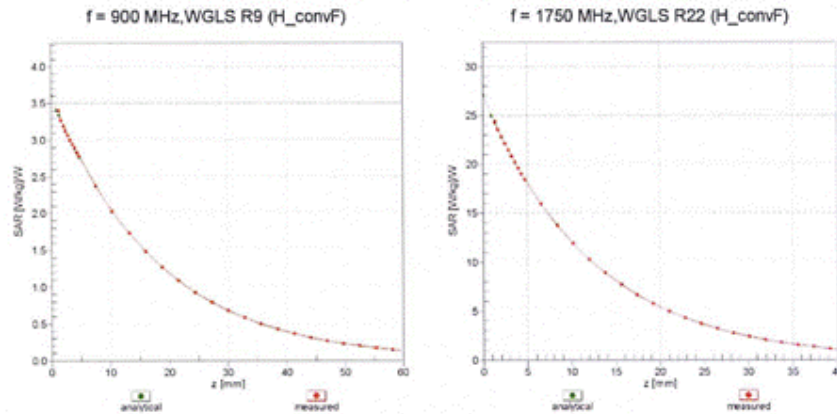
Uncertainty of Linearity Assessment:  $\pm 0.6\%$  (k=2)



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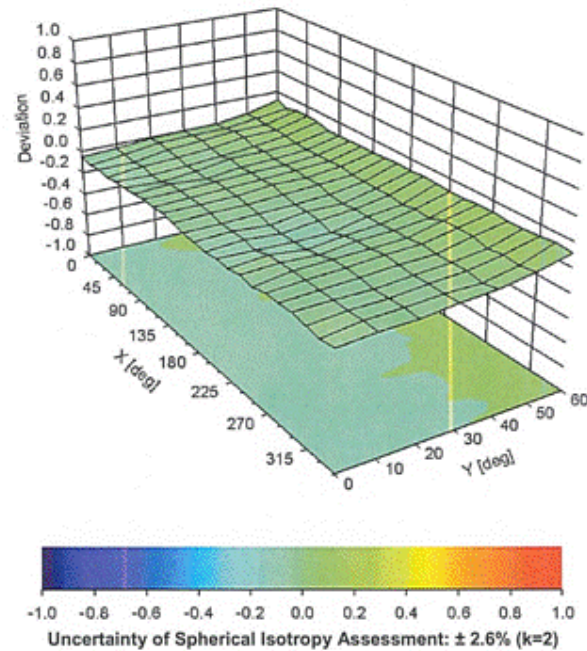
December 15, 2015

## Conversion Factor Assessment



## Deviation from Isotropy in Liquid

Error ( $\phi$ ,  $\theta$ ),  $f = 900 \text{ MHz}$





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**DASY/EASY - Parameters of Probe: EX3DV4 - SN:3759****Other Probe Parameters**

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 27.8       |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disabled   |
| Probe Overall Length                          | 337 mm     |
| Probe Body Diameter                           | 10 mm      |
| Tip Length                                    | 9 mm       |
| Tip Diameter                                  | 2.5 mm     |
| Probe Tip to Sensor X Calibration Point       | 1 mm       |
| Probe Tip to Sensor Y Calibration Point       | 1 mm       |
| Probe Tip to Sensor Z Calibration Point       | 1 mm       |
| Recommended Measurement Distance from Surface | 1.4 mm     |





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**Appendix: Modulation Calibration Parameters**

| UID           | Communication System Name                     |   | A<br>dB | B<br>dB $\mu$ V | C     | D<br>dB | VR<br>mV | Max<br>Unc <sup>E</sup><br>(k=2) |
|---------------|-----------------------------------------------|---|---------|-----------------|-------|---------|----------|----------------------------------|
| 0             | CW                                            | X | 0.00    | 0.00            | 1.00  | 0.00    | 137.4    | $\pm 3.5\%$                      |
|               |                                               | Y | 0.00    | 0.00            | 1.00  |         | 148.5    |                                  |
|               |                                               | Z | 0.00    | 0.00            | 1.00  |         | 142.2    |                                  |
| 10010-<br>CAA | SAR Validation (Square, 100ms, 10ms)          | X | 3.46    | 69.97           | 12.84 | 10.00   | 20.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 3.56    | 70.15           | 13.09 |         | 20.0     |                                  |
|               |                                               | Z | 3.97    | 71.55           | 14.16 |         | 20.0     |                                  |
| 10011-<br>CAB | UMTS-FDD (WCDMA)                              | X | 0.95    | 64.62           | 13.58 | 0.00    | 150.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 0.94    | 64.12           | 13.29 |         | 150.0    |                                  |
|               |                                               | Z | 0.89    | 62.25           | 11.72 |         | 150.0    |                                  |
| 10012-<br>CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)      | X | 1.19    | 62.77           | 14.17 | 0.41    | 150.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 1.18    | 62.39           | 13.90 |         | 150.0    |                                  |
|               |                                               | Z | 1.18    | 61.47           | 12.83 |         | 150.0    |                                  |
| 10013-<br>CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps) | X | 4.80    | 66.41           | 16.69 | 1.46    | 150.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 4.81    | 66.26           | 16.58 |         | 150.0    |                                  |
|               |                                               | Z | 4.81    | 65.99           | 16.26 |         | 150.0    |                                  |
| 10021-<br>DAB | GSM-FDD (TDMA, GMSK)                          | X | 100.00  | 113.42          | 27.36 | 9.39    | 50.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 55.77   | 106.43          | 25.91 |         | 50.0     |                                  |
|               |                                               | Z | 18.93   | 93.26           | 22.95 |         | 50.0     |                                  |
| 10023-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0)                   | X | 58.52   | 106.35          | 25.67 | 9.57    | 50.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 29.55   | 97.95           | 23.72 |         | 50.0     |                                  |
|               |                                               | Z | 14.95   | 89.78           | 21.91 |         | 50.0     |                                  |
| 10024-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0-1)                 | X | 100.00  | 112.07          | 25.64 | 6.56    | 60.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 100.00  | 112.77          | 25.99 |         | 60.0     |                                  |
|               |                                               | Z | 13.59   | 90.28           | 20.87 |         | 60.0     |                                  |
| 10025-<br>DAB | EDGE-FDD (TDMA, 8PSK, TN 0)                   | X | 9.80    | 95.07           | 37.43 | 12.57   | 50.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 4.43    | 69.49           | 24.68 |         | 50.0     |                                  |
|               |                                               | Z | 7.03    | 82.68           | 31.43 |         | 50.0     |                                  |
| 10026-<br>DAB | EDGE-FDD (TDMA, 8PSK, TN 0-1)                 | X | 8.61    | 89.61           | 31.48 | 9.56    | 60.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 6.90    | 83.14           | 28.50 |         | 60.0     |                                  |
|               |                                               | Z | 7.07    | 83.35           | 28.61 |         | 60.0     |                                  |
| 10027-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0-1-2)               | X | 100.00  | 112.51          | 25.09 | 4.80    | 80.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 100.00  | 113.33          | 25.44 |         | 80.0     |                                  |
|               |                                               | Z | 8.57    | 86.56           | 19.18 |         | 80.0     |                                  |
| 10028-<br>DAB | GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)             | X | 100.00  | 114.16          | 25.17 | 3.55    | 100.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 100.00  | 115.07          | 25.54 |         | 100.0    |                                  |
|               |                                               | Z | 4.52    | 81.54           | 17.36 |         | 100.0    |                                  |
| 10029-<br>DAB | EDGE-FDD (TDMA, 8PSK, TN 0-1-2)               | X | 5.41    | 79.01           | 26.03 | 7.80    | 80.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 4.78    | 75.56           | 24.25 |         | 80.0     |                                  |
|               |                                               | Z | 4.78    | 75.09           | 23.94 |         | 80.0     |                                  |
| 10030-<br>CAA | IEEE 802.15.1 Bluetooth (GFSK, DH1)           | X | 100.00  | 110.43          | 24.44 | 5.30    | 70.0     | $\pm 9.6\%$                      |
|               |                                               | Y | 44.16   | 102.43          | 22.81 |         | 70.0     |                                  |
|               |                                               | Z | 6.07    | 81.13           | 17.44 |         | 70.0     |                                  |
| 10031-<br>CAA | IEEE 802.15.1 Bluetooth (GFSK, DH3)           | X | 100.00  | 114.78          | 24.24 | 1.88    | 100.0    | $\pm 9.6\%$                      |
|               |                                               | Y | 6.35    | 89.05           | 18.68 |         | 100.0    |                                  |
|               |                                               | Z | 0.93    | 68.71           | 12.20 |         | 100.0    |                                  |



