Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.4
Phantom	HAC Test Arch	
Distance Dipole Top - Probe Center	15 mm	
Scan resolution	dx, dy = 5 mm	
Frequency	2600 MHz ± 1 MHz	
Input power drift	< 0.05 dB	

Maximum Field values at 2600 MHz

E-field 15 mm above dipole surface	condition	**Interpolated maximum**
Maximum measured above high end	100 mW input power	84.0 V/m = 38.48 dBV/m
Maximum measured above low end	100 mW input power	83.8 V/m = 38.46 dBV/m
Averaged maximum above arm	100 mW input power	**83.9 V/m ± 12.8 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters

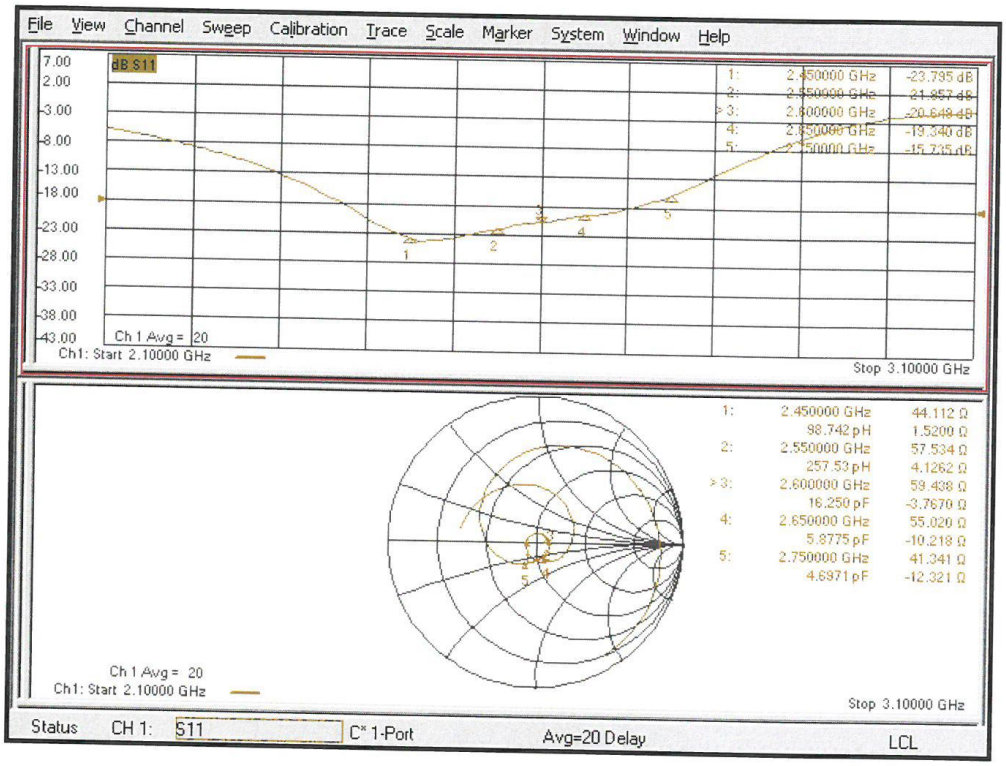
Frequency	**Return Loss**	**Impedance**
2450 MHz	23.8 dB	44.1 Ω + 1.5 jΩ
2550 MHz	22.0 dB	57.5 Ω + 4.1 jΩ
2600 MHz	20.6 dB	59.4 Ω - 3.8 jΩ
2650 MHz	19.3 dB	55.0 Ω - 10.2 jΩ
2750 MHz	15.7 dB	41.3 Ω - 12.3 jΩ

3.2 Antenna Design and Handling

The calibration dipole has a symmetric geometry with a built-in two stub matching network, which leads to the enhanced bandwidth.
The dipole is built of standard semirigid coaxial cable. The internal matching line is open ended. The antenna is therefore open for DC signals.
Do not apply force to dipole arms, as they are liable to bend. The soldered connections near the feedpoint may be damaged. After excessive mechanical stress or overheating, check the impedance characteristics to ensure that the internal matching network is not affected.

