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Subject: Info Request

1) Please repeat PMF procedure using consistent peak power measurement method. CW and AM used 0 span method while CDMA use channel power.

<answer>We used 0 span method for CW and AM while CDMA used channel power to peak power measurement. Please see page 17 of HAC test report(10-14) for consistent power measurement.

2) Please give details of the averaging time used for measurement.

<answer>The follow information is come from ANSI PC63.19 Page 21(4.3 Near-Field Test Procedure):

The electric field probe, and separately the magnetic field probe, are to be used to measure the highest field strength in the 5 cm by 5 cm reference plane. The average field strength<sup>11</sup>, measured over many pulse cycles, may be measured. However, care shall be taken that the proper probe factors are applied (See Section C.3.1 for further guidance.).

<sup>11</sup> Many field probes have relatively slow response times and cannot measure the peak field strength in a time varying RF signal. Therefore the reading is an average of the peak field, averaged over the response time of the probe. See Section C.3.1 for further details and the procedure to assessing the field probe modulation response.

So the E or H field probe test result needs to assume average field strength.

The peak field strength should include the probe modulation factor for final test result.

3) Please explain use of the crest factor for the DASY4 system. PMF procedures and operational crest factors may not be compatible in the measurement. Final measurements should use the same instrument settings as used during PMD determination i.e. CF=1. Please clarify.

<answer>The Dasy4's "SEMCAD" old software (V1.8 Build 146) don't have the PMF to calculated the peak field strength.

See the following formula:

1. Modulation Factor = Measured E/H Field (CW) / Measured E/H Field (Modulation)
2. Crest factor = (Probe Modulation Factor)<sup>2</sup>
3. The HAC measurement of peak V/m or A/m should be calculation by formula or insert crest factor in the day4 software.
4. Peak (dB V/m or dB A/m) = 20 x log(Reading [time averaging V/m or A/m] x Probe Modulation Factor)

For example:

Probe Modulation Factor= 1.007; Crest Factor= (Probe Modulation Factor)<sup>2</sup>

Communication System: Cellular; Frequency: 824.7 MHz; Duty Cycle: 1:1.015

Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Device Section

Measurement Standard: DAS4 (High Precision Assessment)

Dasy4 Field probe test result:

Time average=83.9 V/m Use the crest factor into this version software peak field:84.5 V/m

E in V/m (Time averaged) E in V/m (Slot averaged)

Grid 1	Grid 2	Grid 3
<b>47.4</b>	<b>65.6</b>	<b>67.1</b>
Grid 4	Grid 5	Grid 6
<b>51.0</b>	<b>83.9</b>	<b>89.3</b>
Grid 7	Grid 8	Grid 9
<b>56.2</b>	<b>93.0</b>	<b>103.8</b>

Grid 1	Grid 2	Grid 3
<b>47.7</b>	<b>66.1</b>	<b>67.6</b>
Grid 4	Grid 5	Grid 6
<b>51.4</b>	<b>84.5</b>	<b>90.0</b>
Grid 7	Grid 8	Grid 9
<b>56.7</b>	<b>93.7</b>	<b>104.6</b>

The filed strength use upon formula: Peak (dB V/m or dB A/m) =20 x log(Reading[time averaging V/m or A/m] x Probe Modulation Factor)

The Peak field result is  $20\log(83.9\text{V/m} \times 1.007)=38.536\text{dBV/m}$

The filed strength use upon test result:

The Peak field result is  $20\log(84.5\text{V/m})= 38.537 \text{ dBV/m}$

And the Time Slot average calculation result/averaged test result=1.007

I think t this version software used the crest factor to calculation the peak field result.

So we used the crest factor to make the peak field result by this version software.

The dasy4 have improving the SEMCAD software (SEMCAD, V1.8 Build 159) to add probe modulation factor for final result. We have update the test plot used new software (Please see the test plot).

Please see the follow description and test plot file:

Test Laboratory: Compliance Certification Services Inc.

## HAC\_E\_SCAN\_CDMA835(Close)

DUT: HTC; Type: PA10A; Serial: N/A

Communication System: Cellular; Frequency: 824.7 MHz; Duty Cycle: 1:1

Medium parameters used:  $\sigma = 0$  mho/m,  $\epsilon_r = 1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: E Device Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ER3DV6 - SN2345; ConvF(1, 1, 1); Calibrated: 6/3/2005
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn558; Calibrated: 8/24/2004
- Phantom: HAC Test Arch; Type: SD HAC P01 BA; Serial: 1027
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

### E Scan - ER probe tip 10mm above Device -Low/Hearing Aid Compatibility Test

(101x101x1): Measurement grid: dx=5mm, dy=5mm

Maximum value of peak Total field = 85.5 V/m

Probe Modulation Factor = 1.01

Reference Value = 70.2 V/m; Power Drift = -0.062 dB

Hearing Aid Near-Field Category: M3 (AWF 0 dB)

Peak E-field in V/m

Grid 1	Grid 2	Grid 3
48.4	66.8	68.1
Grid 4	Grid 5	Grid 6
52.2	85.5	90.6
Grid 7	Grid 8	Grid 9
57.5	94.5	104.4

Category	AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.15 - 0.25
M4	0	<63.1	<0.19
	-5	<47.3	<0.15

4) Please explain how the rotation shown on page 39 of 101 was accounted for in the final reported result. Please provide the full calculation used to arrive at the final answer.

