Instructions to Jennifer
Please copy and paste and insert files

Response to: FCC ID MMASP200V2
Applicant: Midland Radio Corporation
Correspondence Reference Number: 26233
731 Confirmation Number: EA667298

1) Please provide liquid recipes.

Liquid Recipe Constituents	150 MHz Body, constitution by weight	150 MHz Head - constitution, by weight
Water	45.45 %	50 %
Sucrose	52.48 %	46 %
NaCl	1.62 %	3.55%
HEC	0.2 %	0.2 %
Bactericide	0.25 %	0.25 %

2) Please justify use of probe at 300 MHz. No calibration certification could be located.

This was discussed with Mr. Tim Harrington. See attached letter. Our probe is calibrated at 150 MHz and at 450 MHz. EUT testing was done with 150 MHz liquid per Tim Harrington's instructions. System validation was done at 300 MHz using 300 MHz liquid, and using the 300 MHz antenna. The justification is that due to the low frequency, the behavior of the dielectric is predictable and the probe factor is predictable. The error variance is expected to be less than 15% and this EUT has adequate margin to absorb this increase fractional error.
In C95.3-2002, page 62, the error is calculated not to exceed 10% for the range from 30 to 300 MHz.

Letter:

From: "hansm" <hans.mellberg@baclcorp.com>
To: "Tim Harrington" <THARRING@fcc.gov>
Sent: Wednesday, November 05, 2003 3:27 PM
Subject: 150 MHz SAR testiing

> Dear Mr. Tim Harrington
>
> I am reviewing a test plan with my technician Eric Yee whom you've recently

> corresponded with and you stated that you have been accepting for 150 MHz
> EUT's system validation using 300 MHz dipole, liquid and probe factor. May
> we use 150 MHz liquid and probe factors with the 300 MHz antenna? That, in
> my opinion, will result in better accuracy. I also believe that the IEC had
> considered that approach as well.
> We do not have current 300 MHz probe factors and if necessary, would you
> allow a linear interpolation between 150 and 450 to derive 300 MHz probe
> factors? We have two probes and the 300 MHz data is out of cal and on the
> second probe we did not cal the 300 MHz.
> As an alternative, I can do comparative probe measurements between the old
> and the new probe to show equivalence between 150 and 450 MHz and thereby
> validate by inference that the 300 MHz probe factors have remained
> unchanged. I would prefer if you accept the interpolated data for this test
> instead of the comparative measurements between the old and new probe.
> Thank you for your consideration.
> Comments?
>
> Best Regards
>
>
> Hans Mellberg
> Engineering Manager
> BACL
> 230 Commercial Street
> Sunnyvale CA 94085 USA
> 408-732-9162 x38
> 408-732-9164 fax

3) Please justify use of Agilent 85070A dielectric probe at 150 MHz.

The dielectric probe is rated from 200 MHz to 20 GHz. This range is stated as nominal and can be extended above 20 GHz and below 200 MHz. In our case, the extension to 150 MHz is only 50 MHz from the stated nominal minimum. The probe's error is stated to reduce in value with increasing relative dielectric value. In our case, the relative dielectric values range from 45 to 67, well in the upper range of lower expected measurement error. See page 4, Accuracy, of Agilent 8570D Dielectric Probe Kit, Product Overview

While using the software package by Agilent, the frequency spectrum swept is nulled and calibrated in air, de-ionized 18 Meg Ohm water, and a direct short. This also accounts for reduced error of measurement by extending the range of

measurement for the probe. Agilen'ts software package, 85070A, allows the use of the 150 MHz range to be used with the 85070D probe kit.

4) Please provide conducted power versus time for at least 30 minute length.

See attached file “conducted dBm vs 30 minutes.xls”

5) Please provide detail of antenna design. Include type and expected VSWR.

See file “antenna spec.pdf”

6) Please provide a photo of the RF exposure warning label affixed to the device referring users of the exposure and referenced training information.

See file “Maxon_SP-220.jpg”

7) The form 731 under technical specification shows FCC Rule Part 80 ONLY. The test report shows FCC Rule Part 80 and 90. Please clarify.

The technical specification in form731 can only let us choose one standard. But the frequency ranges apply to both Part80 and Part90.