After long term use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

Impedance Measurement Plot



DASY5 E-field Result

Date: 18.08.2020

Test Laboratory: SPEAG Lab2

DUT: HAC Dipole 2600 MHz; Type: CD2600V3; Serial: CD2600V3 - SN: 1017

Communication System: UID 0 - CW ; Frequency: 2600 MHz
Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m^3
Phantom section: RF Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

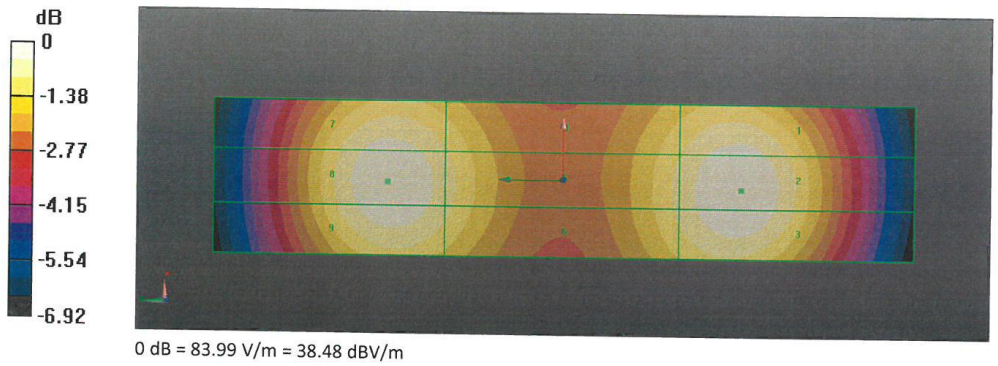
DASY52 Configuration:

- Probe: EF3DV3 - SN4013; ConvF(1, 1, 1) @ 2600 MHz; Calibrated: 31.12.2019
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn781; Calibrated: 27.12.2019
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA; Serial: 1070
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole E-Field measurement @ 2600MHz/E-Scan - 2600MHz d=15mm/Hearing Aid Compatibility Test (41x181x1):
Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 65.44 V/m; Power Drift = 0.01 dB
Applied MIF = 0.00 dB
RF audio interference level = 38.48 dBV/m
Emission category: M2

MIF scaled E-field

Grid 1 **M2** **38.23 dBV/m**	Grid 2 **M2** **38.48 dBV/m**	Grid 3 **M2** **38.41 dBV/m**
Grid 4 **M2** **37.58 dBV/m**	Grid 5 **M2** **37.78 dBV/m**	Grid 6 **M2** **37.71 dBV/m**
Grid 7 **M2** **38.22 dBV/m**	Grid 8 **M2** **38.46 dBV/m**	Grid 9 **M2** **38.35 dBV/m**



0 dB = 83.99 V/m = 38.48 dBV/m

ANNEX F THE EVALUATION OF SPOTCHECK

F.1 The results for spot check

Frequency		Measured Value(dBV/m)	Power Drift (dB)	Category
MHz	Channel			
GSM 850				
848.8	251	27.61	0.03	**M4** (see Fig B.1)
GSM 1900				
1850.2	512	29.60	-0.01	**M4**(see Fig B.2)
LTE Band 41 PC2 16QAM				
2506	39750	23.54	-0.68	**M4** (see Fig B.3)
LTE Band 41 PC3 QPSK				
2506	39750	22.35	0.00	**M4** (see Fig B.4)

F.2 Main test instruments

able 1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Signal Generator	E4483C	MY49071430	January 13, 2022	One Year
02	Power meter	NRP2	106277	September 24, 2021	One year
03	Power sensor	NRP6A	104291		
04	Amplifier	60S1G4	0331848	No Calibration Requested	
05	E-Field Probe	EF3DV3	4060	May 13, 2022	One year
06	DAE	SPEAG DAE4	1524	October 08, 2021	One year
07	HAC Dipole	CD835V3	1023	August 24, 2021	One year
08	HAC Dipole	CD1880V3	1018	August 24, 2021	One year
09	HAC Dipole	CD2600V3	1017	August 24, 2021	One year
10	BTS	CMW500	159890	January 24, 2022	One year
11	AIA	SE UMS 170 CB	1029	No Calibration Requested	