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|-----------|-----------------------------------------------------|---|--------|--------|-------|-------|-------|---------|
| 10032-CAA | IEEE 802.15.1 Bluetooth (GFSK, DH5)                 | X | 5.75   | 92.88  | 20.09 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 1.27   | 77.94  | 16.10 |       | 100.0 |         |
|           |                                                     | Z | 0.47   | 65.20  | 10.94 |       | 100.0 |         |
| 10033-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)           | X | 4.88   | 79.14  | 19.56 | 5.30  | 70.0  | ± 9.6 % |
|           |                                                     | Y | 3.87   | 75.70  | 18.33 |       | 70.0  |         |
|           |                                                     | Z | 3.16   | 72.00  | 16.77 |       | 70.0  |         |
| 10034-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)           | X | 1.90   | 69.58  | 14.48 | 1.88  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 1.70   | 68.18  | 14.00 |       | 100.0 |         |
|           |                                                     | Z | 1.46   | 65.25  | 12.40 |       | 100.0 |         |
| 10035-CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)           | X | 1.47   | 67.57  | 13.41 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 1.37   | 66.58  | 13.09 |       | 100.0 |         |
|           |                                                     | Z | 1.21   | 64.01  | 11.56 |       | 100.0 |         |
| 10036-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH1)               | X | 5.54   | 81.22  | 20.38 | 5.30  | 70.0  | ± 9.6 % |
|           |                                                     | Y | 4.25   | 77.30  | 19.02 |       | 70.0  |         |
|           |                                                     | Z | 3.33   | 72.95  | 17.23 |       | 70.0  |         |
| 10037-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH3)               | X | 1.81   | 69.08  | 14.24 | 1.88  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 1.64   | 67.76  | 13.79 |       | 100.0 |         |
|           |                                                     | Z | 1.42   | 65.00  | 12.26 |       | 100.0 |         |
| 10038-CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH5)               | X | 1.47   | 67.67  | 13.56 | 1.17  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 1.37   | 66.65  | 13.21 |       | 100.0 |         |
|           |                                                     | Z | 1.20   | 64.02  | 11.65 |       | 100.0 |         |
| 10039-CAB | CDMA2000 (1xRTT, RC1)                               | X | 1.31   | 67.25  | 13.15 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                     | Y | 1.31   | 66.96  | 13.14 |       | 150.0 |         |
|           |                                                     | Z | 1.12   | 63.89  | 11.31 |       | 150.0 |         |
| 10042-CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate) | X | 100.00 | 110.37 | 25.17 | 7.78  | 50.0  | ± 9.6 % |
|           |                                                     | Y | 50.75  | 103.30 | 23.75 |       | 50.0  |         |
|           |                                                     | Z | 13.62  | 88.84  | 20.46 |       | 50.0  |         |
| 10044-CAA | IS-91/EIA/TIA-553 FDD (FDMA, FM)                    | X | 0.04   | 83.16  | 2.99  | 0.00  | 150.0 | ± 9.6 % |
|           |                                                     | Y | 0.05   | 85.78  | 2.29  |       | 150.0 |         |
|           |                                                     | Z | 0.07   | 79.92  | 0.01  |       | 150.0 |         |
| 10048-CAA | DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)           | X | 13.64  | 84.78  | 20.90 | 13.80 | 25.0  | ± 9.6 % |
|           |                                                     | Y | 11.80  | 82.44  | 20.33 |       | 25.0  |         |
|           |                                                     | Z | 10.74  | 81.50  | 20.54 |       | 25.0  |         |
| 10049-CAA | DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)         | X | 16.41  | 89.18  | 21.23 | 10.79 | 40.0  | ± 9.6 % |
|           |                                                     | Y | 13.15  | 86.27  | 20.53 |       | 40.0  |         |
|           |                                                     | Z | 11.03  | 84.39  | 20.43 |       | 40.0  |         |
| 10056-CAA | UMTS-TDD (TD-SCDMA, 1.28 Mcps)                      | X | 11.79  | 88.00  | 23.02 | 9.03  | 50.0  | ± 9.6 % |
|           |                                                     | Y | 9.09   | 83.74  | 21.62 |       | 50.0  |         |
|           |                                                     | Z | 7.76   | 81.04  | 20.84 |       | 50.0  |         |
| 10058-DAB | EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)                   | X | 4.22   | 74.24  | 23.18 | 6.55  | 100.0 | ± 9.6 % |
|           |                                                     | Y | 3.87   | 71.93  | 21.91 |       | 100.0 |         |
|           |                                                     | Z | 3.85   | 71.25  | 21.43 |       | 100.0 |         |
| 10059-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)            | X | 1.20   | 63.46  | 14.52 | 0.61  | 110.0 | ± 9.6 % |
|           |                                                     | Y | 1.19   | 62.95  | 14.17 |       | 110.0 |         |
|           |                                                     | Z | 1.18   | 61.87  | 13.02 |       | 110.0 |         |
| 10060-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)          | X | 1.73   | 75.17  | 18.04 | 1.30  | 110.0 | ± 9.6 % |
|           |                                                     | Y | 1.32   | 71.18  | 16.40 |       | 110.0 |         |
|           |                                                     | Z | 1.02   | 65.90  | 13.47 |       | 110.0 |         |





