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Annex A: Measurement data and plots

A.1 MIF validation plots

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Date/Time: 12:00:00 AM

Test Laboratory: BlackBerry RTS

MIF_measurements_03_18-24_14

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ; Calibrated: 1/17/2014
- Sensor-Surface: 0mm (Fix Surface), z = 2.5
- Electronics: DAE3 Sn473; Calibrated: 1/15/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

Configuration/MIF Measurements/MIF_AM80%_1KHz_Measurement

Calibration Factors: 1.089, 1.089; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-1.29 dB		0.00 dB	Power High
PMF	3.81 dB	1.551	0.00 dB	Power High
Detector Level	10.61 dBm		0.00 dB	Power High
RFAIP	9.32 dBm		0.00 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements/MIF_AM10%_1KHz_Measurement

Calibration Factors: 1.089, 1.089; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-9.22 dB		0.00 dB	Power OK
PMF	0.78 dB	1.094	0.00 dB	Power OK
Detector Level	10.46 dBm		0.00 dB	Power OK
RFAIP	1.24 dBm		0.00 dB	(MIF+CF+Detector Level)

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Configuration/MIF Measurements/MIF_AM1%_1KHz_Measurement

Calibration Factors: 1.090, 1.089; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-19.18 dB		0.00 dB	Power OK
PMF	0.08 dB	1.010	0.00 dB	Power OK
Detector Level	10.43 dBm		0.00 dB	Power OK
RFAIP	-8.75 dBm		0.00 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements/MIF_GSM_Measurement

Calibration Factors: 1.089, 1.089; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	3.44 dB		0.00 dB	Power OK
PMF	9.86 dB	3.112	0.01 dB	Power OK
Detector Level	-0.64 dBm		0.00 dB	Power OK
RFAIP	2.80 dBm		0.01 dB	(MIF+CF+Detector Level)

Configuration/MIF

Measurements/MIF_WCDMA_Voice_AMR12_2kps_Measurement

Calibration Factors: 1.089, 1.089; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-25.91 dB		0.18 dB	Power OK
PMF	0.06 dB	1.007	0.00 dB	Power OK
Detector Level	0.11 dBm		0.02 dB	Power OK
RFAIP	-25.80 dBm		0.19 dB	(MIF+CF+Detector Level)

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Date/Time: 12:00:00 AM

Test Laboratory: BlackBerry RTS

MIF_WiFi_measurements_11_14_14

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 333CB445

Communication System: UID 0, CW (0); Frequency: 0.001 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: TCoil Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ; Calibrated: 1/17/2014
- Sensor-Surface: 0mm (Fix Surface), $z = 2.5$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/MIF Measurements

WiFi_VoIP/MIF_AM80%_1KHz_Measurement

Calibration Factors: 1.096, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-1.30 dB		0.00 dB	
PMF	3.81 dB	1.550	0.00 dB	
Detector Level	8.07 dBm		0.00 dB	
RFAIP	6.78 dBm		0.00 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements

WiFi_VoIP/MIF_AM10%_1KHz_Measurement

Calibration Factors: 1.096, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

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Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-9.30 dB		0.00 dB	
PMF	0.77 dB	1.093	0.00 dB	
Detector Level	8.09 dBm		0.00 dB	
RFAIP	-1.20 dBm		0.01 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements

WiFi_VoIP/MIF_AM1%_1KHz_Measurement

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-19.26 dB		0.01 dB	
PMF	0.09 dB	1.010	0.00 dB	
Detector Level	8.06 dBm		0.00 dB	
RFAIP	-11.20 dBm		0.01 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11b_Rate_1Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-13.06 dB		0.09 dB	
PMF	0.44 dB	1.052	0.04 dB	
Detector Level	5.11 dBm		0.02 dB	
RFAIP	-7.95 dBm		0.11 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11b_Rate_2Mbps

Calibration Factors: 1.096, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-12.28 dB		0.08 dB	
PMF	0.48 dB	1.056	0.03 dB	
Detector Level	5.22 dBm		0.01 dB	
RFAIP	-7.06 dBm		0.09 dB	(MIF+CF+Detector Level)

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Configuration/MIF Measurements WiFi_VoIP/MIF_802.11b_Rate_5.5Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-9.76 dB		0.06 dB	
PMF	0.67 dB	1.080	0.05 dB	
Detector Level	5.41 dBm		0.01 dB	
RFAIP	-4.35 dBm		0.07 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11b_Rate_11Mbps

Calibration Factors: 1.096, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.99 dB		0.11 dB	
PMF	0.80 dB	1.096	0.04 dB	
Detector Level	5.31 dBm		0.01 dB	
RFAIP	-3.68 dBm		0.12 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11g_Rate_6Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-10.07 dB		0.04 dB	
PMF	0.89 dB	1.108	0.01 dB	
Detector Level	5.83 dBm		0.01 dB	
RFAIP	-4.24 dBm		0.05 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11g_Rate_9Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-9.40 dB		0.08 dB	
PMF	1.05 dB	1.129	0.01 dB	
Detector Level	5.70 dBm		0.01 dB	
RFAIP	-3.70 dBm		0.09 dB	(MIF+CF+Detector Level)

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Configuration/MIF Measurements WiFi_VoIP/MIF_802.11g_Rate_18Mbps

Calibration Factors: 1.096, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.13 dB		0.14 dB	
PMF	1.08 dB	1.132	0.03 dB	
Detector Level	5.52 dBm		0.00 dB	
RFAIP	-2.61 dBm		0.14 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11g_Rate_54Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.62 dB		0.13 dB	
PMF	1.91 dB	1.246	0.05 dB	
Detector Level	2.40 dBm		0.01 dB	
RFAIP	-6.23 dBm		0.14 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11n_Rate_6.5Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-10.94 dB		0.06 dB	
PMF	0.95 dB	1.116	0.02 dB	
Detector Level	4.13 dBm		0.01 dB	
RFAIP	-6.81 dBm		0.06 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11n_Rate_39Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-7.94 dB		0.14 dB	
PMF	1.32 dB	1.164	0.01 dB	
Detector Level	2.02 dBm		0.01 dB	
RFAIP	-5.93 dBm		0.15 dB	(MIF+CF+Detector Level)

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Configuration/MIF Measurements WiFi_VoIP/MIF_802.11n_Rate_65Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-7.91 dB		0.13 dB	
PMF	1.63 dB	1.206	0.01 dB	
Detector Level	0.90 dBm		0.01 dB	
RFAIP	-7.01 dBm		0.14 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11a_Rate_6Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-10.19 dB		0.09 dB	
PMF	0.95 dB	1.116	0.05 dB	
Detector Level	2.92 dBm		0.10 dB	
RFAIP	-7.27 dBm		0.19 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11a_Rate_24Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-7.98 dB		0.15 dB	
PMF	1.47 dB	1.184	0.02 dB	
Detector Level	1.95 dBm		0.01 dB	
RFAIP	-6.03 dBm		0.16 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11a_Rate_54Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.92 dB		0.11 dB	
PMF	1.77 dB	1.227	0.02 dB	
Detector Level	-0.05 dBm		0.01 dB	
RFAIP	-8.97 dBm		0.12 dB	(MIF+CF+Detector Level)

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Configuration/MIF Measurements WiFi_VoIP/MIF_802.11n_Rate_6.5Mbps 2

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-11.07 dB		0.03 dB	
PMF	1.04 dB	1.128	0.02 dB	
Detector Level	3.06 dBm		0.01 dB	
RFAIP	-8.01 dBm		0.04 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11n_Rate_39Mbps 2

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.14 dB		0.14 dB	
PMF	1.43 dB	1.179	0.04 dB	
Detector Level	1.61 dBm		0.01 dB	
RFAIP	-6.53 dBm		0.14 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11n_Rate_65Mbps 2

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.11 dB		0.14 dB	
PMF	1.67 dB	1.212	0.01 dB	
Detector Level	-0.79 dBm		0.01 dB	
RFAIP	-8.89 dBm		0.15 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11ac_Rate_6.5Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-10.21 dB		0.05 dB	
PMF	0.83 dB	1.101	0.00 dB	
Detector Level	-0.89 dBm		0.02 dB	
RFAIP	-11.10 dBm		0.07 dB	(MIF+CF+Detector Level)

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Configuration/MIF Measurements WiFi_VoIP/MIF_802.11ac_Rate_39Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.23 dB		0.16 dB	
PMF	0.99 dB	1.121	0.08 dB	
Detector Level	-1.26 dBm		0.00 dB	
RFAIP	-9.50 dBm		0.17 dB	(MIF+CF+Detector Level)

Configuration/MIF Measurements WiFi_VoIP/MIF_802.11ac_Rate_54Mbps

Calibration Factors: 1.095, 1.095; MIF Scale: 0.00 dB; Coupling Factor (CF): 0.00 dB

Quantity	Value [log]	[linear]	Fluctuation	Remark
MIF	-8.80 dB		0.16 dB	
PMF	1.94 dB	1.250	0.02 dB	
Detector Level	-2.07 dBm		0.01 dB	
RFAIP	-10.87 dBm		0.17 dB	(MIF+CF+Detector Level)

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A.2 Dipole validation

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Date/Time: 11/5/2014 6:49:57 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_835 validation_11_05_14

DUT: HAC-Dipole 835 MHz; Type: CD835V3; Serial: 1089

Communication System: UID 0, CW For MIF; Frequency: 835 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 9.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

CD835 Dipole E-Field measurement (E-field scan for ANSI C63.19-2011 compliance)/E Scan - measurement distance from the probe sensor center to CD835 = 15mm/Hearing Aid Compatibility Test at 15mm distance (41x361x1):

Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 105.9 V/m; Power Drift = -0.00 dB

PMR not calibrated. PMF = 1.000 is applied.