F.3 Test plots of spot check

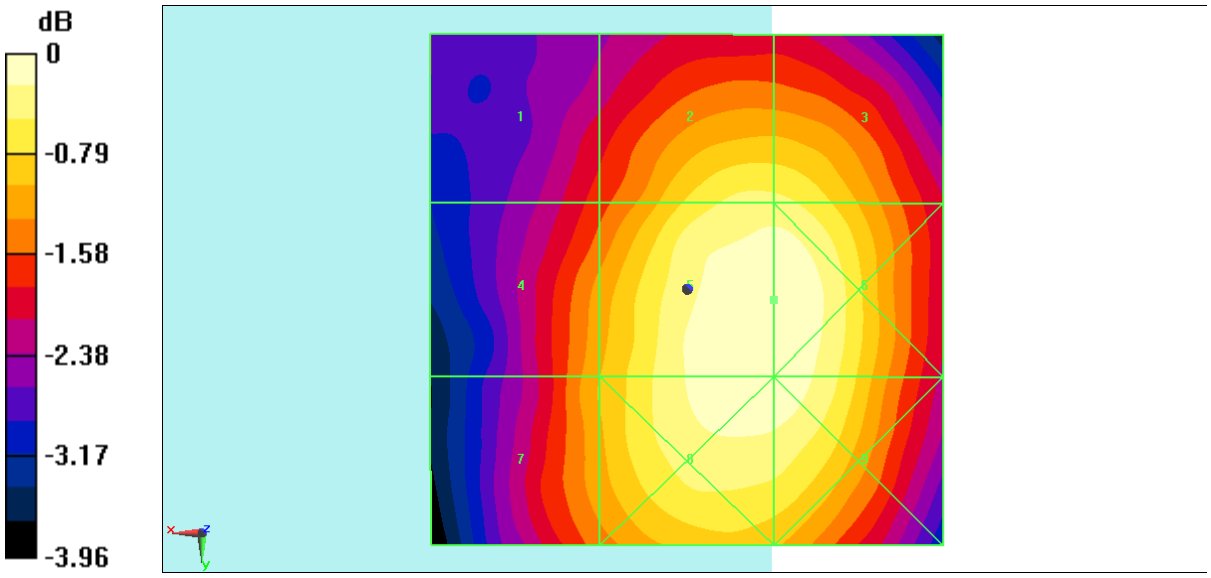
HAC RF E-Field GSM 850

Date/Time: 2022-08-23
Electronics: DAE4 Sn1524
Medium: Air
Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: UID 0, 1GSM 850 (0) Frequency: 848.8 MHz Duty Cycle: 1:8.30042
Probe: EF3DV3 - SN4060

E Scan - ER3DV6 - 2011: 15 mm from Probe Center to the Device 3/Hearing Aid Compatibility Test (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 20.15 V/m; Power Drift = 0.03 dB
Applied MIF = 3.47 dB
RF audio interference level = 27.61 dBV/m
Emission category: M4

MIF scaled E-field

Grid 1 **M4** **25.92 dBV/m**	Grid 2 **M4** **27.18 dBV/m**	Grid 3 **M4** **27.17 dBV/m**
Grid 4 **M4** **26.56 dBV/m**	Grid 5 **M4** **27.61 dBV/m**	Grid 6 **M4** **27.61 dBV/m**
Grid 7 **M4** **26.59 dBV/m**	Grid 8 **M4** **27.58 dBV/m**	Grid 9 **M4** **27.56 dBV/m**



0 dB = 24.02 V/m = 27.61 dBV/m

Fig B.1 HAC RF E-Field GSM 850

HAC RF E-Field GSM 1900

Date/Time: 2022-08-23

Electronics: DAE4 Sn1524

Medium: Air

Medium parameters used: σ = 0 S/m, εr = 1; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

Communication System: UID 0, 1GSM 1900 (0) Frequency: 1850.2 MHz Duty Cycle: 1:8.3

Probe: ER3DV3 – SN4060

E Scan - ER3DV6 - 2011: 15 mm from Probe Center to the Device 2 2 2 2/Hearing Aid Compatibility Test (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 23.30 V/m; Power Drift = -0.01 dB