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|-----------|------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10061-CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)      | X | 1.91 | 71.56 | 17.96 | 2.04 | 110.0 | ± 9.6 % |
|           |                                                | Y | 1.68 | 69.19 | 16.83 |      | 110.0 |         |
|           |                                                | Z | 1.51 | 66.25 | 14.95 |      | 110.0 |         |
| 10062-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)       | X | 4.60 | 66.40 | 16.16 | 0.49 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.62 | 66.29 | 16.08 |      | 100.0 |         |
|           |                                                | Z | 4.60 | 65.95 | 15.71 |      | 100.0 |         |
| 10063-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)       | X | 4.61 | 66.47 | 16.24 | 0.72 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.63 | 66.34 | 16.15 |      | 100.0 |         |
|           |                                                | Z | 4.61 | 66.00 | 15.78 |      | 100.0 |         |
| 10064-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)      | X | 4.87 | 66.70 | 16.45 | 0.86 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.90 | 66.59 | 16.37 |      | 100.0 |         |
|           |                                                | Z | 4.88 | 66.28 | 16.02 |      | 100.0 |         |
| 10065-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)      | X | 4.75 | 66.57 | 16.52 | 1.21 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.76 | 66.43 | 16.42 |      | 100.0 |         |
|           |                                                | Z | 4.75 | 66.13 | 16.07 |      | 100.0 |         |
| 10066-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)      | X | 4.76 | 66.57 | 16.66 | 1.46 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.77 | 66.42 | 16.55 |      | 100.0 |         |
|           |                                                | Z | 4.77 | 66.14 | 16.21 |      | 100.0 |         |
| 10067-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)      | X | 5.05 | 66.81 | 17.13 | 2.04 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.06 | 66.63 | 16.99 |      | 100.0 |         |
|           |                                                | Z | 5.07 | 66.40 | 16.70 |      | 100.0 |         |
| 10068-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)      | X | 5.09 | 66.78 | 17.30 | 2.55 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.10 | 66.60 | 17.16 |      | 100.0 |         |
|           |                                                | Z | 5.11 | 66.40 | 16.89 |      | 100.0 |         |
| 10069-CAB | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)      | X | 5.17 | 66.83 | 17.51 | 2.67 | 100.0 | ± 9.6 % |
|           |                                                | Y | 5.18 | 66.63 | 17.35 |      | 100.0 |         |
|           |                                                | Z | 5.19 | 66.45 | 17.09 |      | 100.0 |         |
| 10071-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)  | X | 4.89 | 66.48 | 16.98 | 1.99 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.90 | 66.31 | 16.84 |      | 100.0 |         |
|           |                                                | Z | 4.90 | 66.08 | 16.54 |      | 100.0 |         |
| 10072-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps) | X | 4.86 | 66.73 | 17.15 | 2.30 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.86 | 66.53 | 17.00 |      | 100.0 |         |
|           |                                                | Z | 4.86 | 66.29 | 16.69 |      | 100.0 |         |
| 10073-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps) | X | 4.92 | 66.88 | 17.46 | 2.83 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.91 | 66.66 | 17.28 |      | 100.0 |         |
|           |                                                | Z | 4.92 | 66.43 | 16.99 |      | 100.0 |         |
| 10074-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps) | X | 4.91 | 66.81 | 17.61 | 3.30 | 100.0 | ± 9.6 % |
|           |                                                | Y | 4.91 | 66.57 | 17.42 |      | 100.0 |         |
|           |                                                | Z | 4.92 | 66.37 | 17.15 |      | 100.0 |         |
| 10075-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps) | X | 4.95 | 66.90 | 17.89 | 3.82 | 90.0  | ± 9.6 % |
|           |                                                | Y | 4.94 | 66.64 | 17.69 |      | 90.0  |         |
|           |                                                | Z | 4.97 | 66.47 | 17.44 |      | 90.0  |         |
| 10076-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps) | X | 4.98 | 66.77 | 18.05 | 4.15 | 90.0  | ± 9.6 % |
|           |                                                | Y | 4.97 | 66.49 | 17.83 |      | 90.0  |         |
|           |                                                | Z | 5.00 | 66.36 | 17.61 |      | 90.0  |         |
| 10077-CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps) | X | 5.01 | 66.86 | 18.16 | 4.30 | 90.0  | ± 9.6 % |
|           |                                                | Y | 5.00 | 66.56 | 17.93 |      | 90.0  |         |
|           |                                                | Z | 5.03 | 66.44 | 17.71 |      | 90.0  |         |



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|           |                                                     |   |        |        |       |      |       |         |
|-----------|-----------------------------------------------------|---|--------|--------|-------|------|-------|---------|
| 10081-CAB | CDMA2000 (1xRTT, RC3)                               | X | 0.73   | 63.46  | 10.92 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 0.75   | 63.35  | 11.00 |      | 150.0 |         |
|           |                                                     | Z | 0.70   | 61.50  | 9.66  |      | 150.0 |         |
| 10082-CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate) | X | 0.68   | 58.87  | 4.28  | 4.77 | 80.0  | ± 9.6 % |
|           |                                                     | Y | 0.65   | 58.57  | 4.16  |      | 80.0  |         |
|           |                                                     | Z | 0.75   | 59.37  | 5.01  |      | 80.0  |         |
| 10090-DAB | GPRS-FDD (TDMA, GMSK, TN 0-4)                       | X | 100.00 | 112.05 | 25.65 | 6.56 | 60.0  | ± 9.6 % |
|           |                                                     | Y | 100.00 | 112.74 | 25.99 |      | 60.0  |         |
|           |                                                     | Z | 13.27  | 89.95  | 20.78 |      | 60.0  |         |
| 10097-CAB | UMTS-FDD (HSDPA)                                    | X | 1.73   | 66.15  | 14.58 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 1.72   | 65.74  | 14.38 |      | 150.0 |         |
|           |                                                     | Z | 1.62   | 64.07  | 13.12 |      | 150.0 |         |
| 10098-CAB | UMTS-FDD (HSUPA, Subtest 2)                         | X | 1.69   | 66.08  | 14.54 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 1.68   | 65.67  | 14.33 |      | 150.0 |         |
|           |                                                     | Z | 1.59   | 64.00  | 13.06 |      | 150.0 |         |
| 10099-DAB | EDGE-FDD (TDMA, 8PSK, TN 0-4)                       | X | 8.67   | 89.71  | 31.51 | 9.56 | 60.0  | ± 9.6 % |
|           |                                                     | Y | 6.93   | 83.22  | 28.52 |      | 60.0  |         |
|           |                                                     | Z | 7.10   | 83.42  | 28.62 |      | 60.0  |         |
| 10100-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)            | X | 2.89   | 68.66  | 15.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.86   | 68.31  | 15.63 |      | 150.0 |         |
|           |                                                     | Z | 2.68   | 66.73  | 14.55 |      | 150.0 |         |
| 10101-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)          | X | 3.14   | 66.73  | 15.39 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 3.14   | 66.54  | 15.27 |      | 150.0 |         |
|           |                                                     | Z | 3.06   | 65.69  | 14.56 |      | 150.0 |         |
| 10102-CAB | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)          | X | 3.25   | 66.76  | 15.51 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 3.25   | 66.59  | 15.40 |      | 150.0 |         |
|           |                                                     | Z | 3.18   | 65.77  | 14.71 |      | 150.0 |         |
| 10103-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)            | X | 5.77   | 73.71  | 19.33 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                     | Y | 5.18   | 71.67  | 18.40 |      | 65.0  |         |
|           |                                                     | Z | 5.04   | 70.75  | 17.81 |      | 65.0  |         |
| 10104-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)          | X | 5.99   | 72.52  | 19.60 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                     | Y | 5.76   | 71.57  | 19.10 |      | 65.0  |         |
|           |                                                     | Z | 5.67   | 70.92  | 18.65 |      | 65.0  |         |
| 10105-CAB | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)          | X | 5.98   | 72.36  | 19.83 | 3.98 | 65.0  | ± 9.6 % |
|           |                                                     | Y | 5.43   | 70.29  | 18.80 |      | 65.0  |         |
|           |                                                     | Z | 5.33   | 69.55  | 18.29 |      | 65.0  |         |
| 10108-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)            | X | 2.52   | 67.89  | 15.60 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.50   | 67.54  | 15.40 |      | 150.0 |         |
|           |                                                     | Z | 2.36   | 65.96  | 14.28 |      | 150.0 |         |
| 10109-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)          | X | 2.78   | 66.49  | 15.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.79   | 66.28  | 15.08 |      | 150.0 |         |
|           |                                                     | Z | 2.71   | 65.30  | 14.28 |      | 150.0 |         |
| 10110-CAC | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)             | X | 2.03   | 66.91  | 15.06 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.02   | 66.53  | 14.85 |      | 150.0 |         |
|           |                                                     | Z | 1.91   | 64.92  | 13.66 |      | 150.0 |         |
| 10111-CAC | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)           | X | 2.46   | 67.03  | 15.25 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                     | Y | 2.47   | 66.79  | 15.15 |      | 150.0 |         |
|           |                                                     | Z | 2.35   | 65.35  | 14.09 |      | 150.0 |         |