<answer> The test report(p. 18) has referred to the full calculation used to arrive the final answer.

Please see the follow information:

1. Modulation Factor = Measured E/H Field (CW)/Measured E/H Field (Modulation)
2. The HAC measurement of peak V/m or A/m should be calculation by formula or insert crest factor in the day4 software.
3. Peak (dB V/m or dB A/m) =  $20 \times \log(\text{Reading}[\text{time averaging V/m or A/m}] \times \text{Probe Modulation Factor})$

5) Please fully explain the positioning of the probe sensor element relative to the WD reference plane. Page 38 of 101 suggests that measurements were made with probe tip 10 mm from the WD. Please justify.

<answer> The probe is positioned over the illuminated dipole at 10 mm distance from the nearest point on the probe sensor element to the top surface.

The WD reference plane(WD's acoustic output point) perpendicular to the field probe with test arch (see test report page 14's figure 13 and 14). Before the every WD test, the dasy4 software shall be performed the Phantom Adjustment and Verification procedure see the below:

1. Surface Check (calibrate HAC phantom)
2. Verify Height 0.5mm above Center
3. Delay 1(10s)
4. Verify Height for Scan

So we can make sure the measurements were made with probe tip 10 mm from the WD.

6) Collocation procedures used may not fully address HAC. Please discuss all intended uses for the WLAN and BT during voice held to ear usage. Are there means for the user to disable the WLAN and BT transmissions? Also, please provide and E and H field scan of the entire WD surface area with and without WLAN turned on. Please show location of the WLAN antenna.

<answer> The HAC tests have performed the only CDMA phone (please see the test report page 20 to 23 CDMA cellular band and CDMA PCS band ) during voice held to ear usage. The collocation test have performed the CDMA phone with WLAN and Bluetooth on during voice held to ear usage(please see the test report page 20 to 23 CDMA cellular band with WLAN and Bluetooth(collocation test) and CDMA PCS band with WLAN and Bluetooth(collocation test). The WLAN antenna have showed on the photo file(please see the photo file page 8).

7) Please discuss expected PMF for AM and WD with those measured.

<answer> The ANSI 63.19 has recommended the validation procedure for the test case. The real or emulated WD transmission signal, an unmodulated (CW) and an 80% AM RF signal shall be used for each relevant frequency band. Each of the cases below shall be measured with both an E- and H-field.

Please see page 17 of test report.

8} Please provide contour plots without exclusion block data removed.

<answer> We have renew the all test plots without exclusion block data remove.

Please attachment "test plot" file.

9} Please clarify if this device has cdma2000 operation as user manual suggests. Filings should be clear about transmitter setup & operation capabilities to ensure devices are configured properly according to communication protocol and operating requirements to obtain valid HAC results. All modes must be tested. Supporting info should include but may not be limited to:

a) CDMA MS Protocol Revision number.

<answer> Protocol revision number is 6.

b) applicability of test codes to simulate the required test conditions, as defined in 3GPP2, TIA, and other standards.

<answer>The test codes simulated C.S0011-A (IS-98D), C.S0011B v1.0 (IS-98E), C.S0033 (IS 866), C.S0031 (IS-898 & IS-95A,B), and C.S0038 (IS-919).

c) Base station simulator and test device configuration info and procedures used to maximize output in all applicable modes, including code domain channels, power & relative gain levels.

<answer>All CDMA measurements were made by linking to a Agilent 8960 series base station simulator.

The CMU200 was set as follows to establish maximum power from the EUT:

Service Class is set to Loopback Service (Test) , which establishes 100 % duty cycle Power Control Bits are set to All Up , which sets the maximum power level Code domain channels are F-FCH-RC and R-FCH-RC. Frame Rate (Data Rate) is set to Full, Cell power is -100 dBm to -106 dBm/

d) Identify CDMA Radio Configurations, Service Options, multiplex options, voice/data, code channel combinations and options used for the SAR tests.

<answer>The EUT was placed in the test code mode and transmitted a CDMA signal at 100 % duty cycle, maximum power and full data rate.

e) Because of the different RC's, SO's, data rates, channel combinations and modulations, filing should include justifications on the selection of applicable configurations to establish and maintain maximum output to demonstrate

SAR compliance for other configurations that are not tested.

<answer>The EUT was placed in the test code mode and transmitted a CDMA signal at 100 % duty cycle, maximum power and full data rate. These measurements will show the maximum possible SAR value for each channel, taking all possible RC's, SO's, data rates, etc. into consideration. HAC compliance is demonstrated with the worst case configuration that transmits the maximum possible energy.

Please refer to new attachments uploaded today.

HAC Photos(10-14)

System check(10-14)

Test plot(10-14)

HAC Test Report(10-14)

Thanks,

Thu Chan

Compliance Certification Services