E-field emissions = 110.1 V/m

Near-field category: M4 (AWF 0 dB)

PMF scaled E-field

Grid 1 M4 105.2 V/m	Grid 2 M4 107.6 V/m	Grid 3 M4 107.2 V/m
Grid 4 M4 61.73 V/m	Grid 5 M4 62.38 V/m	Grid 6 M4 60.89 V/m

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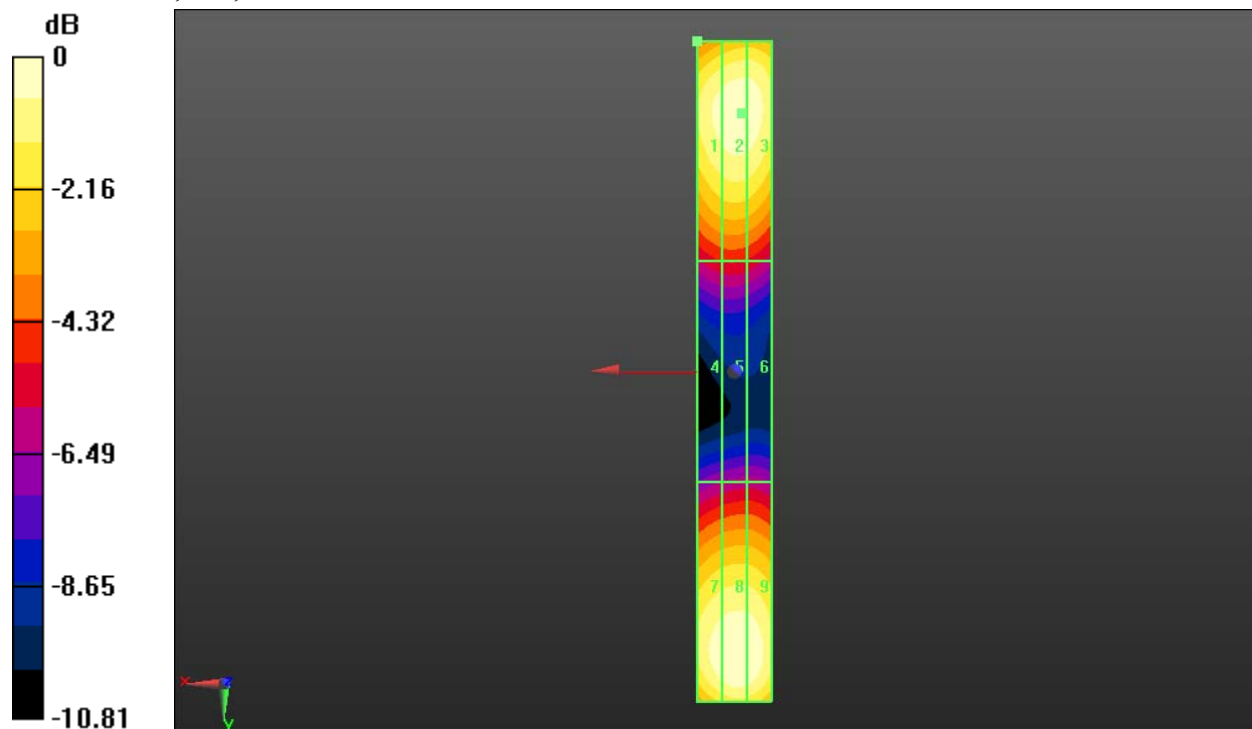
Grid 7 M4 107.0 V/m	Grid 8 M4 110.1 V/m	Grid 9 M4 109.1 V/m
--------------------------------------	--------------------------------------	--------------------------------------

Cursor:

Total = 68.35 V/m

E Category: M4

Location: 10, -90, 9.7 mm



0 dB = 110.1 V/m = 40.84 dBV/m

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Date/Time: 11/5/2014 7:48:20 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_1880 validation_11_05_14

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; Serial: 1068

Communication System: UID 0, CW For MIF; Frequency: 1880 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 9.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

CD1880 Dipole E-Field measurement (E-field scan for ANSI C63.19-2011 compliance)/E Scan - measurement distance from the probe sensor center to CD1880 = 15mm/Hearing Aid Compatibility Test at 15mm distance (41x181x1):

Interpolated grid: $dx=0.5000$ mm, $dy=0.5000$ mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 147.5 V/m; Power Drift = 0.06 dB

PMR not calibrated. PMF = 1.000 is applied.

E-field emissions = 84.46 V/m

Near-field category: M3 (AWF 0 dB)

PMF scaled E-field

Grid 1 M3 82.18 V/m	Grid 2 M3 84.30 V/m	Grid 3 M3 83.95 V/m
Grid 4 M3 66.91 V/m	Grid 5 M3 67.79 V/m	Grid 6 M3 67.20 V/m

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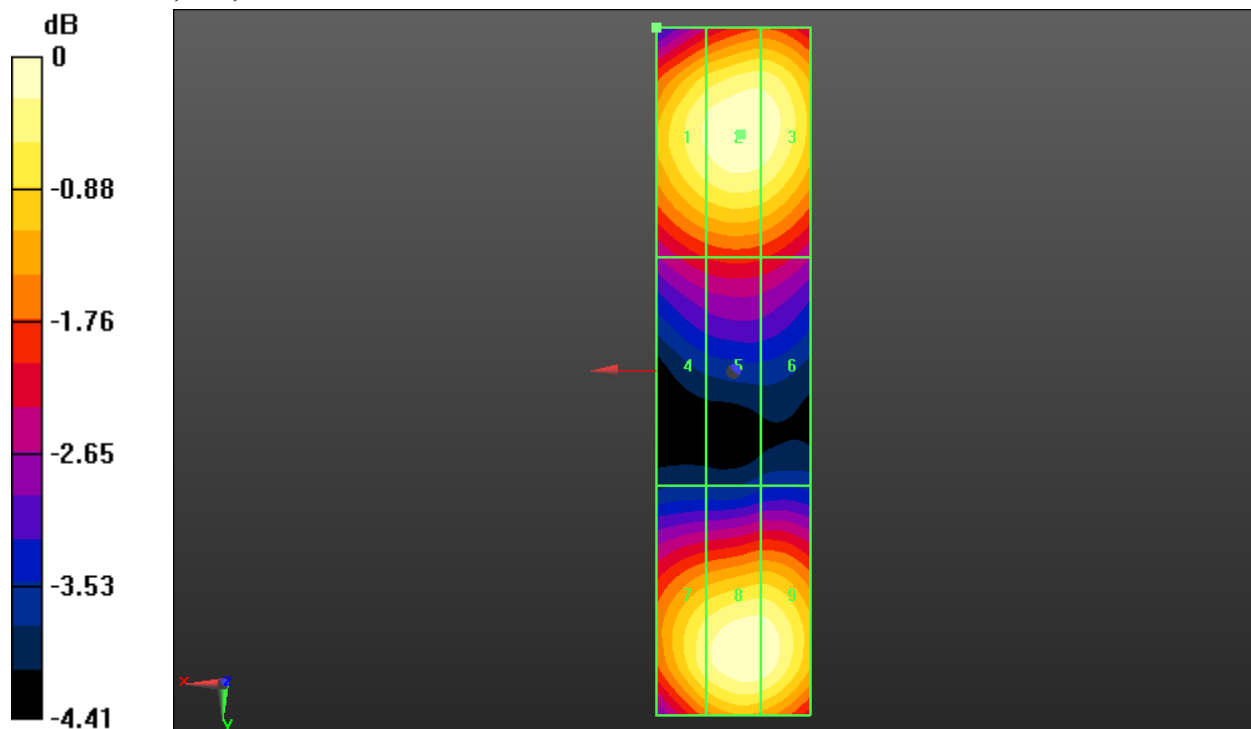
Grid 7 M3	Grid 8 M3	Grid 9 M3
81.05 V/m	84.46 V/m	84.16 V/m