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|-----------|------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10112-CAC | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)     | X | 2.91 | 66.57 | 15.29 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.92 | 66.38 | 15.19 |      | 150.0 |         |
|           |                                                | Z | 2.84 | 65.43 | 14.41 |      | 150.0 |         |
| 10113-CAC | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)      | X | 2.61 | 67.25 | 15.42 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.62 | 67.03 | 15.33 |      | 150.0 |         |
|           |                                                | Z | 2.49 | 65.62 | 14.29 |      | 150.0 |         |
| 10114-CAB | IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)  | X | 5.07 | 66.96 | 16.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.09 | 66.91 | 16.15 |      | 150.0 |         |
|           |                                                | Z | 5.06 | 66.56 | 15.78 |      | 150.0 |         |
| 10115-CAB | IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)  | X | 5.32 | 67.04 | 16.25 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.36 | 67.00 | 16.21 |      | 150.0 |         |
|           |                                                | Z | 5.33 | 66.69 | 15.87 |      | 150.0 |         |
| 10116-CAB | IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM) | X | 5.15 | 67.13 | 16.21 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.18 | 67.07 | 16.17 |      | 150.0 |         |
|           |                                                | Z | 5.14 | 66.72 | 15.79 |      | 150.0 |         |
| 10117-CAB | IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)       | X | 5.04 | 66.86 | 16.16 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.06 | 66.79 | 16.11 |      | 150.0 |         |
|           |                                                | Z | 5.03 | 66.45 | 15.74 |      | 150.0 |         |
| 10118-CAB | IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)       | X | 5.39 | 67.22 | 16.35 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.43 | 67.18 | 16.31 |      | 150.0 |         |
|           |                                                | Z | 5.39 | 66.85 | 15.96 |      | 150.0 |         |
| 10119-CAB | IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)      | X | 5.13 | 67.09 | 16.21 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 5.16 | 67.03 | 16.16 |      | 150.0 |         |
|           |                                                | Z | 5.12 | 66.68 | 15.78 |      | 150.0 |         |
| 10140-CAB | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)     | X | 3.28 | 66.78 | 15.43 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.28 | 66.61 | 15.33 |      | 150.0 |         |
|           |                                                | Z | 3.20 | 65.79 | 14.65 |      | 150.0 |         |
| 10141-CAB | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)     | X | 3.40 | 66.93 | 15.62 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 3.41 | 66.77 | 15.53 |      | 150.0 |         |
|           |                                                | Z | 3.33 | 65.96 | 14.85 |      | 150.0 |         |
| 10142-CAC | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)        | X | 1.78 | 66.63 | 14.50 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.78 | 66.26 | 14.33 |      | 150.0 |         |
|           |                                                | Z | 1.66 | 64.45 | 13.03 |      | 150.0 |         |
| 10143-CAC | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)      | X | 2.25 | 67.31 | 14.65 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.26 | 67.08 | 14.59 |      | 150.0 |         |
|           |                                                | Z | 2.09 | 65.25 | 13.36 |      | 150.0 |         |
| 10144-CAC | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)      | X | 2.07 | 65.42 | 13.21 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 2.09 | 65.28 | 13.20 |      | 150.0 |         |
|           |                                                | Z | 2.00 | 64.08 | 12.32 |      | 150.0 |         |
| 10145-CAC | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)      | X | 1.05 | 63.06 | 10.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.09 | 63.24 | 10.48 |      | 150.0 |         |
|           |                                                | Z | 1.04 | 61.94 | 9.58  |      | 150.0 |         |
| 10146-CAC | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)    | X | 1.43 | 63.12 | 9.42  | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.74 | 64.74 | 10.48 |      | 150.0 |         |
|           |                                                | Z | 1.57 | 63.26 | 9.55  |      | 150.0 |         |
| 10147-CAC | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)    | X | 1.55 | 64.01 | 10.00 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                | Y | 1.96 | 66.08 | 11.26 |      | 150.0 |         |
|           |                                                | Z | 1.69 | 63.99 | 10.04 |      | 150.0 |         |





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|-----------|--------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10149-CAB | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)  | X | 2.79 | 66.54 | 15.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.80 | 66.34 | 15.12 |      | 150.0 |         |
|           |                                            | Z | 2.71 | 65.34 | 14.31 |      | 150.0 |         |
| 10150-CAB | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)  | X | 2.92 | 66.61 | 15.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.93 | 66.43 | 15.23 |      | 150.0 |         |
|           |                                            | Z | 2.84 | 65.46 | 14.44 |      | 150.0 |         |
| 10151-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)    | X | 5.94 | 75.70 | 20.19 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 5.51 | 74.19 | 19.51 |      | 65.0  |         |
|           |                                            | Z | 5.20 | 72.66 | 18.67 |      | 65.0  |         |
| 10152-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)  | X | 5.47 | 72.25 | 19.12 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 5.23 | 71.20 | 18.59 |      | 65.0  |         |
|           |                                            | Z | 5.14 | 70.47 | 18.11 |      | 65.0  |         |
| 10153-CAB | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)  | X | 5.83 | 73.21 | 19.90 | 3.98 | 65.0  | ± 9.6 % |
|           |                                            | Y | 5.58 | 72.17 | 19.39 |      | 65.0  |         |
|           |                                            | Z | 5.45 | 71.30 | 18.83 |      | 65.0  |         |
| 10154-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)    | X | 2.06 | 67.19 | 15.25 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.05 | 66.83 | 15.06 |      | 150.0 |         |
|           |                                            | Z | 1.93 | 65.11 | 13.81 |      | 150.0 |         |
| 10155-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)  | X | 2.47 | 67.05 | 15.27 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.47 | 66.81 | 15.17 |      | 150.0 |         |
|           |                                            | Z | 2.35 | 65.37 | 14.10 |      | 150.0 |         |
| 10156-CAC | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)     | X | 1.61 | 66.39 | 14.08 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 1.61 | 66.05 | 13.95 |      | 150.0 |         |
|           |                                            | Z | 1.49 | 64.09 | 12.57 |      | 150.0 |         |
| 10157-CAC | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)   | X | 1.87 | 65.61 | 13.02 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 1.90 | 65.48 | 13.04 |      | 150.0 |         |
|           |                                            | Z | 1.79 | 64.01 | 12.02 |      | 150.0 |         |
| 10158-CAC | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)  | X | 2.62 | 67.31 | 15.46 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.62 | 67.09 | 15.37 |      | 150.0 |         |
|           |                                            | Z | 2.50 | 65.65 | 14.32 |      | 150.0 |         |
| 10159-CAC | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)   | X | 1.96 | 65.96 | 13.24 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 1.98 | 65.84 | 13.28 |      | 150.0 |         |
|           |                                            | Z | 1.85 | 64.27 | 12.21 |      | 150.0 |         |
| 10160-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)    | X | 2.57 | 67.35 | 15.49 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.57 | 67.04 | 15.32 |      | 150.0 |         |
|           |                                            | Z | 2.44 | 65.67 | 14.31 |      | 150.0 |         |
| 10161-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)  | X | 2.81 | 66.53 | 15.22 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.82 | 66.34 | 15.12 |      | 150.0 |         |
|           |                                            | Z | 2.73 | 65.34 | 14.31 |      | 150.0 |         |
| 10162-CAB | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)  | X | 2.92 | 66.73 | 15.36 | 0.00 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.93 | 66.54 | 15.26 |      | 150.0 |         |
|           |                                            | Z | 2.84 | 65.53 | 14.45 |      | 150.0 |         |
| 10166-CAC | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)   | X | 3.29 | 68.19 | 18.33 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.51 | 68.98 | 18.72 |      | 150.0 |         |
|           |                                            | Z | 3.40 | 67.92 | 17.89 |      | 150.0 |         |
| 10167-CAC | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | X | 3.82 | 70.64 | 18.68 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.31 | 72.22 | 19.35 |      | 150.0 |         |
|           |                                            | Z | 4.06 | 70.75 | 18.41 |      | 150.0 |         |