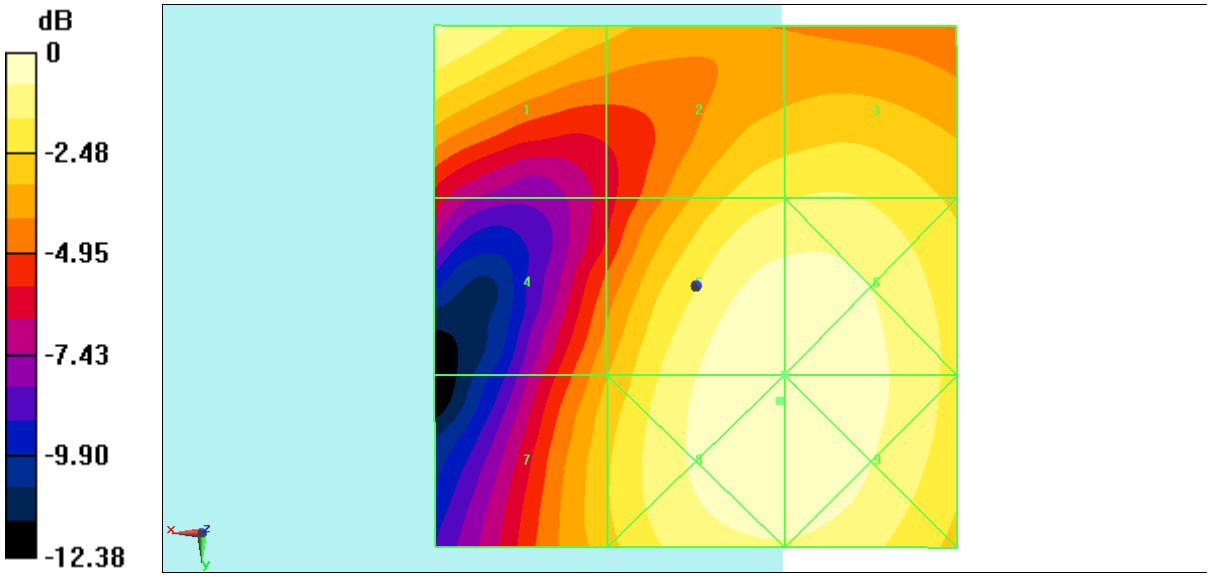
Applied MIF = 3.44 dB

RF audio interference level = 29.60 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 **M4** **29 dBV/m**	Grid 2 **M4** **27.92 dBV/m**	Grid 3 **M4** **28.08 dBV/m**
Grid 4 **M4** **26.3 dBV/m**	Grid 5 **M4** **29.6 dBV/m**	Grid 6 **M4** **29.6 dBV/m**
Grid 7 **M4** **27.08 dBV/m**	Grid 8 **M4** **29.63 dBV/m**	Grid 9 **M4** **29.62 dBV/m**



0 dB = 30.29 V/m = 29.63 dBV/m

Fig B.2 HAC RF E-Field GSM1900

HAC RF E-Field LTE Band41 16QAM PC2

Date/Time: 2022-08-23

Electronics: DAE4 Sn1524

Medium: Air

Medium parameters used: σ = 0 S/m, εr = 1; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

Communication System: UID 0, LTE Band41 (0) Frequency: 2506 MHz Duty Cycle: 1:1.5787

Probe: ER3DV3 – SN4060

E Scan - ER3DV6 - 2011: 15 mm from Probe Center to the Device 3 3 2/Hearing Aid Compatibility Test (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 19.49 V/m; Power Drift = 0.68 dB

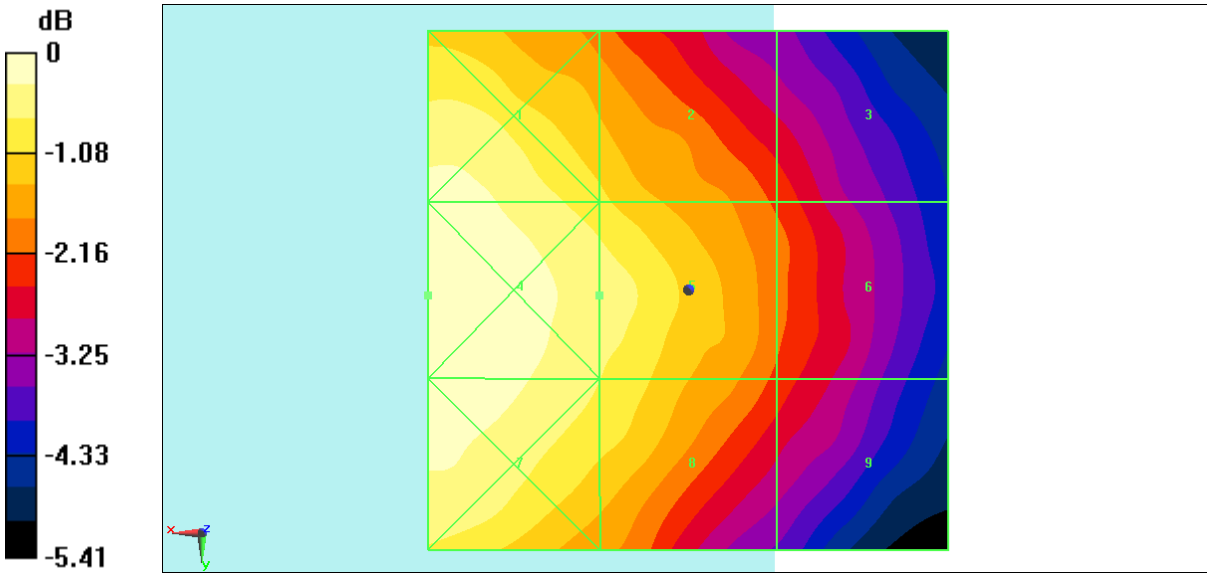
Applied MIF = -1.61 dB

RF audio interference level = 23.54 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 **M4** **23.86 dBV/m**	Grid 2 **M4** **23.11 dBV/m**	Grid 3 **M4** **21.85 dBV/m**
Grid 4 **M4** **24.08 dBV/m**	Grid 5 **M4** **23.54 dBV/m**	Grid 6 **M4** **22.07 dBV/m**
Grid 7 **M4** **23.94 dBV/m**	Grid 8 **M4** **23.36 dBV/m**	Grid 9 **M4** **21.82 dBV/m**