Cursor:

Total = 57.08 V/m

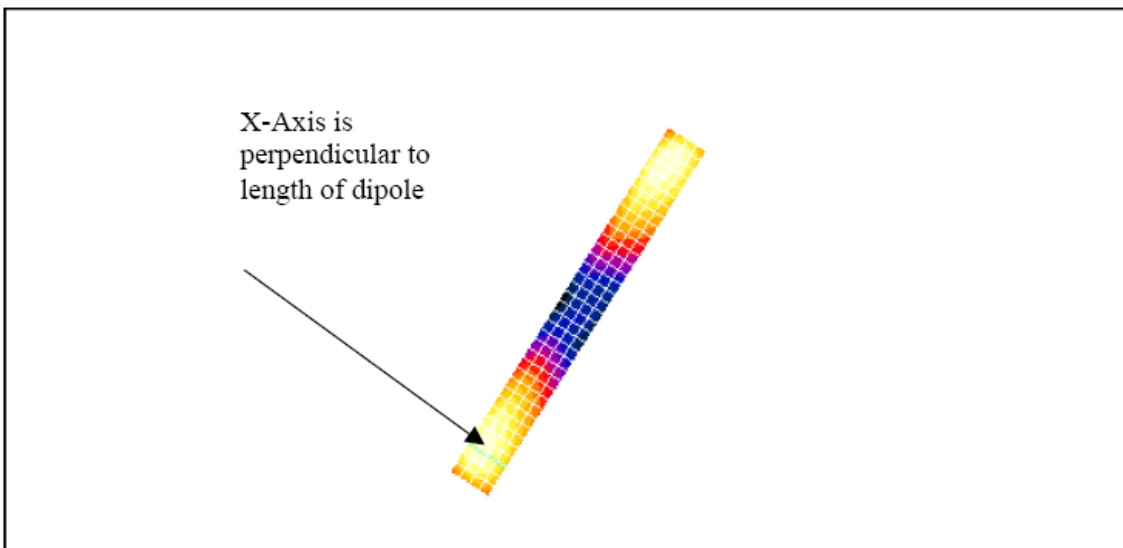
E Category: M4

Location: 10, -45, 9.7 mm



0 dB = 84.46 V/m = 38.53 dBV/m

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The green line in this figure shows the axis along which the points lie.

Comparison of 5mm and 2mm step sizes

An additional set of measurements was taken: dipole validations were performed using 5mm and 2mm step sizes. The delta between the two readings is insignificant for both field types ($< 0.4\%$ for E and 0% for H), demonstrating that 5mm is sufficient. The plots follow.

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Lab: RIM Testing Services (RTS)

Dipole Validation 1880 MHz_E-Field 07_14_05

DUT: HAC Dipole 1880 MHz; Type: CD1880V3

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: H Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 10/12/2004
- Sensor-Surface: 0mm (Fix Surface) Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (5x19x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of Total (measured) = 134.8 V/m

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (41x181x1):

Measurement grid: dx=5mm, dy=5mm
Maximum value of Total field (slot averaged) = 131.0 V/m

Hearing Aid Near-Field Category: M2 (AWF 0 dB)

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

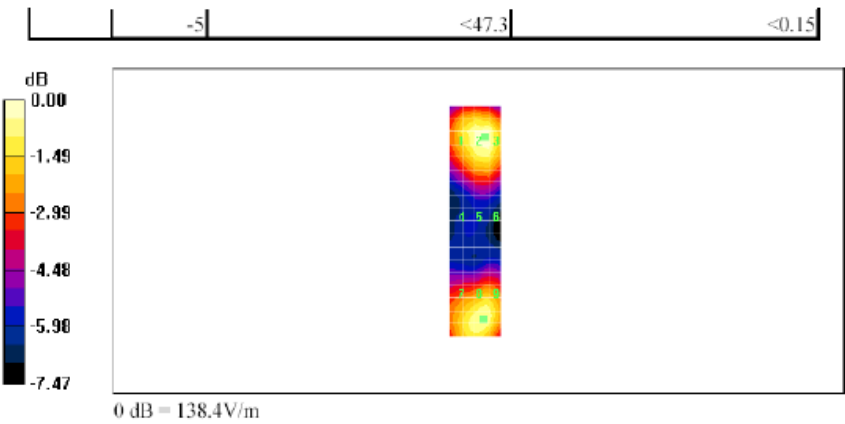
Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
123.2	138.1	138.4	123.2	138.1	138.4
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
80.9	92.3	92.2	80.9	92.3	92.2
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
119.8	131.0	130.7	119.8	131.0	130.7

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

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Date/Time: 14/07/2005 11:44:51 AM

Lab: RIM Testing Services (RTS)

Dipole Validation 1880 MHz_2mm step_E-Field 07_14_05

DUT: HAC Dipole 1880 MHz; Type: CD1880V3

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ mho/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³
Phantom section: H Device Section

DASY4 Configuration:

- Probe: ER3DV6 - SN2285; ConvF(1, 1, 1); Calibrated: 10/12/2004
- Sensor-Surface: 0mm (Fix Surface) Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: HAC Test Arch; Type: SD HAC P01 BA;
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (11x46x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of Total (measured) = 138.0 V/m

E Scan 10mm above CD 1880 MHz/Hearing Aid Compatibility Test (101x451x1):

Measurement grid: dx=2mm, dy=2mm
Maximum value of Total field (slot averaged) = 131.2 V/m

Hearing Aid Near-Field Category: M2 (AWF 0 dB)

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

Grid 1	Grid 2	Grid 3	Grid 1	Grid 2	Grid 3
123.1	138.6	138.6	123.1	138.6	138.6
Grid 4	Grid 5	Grid 6	Grid 4	Grid 5	Grid 6
81.4	92.1	91.6	81.4	92.1	91.6
Grid 7	Grid 8	Grid 9	Grid 7	Grid 8	Grid 9
121.3	131.2	131.0	121.3	131.2	131.0

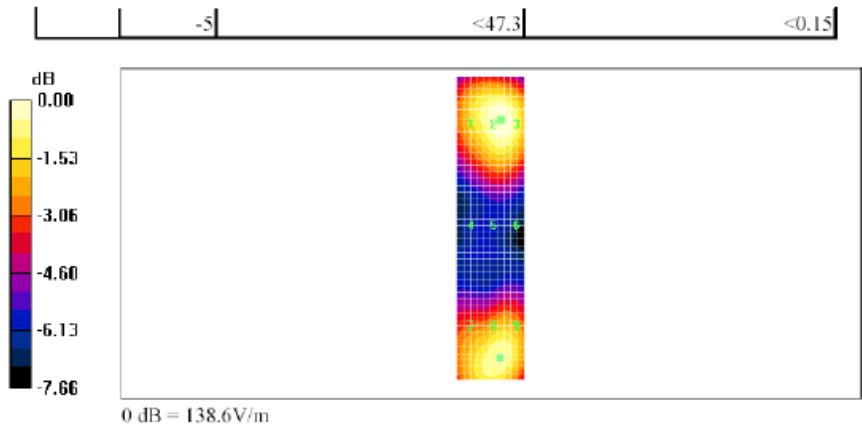
Category	AWF (dB)	Limits for E-Field Emissions (V/m)	Limits for H-Field Emissions (A/m)
M1	0	199.5 - 354.8	0.6 - 1.07
	-5	149.6 - 266.1	0.45 - 0.8
M2	0	112.2 - 199.5	0.34 - 0.6
	-5	84.1 - 149.6	0.25 - 0.45
M3	0	63.1 - 112.2	0.19 - 0.34
	-5	47.3 - 84.1	0.15 - 0.25
M4	0	<63.1	<0.19

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Daoud Attayi	March 18-24, Nov. 05-14, 2014	RTS-6057-1411-18	L6ARGV160LW	

A.3 RF emission field plots

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Date/Time: 11/5/2014 9:07:15 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_GSM850

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, GSM 850; Frequency: 824.2 MHz, Frequency: 836.8 MHz,
Frequency: 848.8 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field GSM850 measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan/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 = 74.26 V/m; Power Drift = 0.03 dB

Applied MIF = 3.44 dB

RF audio interference level = 38.98 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 38.54 dBV/m	Grid 2 M4 39.28 dBV/m	Grid 3 M4 38.94 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4

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38.18 dBV/m	38.98 dBV/m	38.82 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
37.91 dBV/m	38.76 dBV/m	38.45 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 36.89 dBV/m

E Category: M4

Location: 25, -25, 8.7 mm

Device E-Field GSM850 measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Mid_Chan/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 = 76.91 V/m; Power Drift = 0.00 dB