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|-----------|--------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10168-CAC | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | X | 4.20 | 72.71 | 19.96 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.87 | 74.88 | 20.89 |      | 150.0 |         |
|           |                                            | Z | 4.45 | 72.72 | 19.62 |      | 150.0 |         |
| 10169-CAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)      | X | 2.63 | 66.83 | 17.73 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.93 | 68.39 | 18.45 |      | 150.0 |         |
|           |                                            | Z | 2.81 | 67.22 | 17.54 |      | 150.0 |         |
| 10170-CAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)    | X | 3.24 | 71.42 | 19.68 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.12 | 75.18 | 21.22 |      | 150.0 |         |
|           |                                            | Z | 3.67 | 72.59 | 19.71 |      | 150.0 |         |
| 10171-AAB | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)    | X | 2.76 | 68.22 | 17.25 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.29 | 70.52 | 18.19 |      | 150.0 |         |
|           |                                            | Z | 3.08 | 69.10 | 17.23 |      | 150.0 |         |
| 10172-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)      | X | 5.47 | 82.72 | 25.06 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 4.20 | 76.96 | 22.67 |      | 65.0  |         |
|           |                                            | Z | 4.05 | 75.61 | 21.82 |      | 65.0  |         |
| 10173-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)    | X | 7.27 | 85.40 | 24.19 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 8.35 | 87.00 | 24.60 |      | 65.0  |         |
|           |                                            | Z | 6.50 | 82.14 | 22.62 |      | 65.0  |         |
| 10174-CAB | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)    | X | 5.74 | 80.70 | 22.00 | 6.02 | 65.0  | ± 9.6 % |
|           |                                            | Y | 5.36 | 79.02 | 21.33 |      | 65.0  |         |
|           |                                            | Z | 4.82 | 76.71 | 20.17 |      | 65.0  |         |
| 10175-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)      | X | 2.61 | 66.61 | 17.52 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.89 | 68.08 | 18.20 |      | 150.0 |         |
|           |                                            | Z | 2.78 | 66.99 | 17.33 |      | 150.0 |         |
| 10176-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)    | X | 3.25 | 71.44 | 19.69 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.13 | 75.21 | 21.23 |      | 150.0 |         |
|           |                                            | Z | 3.67 | 72.61 | 19.72 |      | 150.0 |         |
| 10177-CAE | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)       | X | 2.63 | 66.72 | 17.59 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.92 | 68.23 | 18.30 |      | 150.0 |         |
|           |                                            | Z | 2.80 | 67.10 | 17.40 |      | 150.0 |         |
| 10178-CAC | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)     | X | 3.23 | 71.31 | 19.61 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.08 | 74.97 | 21.11 |      | 150.0 |         |
|           |                                            | Z | 3.65 | 72.45 | 19.63 |      | 150.0 |         |
| 10179-CAC | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)    | X | 2.98 | 69.75 | 18.35 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.65 | 72.66 | 19.54 |      | 150.0 |         |
|           |                                            | Z | 3.34 | 70.72 | 18.33 |      | 150.0 |         |
| 10180-CAC | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)     | X | 2.76 | 68.18 | 17.22 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.29 | 70.46 | 18.14 |      | 150.0 |         |
|           |                                            | Z | 3.07 | 69.06 | 17.19 |      | 150.0 |         |
| 10181-CAB | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)      | X | 2.62 | 66.70 | 17.59 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 2.91 | 68.21 | 18.29 |      | 150.0 |         |
|           |                                            | Z | 2.80 | 67.09 | 17.40 |      | 150.0 |         |
| 10182-CAB | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)    | X | 3.22 | 71.28 | 19.59 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 4.07 | 74.94 | 21.10 |      | 150.0 |         |
|           |                                            | Z | 3.64 | 72.43 | 19.62 |      | 150.0 |         |
| 10183-AAA | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)    | X | 2.76 | 68.16 | 17.21 | 3.01 | 150.0 | ± 9.6 % |
|           |                                            | Y | 3.28 | 70.43 | 18.13 |      | 150.0 |         |
|           |                                            | Z | 3.07 | 69.04 | 17.18 |      | 150.0 |         |



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|-----------|-----------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10184-CAC | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)          | X | 2.63 | 66.74 | 17.61 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 2.92 | 68.25 | 18.31 |      | 150.0 |         |
|           |                                               | Z | 2.81 | 67.12 | 17.42 |      | 150.0 |         |
| 10185-CAC | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)        | X | 3.23 | 71.35 | 19.63 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.10 | 75.03 | 21.14 |      | 150.0 |         |
|           |                                               | Z | 3.66 | 72.49 | 19.65 |      | 150.0 |         |
| 10186-AAC | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)        | X | 2.77 | 68.22 | 17.24 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.30 | 70.50 | 18.17 |      | 150.0 |         |
|           |                                               | Z | 3.08 | 69.09 | 17.21 |      | 150.0 |         |
| 10187-CAC | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)        | X | 2.64 | 66.79 | 17.67 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 2.93 | 68.31 | 18.38 |      | 150.0 |         |
|           |                                               | Z | 2.82 | 67.18 | 17.48 |      | 150.0 |         |
| 10188-CAC | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)      | X | 3.31 | 71.83 | 19.94 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.24 | 75.78 | 21.56 |      | 150.0 |         |
|           |                                               | Z | 3.75 | 73.03 | 19.98 |      | 150.0 |         |
| 10189-AAC | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)      | X | 2.82 | 68.54 | 17.47 | 3.01 | 150.0 | ± 9.6 % |
|           |                                               | Y | 3.37 | 70.94 | 18.46 |      | 150.0 |         |
|           |                                               | Z | 3.14 | 69.44 | 17.45 |      | 150.0 |         |
| 10193-CAB | IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)  | X | 4.47 | 66.43 | 15.87 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.49 | 66.34 | 15.81 |      | 150.0 |         |
|           |                                               | Z | 4.46 | 65.95 | 15.40 |      | 150.0 |         |
| 10194-CAB | IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM) | X | 4.62 | 66.71 | 16.00 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.64 | 66.62 | 15.94 |      | 150.0 |         |
|           |                                               | Z | 4.61 | 66.23 | 15.54 |      | 150.0 |         |
| 10195-CAB | IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM) | X | 4.66 | 66.74 | 16.02 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.68 | 66.66 | 15.96 |      | 150.0 |         |
|           |                                               | Z | 4.65 | 66.27 | 15.56 |      | 150.0 |         |
| 10196-CAB | IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)       | X | 4.46 | 66.46 | 15.87 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.48 | 66.37 | 15.82 |      | 150.0 |         |
|           |                                               | Z | 4.45 | 65.98 | 15.41 |      | 150.0 |         |
| 10197-CAB | IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)      | X | 4.63 | 66.72 | 16.01 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.66 | 66.64 | 15.95 |      | 150.0 |         |
|           |                                               | Z | 4.62 | 66.25 | 15.55 |      | 150.0 |         |
| 10198-CAB | IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)      | X | 4.66 | 66.75 | 16.03 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.68 | 66.67 | 15.97 |      | 150.0 |         |
|           |                                               | Z | 4.65 | 66.28 | 15.57 |      | 150.0 |         |
| 10219-CAB | IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)       | X | 4.41 | 66.47 | 15.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.43 | 66.38 | 15.78 |      | 150.0 |         |
|           |                                               | Z | 4.40 | 65.97 | 15.35 |      | 150.0 |         |
| 10220-CAB | IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)    | X | 4.62 | 66.69 | 16.00 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.65 | 66.61 | 15.94 |      | 150.0 |         |
|           |                                               | Z | 4.62 | 66.22 | 15.54 |      | 150.0 |         |
| 10221-CAB | IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)    | X | 4.67 | 66.69 | 16.02 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 4.70 | 66.61 | 15.96 |      | 150.0 |         |
|           |                                               | Z | 4.67 | 66.23 | 15.56 |      | 150.0 |         |
| 10222-CAB | IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)        | X | 5.02 | 66.85 | 16.15 | 0.00 | 150.0 | ± 9.6 % |
|           |                                               | Y | 5.04 | 66.79 | 16.10 |      | 150.0 |         |
|           |                                               | Z | 5.01 | 66.45 | 15.73 |      | 150.0 |         |