0 dB = 15.99 V/m = 24.08 dBV/m

Fig B.3 HAC RF E-Field LTE Band41 16QAM PC2

HAC RF E-Field LTE Band41 QPSK PC3

Date/Time: 2022-08-23

Electronics: DAE4 Sn1524

Medium: Air

Medium parameters used: σ = 0 S/m, εr = 1; ρ = 1000 kg/m3

Ambient Temperature:23.3oC Liquid Temperature: 22.5oC

Communication System: UID 0, LTE Band41 (0) Frequency: 2506 MHz Duty Cycle: 1:1.5787

Probe: ER3DV3 – SN4060

E Scan - ER3DV6 - 2011: 15 mm from Probe Center to the Device 3 3 2/Hearing Aid Compatibility Test (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 21.88 V/m; Power Drift = 0.00 dB

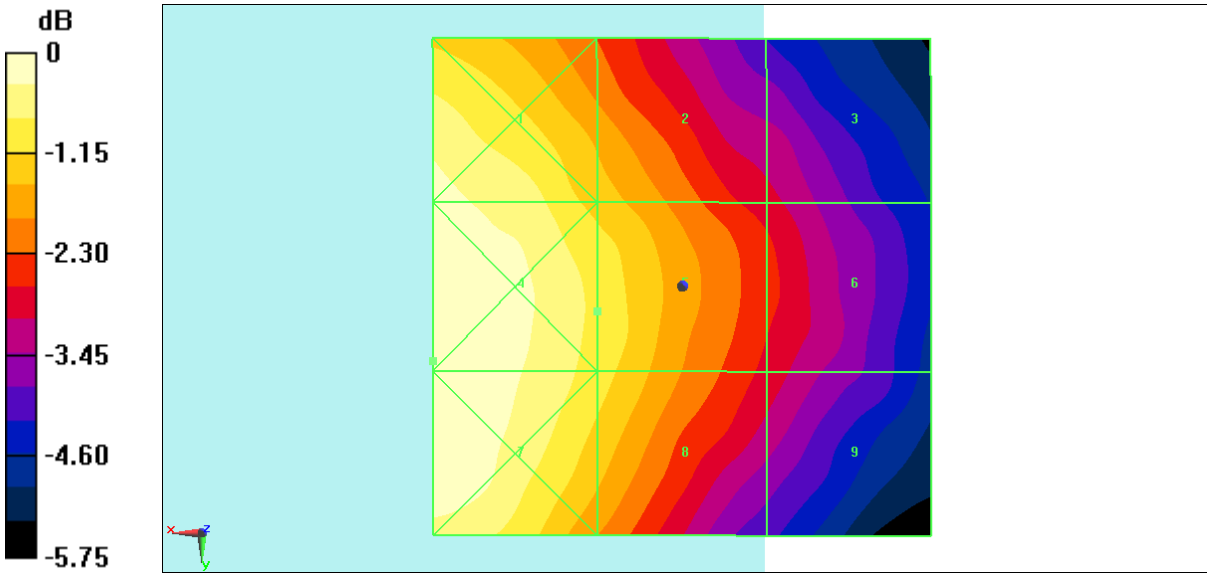
Applied MIF = -3.42 dB

RF audio interference level = 22.35 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 **M4** **22.99 dBV/m**	Grid 2 **M4** **21.93 dBV/m**	Grid 3 **M4** **20.33 dBV/m**
Grid 4 **M4** **23.22 dBV/m**	Grid 5 **M4** **22.35 dBV/m**	Grid 6 **M4** **20.69 dBV/m**
Grid 7 **M4** **23.22 dBV/m**	Grid 8 **M4** **22.25 dBV/m**	Grid 9 **M4** **20.42 dBV/m**



0 dB = 14.48 V/m = 23.22 dBV/m

Fig B.4 HAC RF E-Field LTE Band41 QPSK PC3

The photos of HAC test are presented in the additional document:

Appendix to test report No.I22Z61591-SEM02

The photos of HAC test