Applied MIF = 3.44 dB

RF audio interference level = 39.38 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4	Grid 2 M4	Grid 3 M4
38.56 dBV/m	39.64 dBV/m	39.36 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4
38.24 dBV/m	39.38 dBV/m	39.28 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
37.87 dBV/m	39.17 dBV/m	39.08 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m

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M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 36.37 dBV/m

E Category: M4

Location: 25, -25, 8.7 mm

Device E-Field GSM850 measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_High_Chan/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 = 71.97 V/m; Power Drift = -0.04 dB

Applied MIF = 3.44 dB

RF audio interference level = 38.87 dBV/m

Emission category: M4

MIF scaled E-field

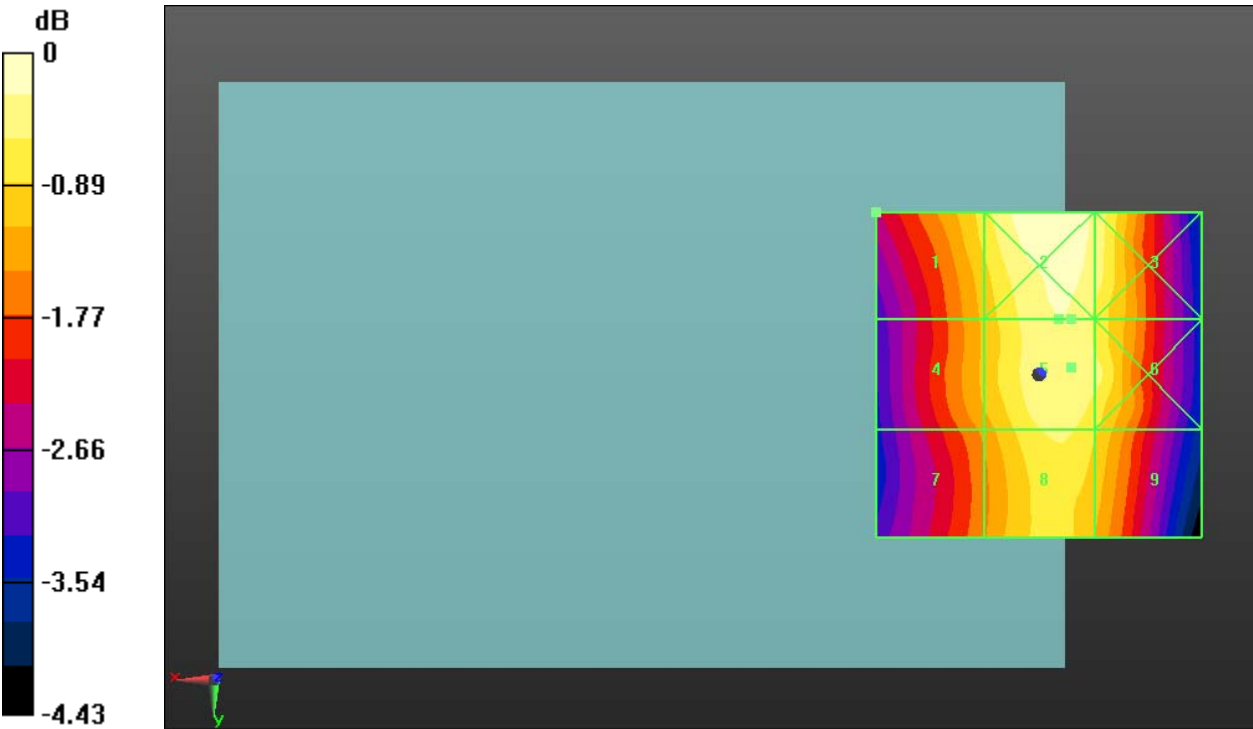
Grid 1 M4 38.17 dBV/m	Grid 2 M4 39.2 dBV/m	Grid 3 M4 38.97 dBV/m
Grid 4 M4 37.6 dBV/m	Grid 5 M4 38.87 dBV/m	Grid 6 M4 38.76 dBV/m
Grid 7 M4 37.08 dBV/m	Grid 8 M4 38.45 dBV/m	Grid 9 M4 38.35 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 35.87 dBV/m

E Category: M4
 Location: 25, -25, 8.7 mm



0 dB = 92.08 V/m = 39.28 dBV/m

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Date/Time: 11/6/2014 10:05:38 AM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_GSM 850_telecoil

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, GSM 850 (0); Frequency: 824.2 MHz, Frequency: 836.8 MHz,
Frequency: 848.8 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASYS 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field GSM850 measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan_telecoil/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 = 74.90 V/m; Power Drift = 0.07 dB

Applied MIF = 3.44 dB

RF audio interference level = 39.00 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 38.23 dBV/m	Grid 2 M4 39.1 dBV/m	Grid 3 M4 38.91 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4

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38.13 dBV/m	39 dBV/m	38.82 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
38.54 dBV/m	38.91 dBV/m	38.5 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 36.12 dBV/m

E Category: M4

Location: 25, -10, 8.7 mm

Device E-Field GSM850 measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Mid_Chan_telecoil/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 = 77.41 V/m; Power Drift = -0.00 dB

Applied MIF = 3.44 dB

RF audio interference level = 39.29 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4	Grid 2 M4	Grid 3 M4
38.22 dBV/m	39.41 dBV/m	39.32 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4
37.98 dBV/m	39.29 dBV/m	39.17 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
37.78 dBV/m	38.93 dBV/m	38.79 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m

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M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 35.48 dBV/m

E Category: M4

Location: 25, -10, 8.7 mm

Device E-Field GSM850 measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_High_Chan_telecoil/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 = 73.13 V/m; Power Drift = -0.10 dB

Applied MIF = 3.44 dB

RF audio interference level = 38.63 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 37.7 dBV/m	Grid 2 M4 39.03 dBV/m	Grid 3 M4 38.95 dBV/m
Grid 4 M4 37.26 dBV/m	Grid 5 M4 38.63 dBV/m	Grid 6 M4 38.53 dBV/m
Grid 7 M4 36.49 dBV/m	Grid 8 M4 37.96 dBV/m	Grid 9 M4 37.85 dBV/m

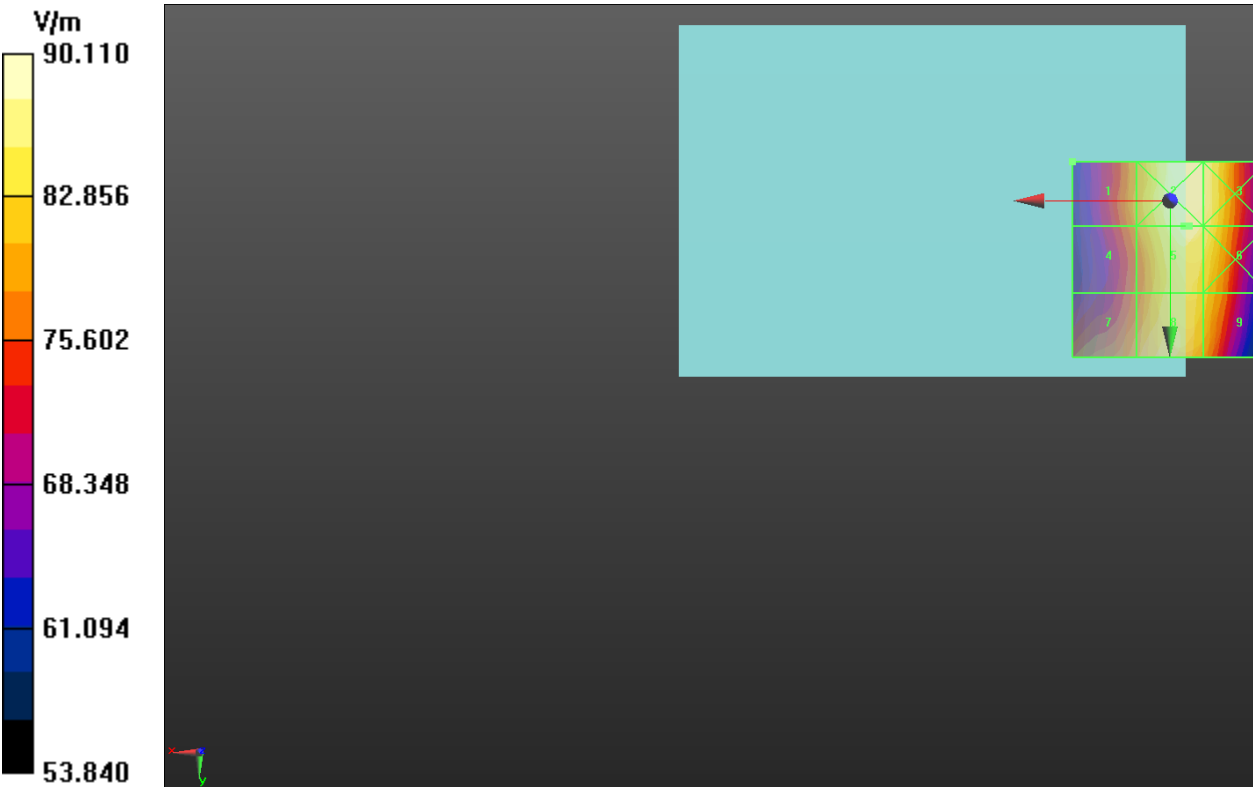
Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 35.02 dBV/m