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|-----------|-------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10223-CAB | IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)  | X | 5.31 | 67.09 | 16.29 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 5.34 | 67.04 | 16.25 |      | 150.0 |         |
|           |                                           | Z | 5.30 | 66.71 | 15.90 |      | 150.0 |         |
| 10224-CAB | IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM) | X | 5.06 | 66.96 | 16.14 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 5.08 | 66.89 | 16.09 |      | 150.0 |         |
|           |                                           | Z | 5.05 | 66.55 | 15.71 |      | 150.0 |         |
| 10225-CAB | UMTS-FDD (HSPA+)                          | X | 2.72 | 65.54 | 14.67 | 0.00 | 150.0 | ± 9.6 % |
|           |                                           | Y | 2.73 | 65.39 | 14.61 |      | 150.0 |         |
|           |                                           | Z | 2.68 | 64.57 | 13.91 |      | 150.0 |         |
| 10226-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)  | X | 7.63 | 86.31 | 24.59 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.86 | 88.13 | 25.08 |      | 65.0  |         |
|           |                                           | Z | 6.77 | 82.89 | 22.97 |      | 65.0  |         |
| 10227-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)  | X | 7.45 | 84.85 | 23.48 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.67 | 86.63 | 23.98 |      | 65.0  |         |
|           |                                           | Z | 6.62 | 81.60 | 21.95 |      | 65.0  |         |
| 10228-CAA | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)    | X | 5.56 | 83.10 | 25.23 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 5.57 | 82.43 | 24.85 |      | 65.0  |         |
|           |                                           | Z | 4.86 | 79.06 | 23.24 |      | 65.0  |         |
| 10229-CAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)    | X | 7.32 | 85.49 | 24.23 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.41 | 87.12 | 24.65 |      | 65.0  |         |
|           |                                           | Z | 6.54 | 82.23 | 22.66 |      | 65.0  |         |
| 10230-CAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)    | X | 7.11 | 84.01 | 23.12 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.19 | 85.62 | 23.56 |      | 65.0  |         |
|           |                                           | Z | 6.36 | 80.93 | 21.64 |      | 65.0  |         |
| 10231-CAB | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)      | X | 5.39 | 82.47 | 24.92 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 5.38 | 81.75 | 24.52 |      | 65.0  |         |
|           |                                           | Z | 4.74 | 78.57 | 22.98 |      | 65.0  |         |
| 10232-CAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)    | X | 7.30 | 85.47 | 24.22 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.40 | 87.10 | 24.64 |      | 65.0  |         |
|           |                                           | Z | 6.53 | 82.21 | 22.65 |      | 65.0  |         |
| 10233-CAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)    | X | 7.09 | 83.98 | 23.11 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.17 | 85.59 | 23.55 |      | 65.0  |         |
|           |                                           | Z | 6.35 | 80.90 | 21.64 |      | 65.0  |         |
| 10234-CAB | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)      | X | 5.25 | 81.89 | 24.59 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 5.23 | 81.13 | 24.18 |      | 65.0  |         |
|           |                                           | Z | 4.64 | 78.11 | 22.70 |      | 65.0  |         |
| 10235-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)   | X | 7.30 | 85.49 | 24.23 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.40 | 87.11 | 24.65 |      | 65.0  |         |
|           |                                           | Z | 6.53 | 82.22 | 22.66 |      | 65.0  |         |
| 10236-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)   | X | 7.16 | 84.11 | 23.15 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.24 | 85.72 | 23.59 |      | 65.0  |         |
|           |                                           | Z | 6.40 | 81.00 | 21.67 |      | 65.0  |         |
| 10237-CAB | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)     | X | 5.39 | 82.50 | 24.93 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 5.38 | 81.76 | 24.53 |      | 65.0  |         |
|           |                                           | Z | 4.74 | 78.58 | 22.98 |      | 65.0  |         |
| 10238-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)   | X | 7.29 | 85.45 | 24.21 | 6.02 | 65.0  | ± 9.6 % |
|           |                                           | Y | 8.37 | 87.06 | 24.63 |      | 65.0  |         |
|           |                                           | Z | 6.51 | 82.18 | 22.64 |      | 65.0  |         |



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|-----------|--------------------------------------------|---|------|-------|-------|------|------|---------|
| 10239-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)    | X | 7.07 | 83.95 | 23.10 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 8.14 | 85.56 | 23.54 |      | 65.0 |         |
|           |                                            | Z | 6.33 | 80.87 | 21.62 |      | 65.0 |         |
| 10240-CAB | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)      | X | 5.38 | 82.47 | 24.92 | 6.02 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.37 | 81.73 | 24.51 |      | 65.0 |         |
|           |                                            | Z | 4.73 | 78.56 | 22.97 |      | 65.0 |         |
| 10241-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | X | 7.17 | 79.14 | 24.28 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 7.29 | 78.93 | 24.09 |      | 65.0 |         |
|           |                                            | Z | 7.06 | 77.98 | 23.58 |      | 65.0 |         |
| 10242-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | X | 6.66 | 77.62 | 23.56 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 6.18 | 75.54 | 22.58 |      | 65.0 |         |
|           |                                            | Z | 6.18 | 75.29 | 22.35 |      | 65.0 |         |
| 10243-CAA | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)   | X | 5.52 | 74.33 | 22.97 | 6.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.14 | 72.24 | 21.90 |      | 65.0 |         |
|           |                                            | Z | 5.18 | 72.09 | 21.70 |      | 65.0 |         |
| 10244-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)   | X | 4.36 | 70.62 | 15.44 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.59 | 71.27 | 15.92 |      | 65.0 |         |
|           |                                            | Z | 4.21 | 69.60 | 15.06 |      | 65.0 |         |
| 10245-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)   | X | 4.29 | 70.16 | 15.18 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.52 | 70.81 | 15.66 |      | 65.0 |         |
|           |                                            | Z | 4.18 | 69.28 | 14.87 |      | 65.0 |         |
| 10246-CAB | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)     | X | 4.01 | 72.52 | 16.68 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 3.73 | 71.39 | 16.29 |      | 65.0 |         |
|           |                                            | Z | 3.40 | 69.47 | 15.35 |      | 65.0 |         |
| 10247-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)   | X | 4.34 | 70.86 | 16.59 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.15 | 70.08 | 16.32 |      | 65.0 |         |
|           |                                            | Z | 3.98 | 68.93 | 15.68 |      | 65.0 |         |
| 10248-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)   | X | 4.35 | 70.49 | 16.41 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.19 | 69.76 | 16.16 |      | 65.0 |         |
|           |                                            | Z | 4.04 | 68.75 | 15.59 |      | 65.0 |         |
| 10249-CAB | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)     | X | 5.03 | 76.01 | 19.12 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.53 | 74.20 | 18.43 |      | 65.0 |         |
|           |                                            | Z | 4.06 | 71.82 | 17.26 |      | 65.0 |         |
| 10250-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)  | X | 5.34 | 73.84 | 19.67 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.06 | 72.69 | 19.17 |      | 65.0 |         |
|           |                                            | Z | 4.84 | 71.36 | 18.39 |      | 65.0 |         |
| 10251-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)  | X | 5.18 | 72.21 | 18.62 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 4.94 | 71.17 | 18.14 |      | 65.0 |         |
|           |                                            | Z | 4.81 | 70.28 | 17.59 |      | 65.0 |         |
| 10252-CAB | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)    | X | 5.71 | 77.17 | 20.66 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.16 | 75.23 | 19.84 |      | 65.0 |         |
|           |                                            | Z | 4.74 | 73.12 | 18.75 |      | 65.0 |         |
| 10253-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)  | X | 5.40 | 71.87 | 18.90 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.16 | 70.85 | 18.40 |      | 65.0 |         |
|           |                                            | Z | 5.08 | 70.16 | 17.94 |      | 65.0 |         |
| 10254-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)  | X | 5.72 | 72.73 | 19.59 | 3.98 | 65.0 | ± 9.6 % |
|           |                                            | Y | 5.48 | 71.72 | 19.10 |      | 65.0 |         |
|           |                                            | Z | 5.37 | 70.91 | 18.57 |      | 65.0 |         |





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|-----------|---------------------------------------------|---|------|-------|-------|------|------|---------|
| 10255-CAB | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)     | X | 5.72 | 75.21 | 20.17 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.32 | 73.72 | 19.49 |      | 65.0 |         |
|           |                                             | Z | 5.06 | 72.29 | 18.68 |      | 65.0 |         |
| 10256-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | X | 3.34 | 66.97 | 12.65 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 3.55 | 67.68 | 13.21 |      | 65.0 |         |
|           |                                             | Z | 3.38 | 66.73 | 12.71 |      | 65.0 |         |
| 10257-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | X | 3.29 | 66.49 | 12.32 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 3.49 | 67.18 | 12.87 |      | 65.0 |         |
|           |                                             | Z | 3.36 | 66.37 | 12.44 |      | 65.0 |         |
| 10258-CAA | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)   | X | 3.07 | 68.48 | 13.96 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 2.97 | 68.04 | 13.90 |      | 65.0 |         |
|           |                                             | Z | 2.82 | 66.85 | 13.31 |      | 65.0 |         |
| 10259-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)   | X | 4.73 | 72.02 | 17.73 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 4.50 | 71.08 | 17.36 |      | 65.0 |         |
|           |                                             | Z | 4.31 | 69.85 | 16.67 |      | 65.0 |         |
| 10260-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)   | X | 4.77 | 71.84 | 17.65 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 4.56 | 70.95 | 17.30 |      | 65.0 |         |
|           |                                             | Z | 4.38 | 69.78 | 16.64 |      | 65.0 |         |
| 10261-CAB | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)     | X | 5.13 | 75.91 | 19.52 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 4.64 | 74.10 | 18.79 |      | 65.0 |         |
|           |                                             | Z | 4.24 | 71.97 | 17.71 |      | 65.0 |         |
| 10262-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)   | X | 5.33 | 73.78 | 19.62 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.05 | 72.64 | 19.12 |      | 65.0 |         |
|           |                                             | Z | 4.83 | 71.32 | 18.35 |      | 65.0 |         |
| 10263-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)   | X | 5.17 | 72.19 | 18.61 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 4.93 | 71.15 | 18.14 |      | 65.0 |         |
|           |                                             | Z | 4.81 | 70.26 | 17.59 |      | 65.0 |         |
| 10264-CAB | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)     | X | 5.67 | 77.01 | 20.58 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.13 | 75.08 | 19.76 |      | 65.0 |         |
|           |                                             | Z | 4.72 | 73.01 | 18.69 |      | 65.0 |         |
| 10265-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)  | X | 5.47 | 72.25 | 19.13 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.23 | 71.20 | 18.60 |      | 65.0 |         |
|           |                                             | Z | 5.14 | 70.47 | 18.11 |      | 65.0 |         |
| 10266-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)  | X | 5.83 | 73.20 | 19.89 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.58 | 72.16 | 19.38 |      | 65.0 |         |
|           |                                             | Z | 5.45 | 71.29 | 18.82 |      | 65.0 |         |
| 10267-CAB | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)    | X | 5.93 | 75.67 | 20.18 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.50 | 74.16 | 19.50 |      | 65.0 |         |
|           |                                             | Z | 5.20 | 72.64 | 18.66 |      | 65.0 |         |
| 10268-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)  | X | 6.16 | 72.51 | 19.69 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.94 | 71.60 | 19.22 |      | 65.0 |         |
|           |                                             | Z | 5.86 | 70.98 | 18.79 |      | 65.0 |         |
| 10269-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)  | X | 6.17 | 72.20 | 19.61 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.96 | 71.33 | 19.15 |      | 65.0 |         |
|           |                                             | Z | 5.89 | 70.77 | 18.75 |      | 65.0 |         |
| 10270-CAB | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)    | X | 6.07 | 73.94 | 19.64 | 3.98 | 65.0 | ± 9.6 % |
|           |                                             | Y | 5.77 | 72.85 | 19.12 |      | 65.0 |         |
|           |                                             | Z | 5.58 | 71.81 | 18.48 |      | 65.0 |         |