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E Category: M4
Location: 25, -10, 8.7 mm



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Date/Time: 11/5/2014 9:34:31 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_GSM1900

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, GSM 1900; Frequency: 1850.2 MHz, Frequency: 1880 MHz,
Frequency: 1909.8 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field GSM 1900 measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan/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 = 28.50 V/m; Power Drift = -0.17 dB

Applied MIF = 3.44 dB

RF audio interference level = 32.45 dBV/m

Emission category: M3

MIF scaled E-field

Grid 1 M4 25.4 dBV/m	Grid 2 M3 30.5 dBV/m	Grid 3 M3 30.51 dBV/m
Grid 4 M4	Grid 5 M3	Grid 6 M3

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28.6 dBV/m	32.45 dBV/m	32.45 dBV/m
Grid 7 M3	Grid 8 M3	Grid 9 M3
30.8 dBV/m	33.72 dBV/m	33.63 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 24.06 dBV/m

E Category: M4

Location: 25, -25, 8.7 mm

**Device E-Field GSM 1900 measurement with ER probe/E Scan - ER3D - 2011:
15 mm from Probe Center to the Device_Mid_Chan/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 = 28.34 V/m; Power Drift = -0.06 dB

Applied MIF = 3.44 dB

RF audio interference level = 32.57 dBV/m

Emission category: M3

MIF scaled E-field

Grid 1 M4	Grid 2 M3	Grid 3 M3
26.48 dBV/m	30.87 dBV/m	30.96 dBV/m
Grid 4 M4	Grid 5 M3	Grid 6 M3
29.06 dBV/m	32.57 dBV/m	32.57 dBV/m
Grid 7 M3	Grid 8 M3	Grid 9 M3
31.21 dBV/m	33.9 dBV/m	33.83 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m

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M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 22.12 dBV/m

E Category: M4

Location: 25, -25, 8.7 mm

**Device E-Field GSM 1900 measurement with ER probe/E Scan - ER3D - 2011:
15 mm from Probe Center to the Device_High_Chan/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 = 26.88 V/m; Power Drift = -0.04 dB

Applied MIF = 3.44 dB

RF audio interference level = 32.27 dBV/m

Emission category: M3

MIF scaled E-field

Grid 1 M4 25.58 dBV/m	Grid 2 M3 30.27 dBV/m	Grid 3 M3 30.35 dBV/m
Grid 4 M4 28.7 dBV/m	Grid 5 M3 32.27 dBV/m	Grid 6 M3 32.27 dBV/m
Grid 7 M3 31.42 dBV/m	Grid 8 M3 33.9 dBV/m	Grid 9 M3 33.81 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 24.80 dBV/m



Document

**Annex A to Hearing Aid Compatibility RF Emissions Test Report
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Author Data

Daoud Attayi

Dates of Test

March 18-24, Nov. 05-14, 2014

Report No

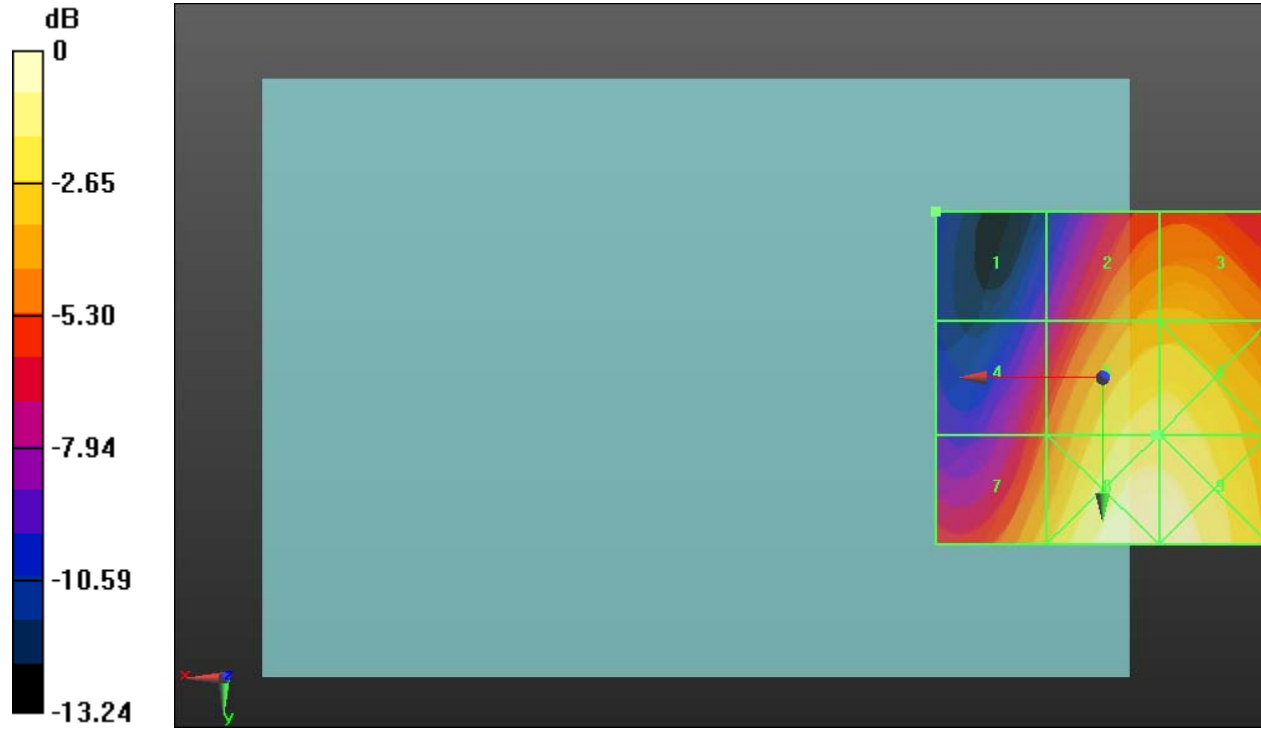
RTS-6057-1411-18

FCC ID

L6ARGV160LW

E Category: M4

Location: 25, -25, 8.7 mm

 $0 \text{ dB} = 48.54 \text{ V/m} = 33.72 \text{ dBV/m}$

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Author Data Daoud Attayi	Dates of Test March 18-24, Nov. 05-14, 2014	Report No RTS-6057-1411-18	FCC ID L6ARGV160LW	

Date/Time: 11/6/2014 9:37:42 AM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_GSM 1900_Telecoil

DUT: BlackBerry Smartphone; Type: Sample; Serial: 2FFEDD03

Communication System: UID 0, GSM 1900 (0); Frequency: 1850.2 MHz, Frequency: 1880 MHz, Frequency: 1909.8 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA; DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Device E-Field GSM 1900 measurement with ER probe/E Scan - ER3D - 2011:
15 mm from Probe Center to the Device_Low_Chan_telecoil/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 = 28.36 V/m; Power Drift = -0.39 dB

Applied MIF = 3.44 dB

RF audio interference level = 33.63 dBV/m

Emission category: M3

MIF scaled E-field

Grid 1 M4 28.33 dBV/m	Grid 2 M3 32.28 dBV/m	Grid 3 M3 32.25 dBV/m
Grid 4 M3	Grid 5 M3	Grid 6 M3

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Author Data Daoud Attayi	Dates of Test March 18-24, Nov. 05-14, 2014	Report No RTS-6057-1411-18	FCC ID L6ARGV160LW

30.83 dBV/m	33.63 dBV/m	33.57 dBV/m
Grid 7 M3	Grid 8 M3	Grid 9 M3
33.09 dBV/m	34.5 dBV/m	34.2 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 23.26 dBV/m

E Category: M4

Location: 25, -10, 8.7 mm

**Device E-Field GSM 1900 measurement with ER probe/E Scan - ER3D - 2011:
15 mm from Probe Center to the Device_Mid_Chan_telecoil/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 = 28.41 V/m; Power Drift = 0.07 dB