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|           |                                                                    |   |      |       |       |      |       |         |
|-----------|--------------------------------------------------------------------|---|------|-------|-------|------|-------|---------|
| 10274-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)                          | X | 2.51 | 65.84 | 14.58 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.52 | 65.60 | 14.47 |      | 150.0 |         |
|           |                                                                    | Z | 2.44 | 64.63 | 13.68 |      | 150.0 |         |
| 10275-CAB | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)                           | X | 1.48 | 65.87 | 14.27 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.47 | 65.43 | 14.03 |      | 150.0 |         |
|           |                                                                    | Z | 1.39 | 63.67 | 12.69 |      | 150.0 |         |
| 10277-CAA | PHS (QPSK)                                                         | X | 2.32 | 61.85 | 7.43  | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 2.39 | 62.00 | 7.67  |      | 50.0  |         |
|           |                                                                    | Z | 2.59 | 62.64 | 8.34  |      | 50.0  |         |
| 10278-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.5)                                 | X | 4.01 | 69.23 | 13.78 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 4.05 | 69.29 | 13.97 |      | 50.0  |         |
|           |                                                                    | Z | 4.11 | 69.29 | 14.23 |      | 50.0  |         |
| 10279-CAA | PHS (QPSK, BW 884MHz, Rolloff 0.38)                                | X | 4.10 | 69.46 | 13.94 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 4.14 | 69.51 | 14.11 |      | 50.0  |         |
|           |                                                                    | Z | 4.20 | 69.48 | 14.36 |      | 50.0  |         |
| 10290-AAB | CDMA2000, RC1, SO55, Full Rate                                     | X | 1.14 | 65.37 | 11.96 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.16 | 65.27 | 12.04 |      | 150.0 |         |
|           |                                                                    | Z | 1.04 | 63.04 | 10.62 |      | 150.0 |         |
| 10291-AAB | CDMA2000, RC3, SO55, Full Rate                                     | X | 0.72 | 63.34 | 10.83 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 0.74 | 63.23 | 10.92 |      | 150.0 |         |
|           |                                                                    | Z | 0.70 | 61.43 | 9.60  |      | 150.0 |         |
| 10292-AAB | CDMA2000, RC3, SO32, Full Rate                                     | X | 0.81 | 65.45 | 12.33 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 0.81 | 65.06 | 12.27 |      | 150.0 |         |
|           |                                                                    | Z | 0.72 | 62.22 | 10.36 |      | 150.0 |         |
| 10293-AAB | CDMA2000, RC3, SO3, Full Rate                                      | X | 1.01 | 68.43 | 14.20 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 0.98 | 67.59 | 13.94 |      | 150.0 |         |
|           |                                                                    | Z | 0.79 | 63.25 | 11.26 |      | 150.0 |         |
| 10295-AAB | CDMA2000, RC1, SO3, 1/8th Rate 25 fr.                              | X | 8.27 | 81.58 | 21.80 | 9.03 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 7.31 | 79.27 | 20.97 |      | 50.0  |         |
|           |                                                                    | Z | 6.65 | 77.32 | 20.30 |      | 50.0  |         |
| 10297-AAA | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)                            | X | 2.52 | 67.96 | 15.65 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.51 | 67.62 | 15.46 |      | 150.0 |         |
|           |                                                                    | Z | 2.36 | 66.02 | 14.32 |      | 150.0 |         |
| 10298-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)                             | X | 1.31 | 65.03 | 12.32 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.34 | 64.95 | 12.39 |      | 150.0 |         |
|           |                                                                    | Z | 1.24 | 63.11 | 11.14 |      | 150.0 |         |
| 10299-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)                           | X | 1.94 | 65.97 | 11.96 | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 2.37 | 67.93 | 13.07 |      | 150.0 |         |
|           |                                                                    | Z | 2.01 | 65.39 | 11.59 |      | 150.0 |         |
| 10300-AAB | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)                           | X | 1.58 | 63.06 | 9.76  | 0.00 | 150.0 | ± 9.6 % |
|           |                                                                    | Y | 1.84 | 64.23 | 10.55 |      | 150.0 |         |
|           |                                                                    | Z | 1.73 | 63.17 | 9.82  |      | 150.0 |         |
| 10301-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)                 | X | 4.65 | 65.37 | 17.24 | 4.17 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 4.53 | 64.58 | 16.80 |      | 50.0  |         |
|           |                                                                    | Z | 4.58 | 64.53 | 16.64 |      | 50.0  |         |
| 10302-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3 CTRL symbols) | X | 5.08 | 65.78 | 17.86 | 4.96 | 50.0  | ± 9.6 % |
|           |                                                                    | Y | 5.05 | 65.38 | 17.62 |      | 50.0  |         |
|           |                                                                    | Z | 5.09 | 65.33 | 17.48 |      | 50.0  |         |



Product Service

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|           |                                                                     |   |      |       |       |       |       |         |
|-----------|---------------------------------------------------------------------|---|------|-------|-------|-------|-------|---------|
| 10303-AAA | IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)                 | X | 4.83 | 65.41 | 17.67 | 4.96  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 4.81 | 65.01 | 17.43 |       | 50.0  |         |
|           |                                                                     | Z | 4.85 | 64.96 | 17.29 |       | 50.0  |         |
| 10304-AAA | IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)                 | X | 4.64 | 65.25 | 17.14 | 4.17  | 50.0  | ± 9.6 % |
|           |                                                                     | Y | 4.61 | 64.89 | 16.93 |       | 50.0  |         |
|           |                                                                     | Z | 4.63 | 64.72 | 16.71 |       | 50.0  |         |
| 10305-AAA | IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC, 15 symbols)    | X | 4.31 | 67.17 | 19.07 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.26 | 66.48 | 18.68 |       | 35.0  |         |
|           |                                                                     | Z | 4.34 | 66.61 | 18.67 |       | 35.0  |         |
| 10306-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC, 18 symbols)    | X | 4.62 | 66.23 | 18.75 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.59 | 65.71 | 18.43 |       | 35.0  |         |
|           |                                                                     | Z | 4.66 | 65.81 | 18.40 |       | 35.0  |         |
| 10307-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC, 18 symbols)     | X | 4.51 | 66.33 | 18.69 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.48 | 65.81 | 18.37 |       | 35.0  |         |
|           |                                                                     | Z | 4.55 | 65.90 | 18.34 |       | 35.0  |         |
| 10308-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)                | X | 4.49 | 66.54 | 18.83 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.45 | 65.98 | 18.49 |       | 35.0  |         |
|           |                                                                     | Z | 4.53 | 66.08 | 18.46 |       | 35.0  |         |
| 10309-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, AMC 2x3, 18 symbols) | X | 4.65 | 66.37 | 18.87 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.62 | 65.85 | 18.54 |       | 35.0  |         |
|           |                                                                     | Z | 4.70 | 65.95 | 18.52 |       | 35.0  |         |
| 10310-AAA | IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3, 18 symbols)  | X | 4.57 | 66.29 | 18.73 | 6.02  | 35.0  | ± 9.6 % |
|           |                                                                     | Y | 4.54 | 65.76 | 18.41 |       | 35.0  |         |
|           |                                                                     | Z | 4.61 | 65.86 | 18.38 |       | 35.0  |         |
| 10311-AAA | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)                            | X | 2.87 | 67.40 | 15.40 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 2.85 | 67.08 | 15.21 |       | 150.0 |         |
|           |                                                                     | Z | 2.67 | 65.55 | 14.15 |       | 150.0 |         |
| 10313-AAA | iDEN 1:3                                                            | X | 3.13 | 71.14 | 15.52 | 6.99  | 70.0  | ± 9.6 % |
|           |                                                                     | Y | 2.78 | 69.65 | 14.97 |       | 70.0  |         |
|           |                                                                     | Z | 2.53 | 67.94 | 14.30 |       | 70.0  |         |
| 10314-AAA | iDEN 1:6                                                            | X | 3.80 | 75.24 | 20.00 | 10.00 | 30.0  | ± 9.6 % |
|           |                                                                     | Y | 3.42 | 73.31 | 19.25 |       | 30.0  |         |
|           |                                                                     | Z | 2.87 | 69.72 | 17.77 |       | 30.0  |         |
| 10315-AAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle)           | X | 1.10 | 62.64 | 14.06 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 1.10 | 62.30 | 13.81 |       | 150.0 |         |
|           |                                                                     | Z | 1.09 | 61.30 | 12.66 |       | 150.0 |         |
| 10316-AAB | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle)       | X | 4.50 | 66.39 | 15.94 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.52 | 66.28 | 15.86 |       | 150.0 |         |
|           |                                                                     | Z | 4.49 | 65.92 | 15.47 |       | 150.0 |         |
| 10317-AAB | IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle)             | X | 4.50 | 66.39 | 15.94 | 0.17  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.52 | 66.28 | 15.86 |       | 150.0 |         |
|           |                                                                     | Z | 4.49 | 65.92 | 15.47 |       | 150.0 |         |
| 10400-AAC | IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc duty cycle)                 | X | 4.60 | 66.74 | 15.99 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 4.62 | 66.64 | 15.92 |       | 150.0 |         |
|           |                                                                     | Z | 4.59 | 66.25 | 15.52 |       | 150.0 |         |
| 10401-AAC | IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc duty cycle)                 | X | 5.29 | 66.86 | 16.15 | 0.00  | 150.0 | ± 9.6 % |
|           |                                                                     | Y | 5.33 | 66.84 | 16.12 |       | 150.0 |         |
|           |                                                                     | Z | 5.30 | 66.53 | 15.78 |       | 150.0 |         |