Applied MIF = 3.44 dB

RF audio interference level = 33.59 dBV/m

Emission category: M3

MIF scaled E-field

Grid 1 M4	Grid 2 M3	Grid 3 M3
28.88 dBV/m	32.38 dBV/m	32.37 dBV/m
Grid 4 M3	Grid 5 M3	Grid 6 M3
30.89 dBV/m	33.59 dBV/m	33.57 dBV/m
Grid 7 M3	Grid 8 M3	Grid 9 M3
33.24 dBV/m	34.72 dBV/m	34.4 dBV/m

Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m

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M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 21.49 dBV/m

E Category: M4

Location: 25, -10, 8.7 mm

**Device E-Field GSM 1900 measurement with ER probe/E Scan - ER3D - 2011:
15 mm from Probe Center to the Device_High_Chan_telecoil/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 = 26.23 V/m; Power Drift = -0.13 dB

Applied MIF = 3.44 dB

RF audio interference level = 33.86 dBV/m

Emission category: M3

MIF scaled E-field

Grid 1 M4 28.01 dBV/m	Grid 2 M3 32.16 dBV/m	Grid 3 M3 32.18 dBV/m
Grid 4 M3 31.01 dBV/m	Grid 5 M3 33.86 dBV/m	Grid 6 M3 33.84 dBV/m
Grid 7 M3 34 dBV/m	Grid 8 M2 35.45 dBV/m	Grid 9 M2 35.12 dBV/m

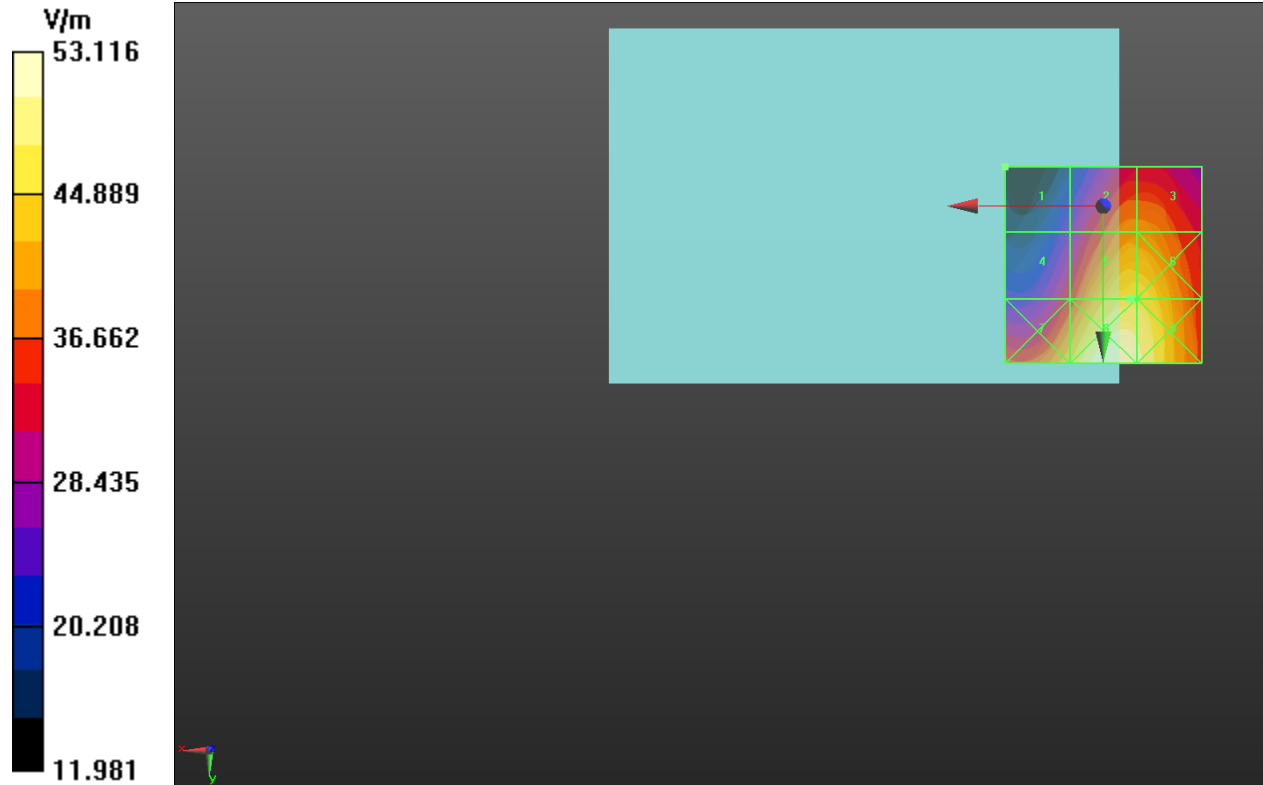
Category	Limits for E-Field Emissions < 960MHz	Limits for E-Field Emissions > 960MHz
M1	50 dBV/m - 55 dB V/m	40 dBV/m - 45 dB V/m
M2	45 dBV/m - 50 dB V/m	35 dBV/m - 40 dB V/m
M3	40 dBV/m - 45 dB V/m	30 dBV/m - 35 dB V/m
M4	<40 dBV/m	<30 dBV/m

Cursor:

Total = 24.64 dBV/m

E Category: M4

Location: 25, -10, 8.7 mm



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Author Data Daoud Attayi	Dates of Test March 18-24, Nov. 05-14, 2014	Report No RTS-6057-1411-18	FCC ID L6ARGV160LW

Date/Time: 11/5/2014 10:00:23 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_UMTS_V

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, WCDMA FDD V; Frequency: 826.4 MHz, Frequency: 836.4 MHz, Frequency: 846.6 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field UMTS band V measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan/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 = 76.23 V/m; Power Drift = -0.04 dB

Applied MIF = -25.91 dB

RF audio interference level = 9.80 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 9.25 dBV/m	Grid 2 M4 10.08 dBV/m	Grid 3 M4 9.86 dBV/m
Grid 4 M4 8.77 dBV/m	Grid 5 M4 9.8 dBV/m	Grid 6 M4 9.66 dBV/m

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Grid 7 M4 8.43 dBV/m	Grid 8 M4 9.54 dBV/m	Grid 9 M4 9.34 dBV/m
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Cursor:

Total = 10.08 dBV/m

E Category: M4

Location: -2.5, -25, 8.7 mm

Device E-Field UMTS band V measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Mid_Chan/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 = 70.60 V/m; Power Drift = 0.02 dB

Applied MIF = -25.91 dB

RF audio interference level = 9.27 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 8.53 dBV/m	Grid 2 M4 9.51 dBV/m	Grid 3 M4 9.24 dBV/m
Grid 4 M4 8.14 dBV/m	Grid 5 M4 9.27 dBV/m	Grid 6 M4 9.16 dBV/m
Grid 7 M4 7.83 dBV/m	Grid 8 M4 9.09 dBV/m	Grid 9 M4 8.97 dBV/m

Cursor:

Total = 9.51 dBV/m

E Category: M4

Location: -3, -25, 8.7 mm

Device E-Field UMTS band V measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_High_Chan/Hearing Aid

Compatibility Test (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

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Device Reference Point: 0, 0, -6.3 mm

Reference Value = 75.34 V/m; Power Drift = -0.00 dB

Applied MIF = -25.91 dB

RF audio interference level = 9.75 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 9.33 dBV/m	Grid 2 M4 10.05 dBV/m	Grid 3 M4 9.78 dBV/m
Grid 4 M4 8.77 dBV/m	Grid 5 M4 9.75 dBV/m	Grid 6 M4 9.59 dBV/m
Grid 7 M4 8.37 dBV/m	Grid 8 M4 9.44 dBV/m	Grid 9 M4 9.2 dBV/m

Cursor:

Total = 10.05 dBV/m

E Category: M4

Location: -2.5, -25, 8.7 mm



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**Annex A to Hearing Aid Compatibility RF Emissions Test Report
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Author Data

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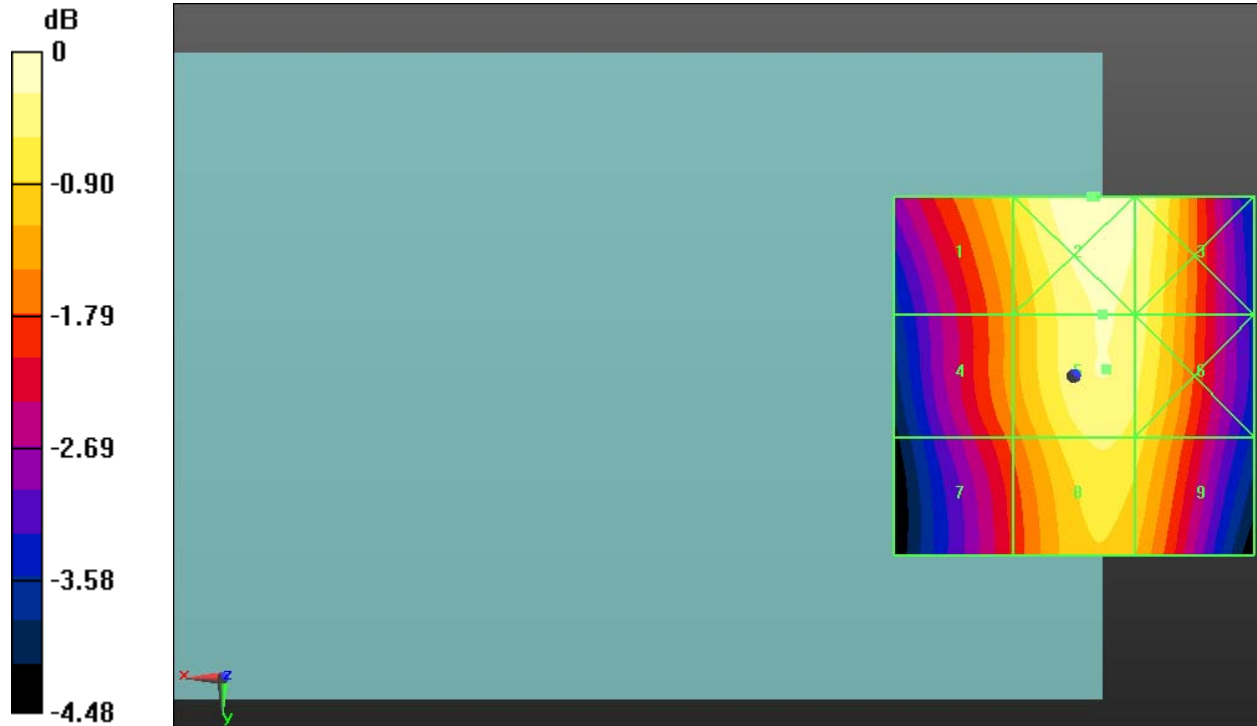
Dates of Test

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0 dB = 3.190 V/m = 10.08 dBV/m

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Author Data Daoud Attayi	Dates of Test March 18-24, Nov. 05-14, 2014	Report No RTS-6057-1411-18	FCC ID L6ARGV160LW

Date/Time: 11/5/2014 10:20:02 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_UMTS_V_Telecoil

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, WCDMA FDD V (0); Frequency: 826.4 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field UMTS band V measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan_telecoil/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 = 67.21 V/m; Power Drift = 0.00 dB

Applied MIF = -25.91 dB

RF audio interference level = 8.60 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 7.87 dBV/m	Grid 2 M4 8.73 dBV/m	Grid 3 M4 8.51 dBV/m
Grid 4 M4 7.73 dBV/m	Grid 5 M4 8.6 dBV/m	Grid 6 M4 8.38 dBV/m

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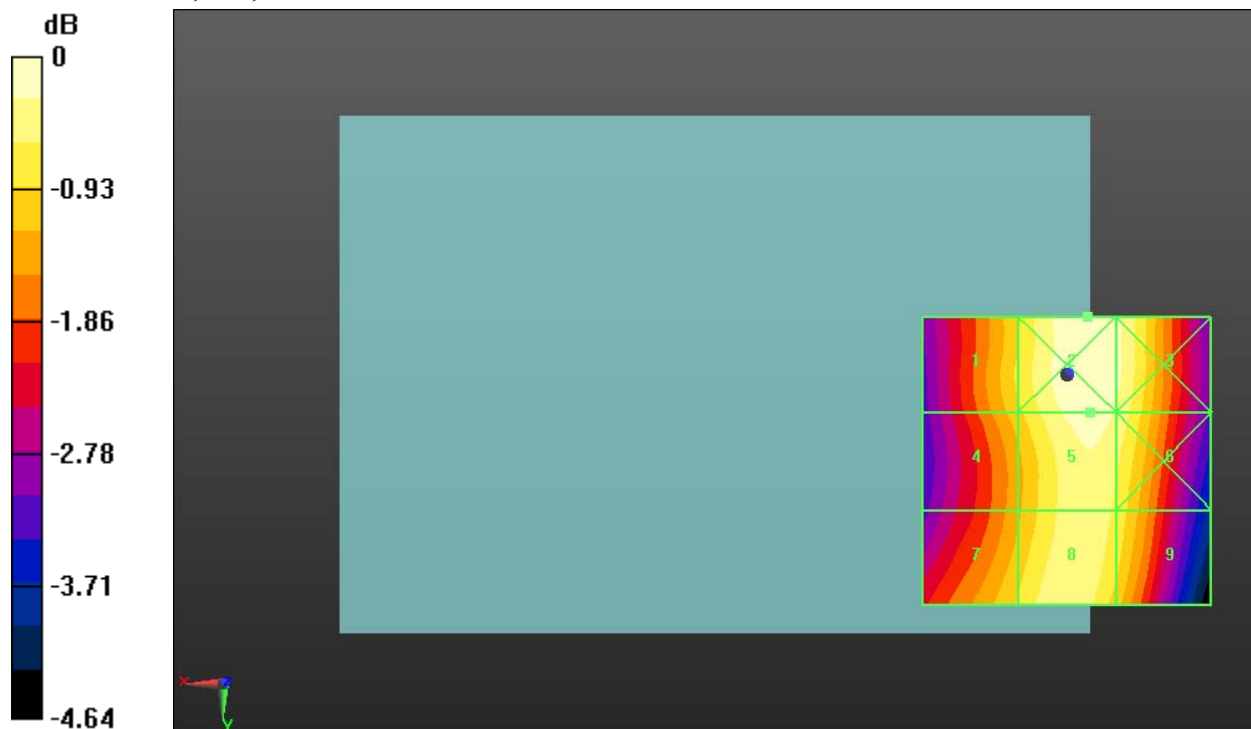
Grid 7 M4 7.86 dBV/m	Grid 8 M4 8.32 dBV/m	Grid 9 M4 8.04 dBV/m
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Cursor:

Total = 8.73 dBV/m

E Category: M4

Location: -3.5, -10, 8.7 mm



0 dB = 2.732 V/m = 8.73 dBV/m

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Date/Time: 11/5/2014 10:27:18 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_UMTS_IV

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, WCDMA FDD IV; Frequency: 1712.4 MHz, Frequency:
1732.6 MHz, Frequency: 1752.6 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field UMTS band IV measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan/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 = 26.35 V/m; Power Drift = 0.10 dB

Applied MIF = -25.91 dB

RF audio interference level = 2.92 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 -4.48 dBV/m	Grid 2 M4 0.12 dBV/m	Grid 3 M4 0.21 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4

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-0.31 dBV/m	2.92 dBV/m	2.92 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
1.96 dBV/m	4.36 dBV/m	4.28 dBV/m

Cursor:

Total = 4.36 dBV/m

E Category: M4

Location: -6, 25, 8.7 mm

Device E-Field UMTS band IV measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Mid_Chan/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 = 32.05 V/m; Power Drift = -0.08 dB

Applied MIF = -25.91 dB

RF audio interference level = 4.32 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4	Grid 2 M4	Grid 3 M4
-2.57 dBV/m	2.02 dBV/m	2.09 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4
0.8 dBV/m	4.32 dBV/m	4.32 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
2.83 dBV/m	5.54 dBV/m	5.47 dBV/m

Cursor:

Total = 5.54 dBV/m

E Category: M4

Location: -6.5, 25, 8.7 mm

Device E-Field UMTS band IV measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_High_Chan/Hearing Aid

		Document Annex A to Hearing Aid Compatibility RF Emissions Test Report for the BlackBerry® Smartphone RGV161LW (SQW100-3)		Page 46 (55)
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Compatibility Test (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 35.49 V/m; Power Drift = -0.01 dB

Applied MIF = -25.91 dB

RF audio interference level = 5.25 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 -1.58 dBV/m	Grid 2 M4 3.17 dBV/m	Grid 3 M4 3.25 dBV/m
Grid 4 M4 1.47 dBV/m	Grid 5 M4 5.25 dBV/m	Grid 6 M4 5.25 dBV/m
Grid 7 M4 3.63 dBV/m	Grid 8 M4 6.48 dBV/m	Grid 9 M4 6.42 dBV/m

Cursor:

Total = 6.48 dBV/m

E Category: M4

Location: -6.5, 25, 8.7 mm



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Author Data

Daoud Attayi

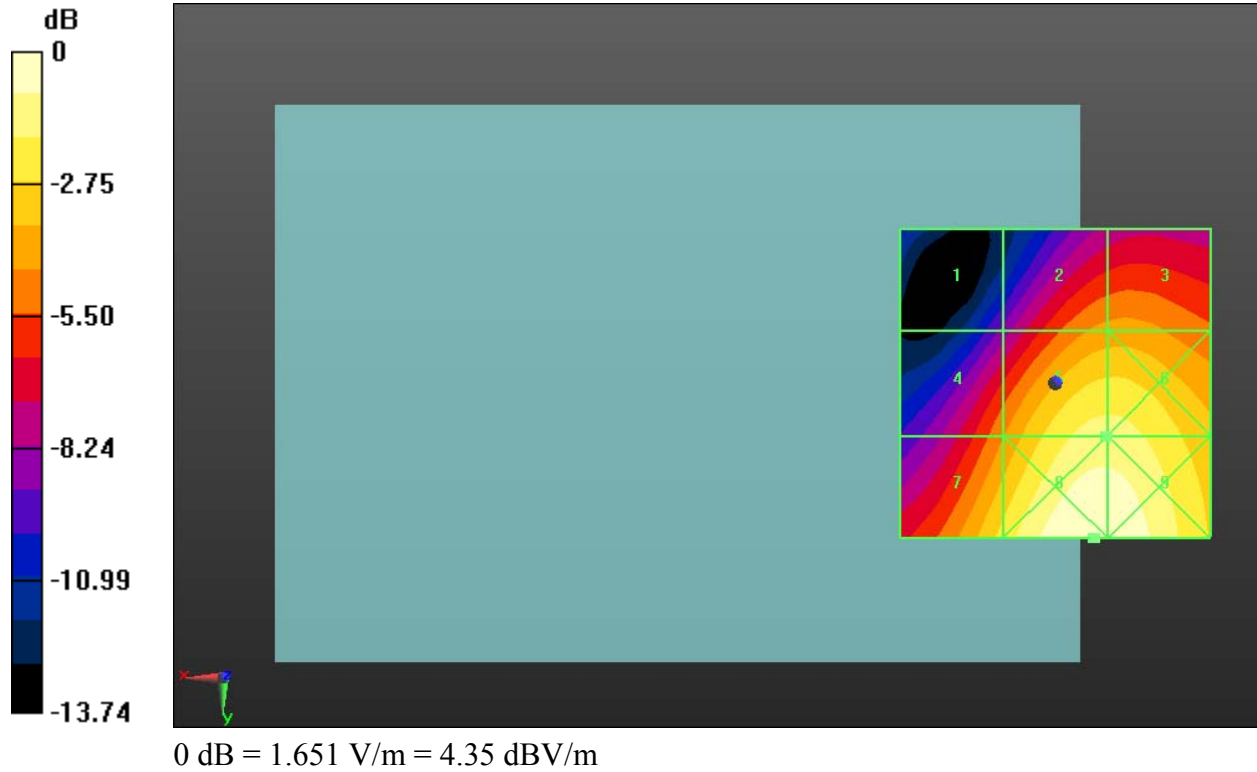
Dates of Test

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FCC ID

L6ARGV160LW

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Date/Time: 11/5/2014 10:44:18 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_UMTS_IV_Telecoil

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, WCDMA FDD IV (0); Frequency: 1752.6 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field UMTS band IV measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_High_Chan_telecoil/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 = 34.32 V/m; Power Drift = 0.00 dB

Applied MIF = -25.91 dB

RF audio interference level = 6.14 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 1.02 dBV/m	Grid 2 M4 4.81 dBV/m	Grid 3 M4 4.82 dBV/m
Grid 4 M4 3.32 dBV/m	Grid 5 M4 6.14 dBV/m	Grid 6 M4 6.1 dBV/m

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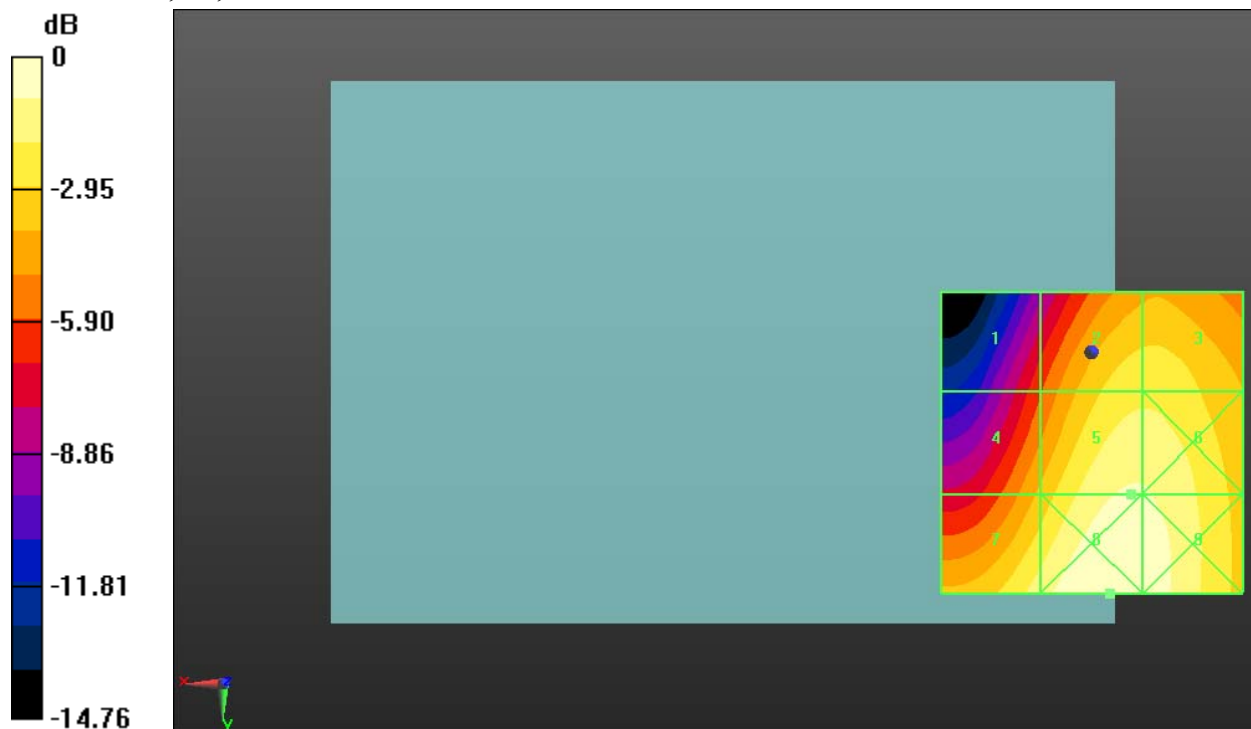
Grid 7 M4 5.57 dBV/m	Grid 8 M4 7.01 dBV/m	Grid 9 M4 6.7 dBV/m
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Cursor:

Total = 7.01 dBV/m

E Category: M4

Location: -3, 40, 8.7 mm



0 dB = 2.242 V/m = 7.01 dBV/m

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Date/Time: 11/5/2014 10:49:56 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_UMTS_II

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, WCDMA FDD II; Frequency: 1852.4 MHz, Frequency: 1880 MHz, Frequency: 1907.6 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field UMTS band II measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan/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 = 39.25 V/m; Power Drift = -0.03 dB

Applied MIF = -25.91 dB

RF audio interference level = 5.82 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 -0.46 dBV/m	Grid 2 M4 4.26 dBV/m	Grid 3 M4 4.31 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4

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2.01 dBV/m	5.82 dBV/m	5.82 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
3.81 dBV/m	6.65 dBV/m	6.59 dBV/m

Cursor:

Total = 6.65 dBV/m

E Category: M4

Location: -6.5, 25, 8.7 mm

**Device E-Field UMTS band II measurement with ER probe/E Scan - ER3D -
2011: 15 mm from Probe Center to the Device_Mid_Chan/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 = 37.19 V/m; Power Drift = 0.06 dB

Applied MIF = -25.91 dB

RF audio interference level = 5.44 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4	Grid 2 M4	Grid 3 M4
-0.43 dBV/m	4.19 dBV/m	4.26 dBV/m
Grid 4 M4	Grid 5 M4	Grid 6 M4
1.93 dBV/m	5.44 dBV/m	5.44 dBV/m
Grid 7 M4	Grid 8 M4	Grid 9 M4
4.11 dBV/m	6.53 dBV/m	6.43 dBV/m

Cursor:

Total = 6.53 dBV/m

E Category: M4

Location: -6, 25, 8.7 mm

**Device E-Field UMTS band II measurement with ER probe/E Scan - ER3D -
2011: 15 mm from Probe Center to the Device_High_Chan/Hearing Aid**

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Compatibility Test (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 33.44 V/m; Power Drift = 0.04 dB

Applied MIF = -25.91 dB

RF audio interference level = 4.94 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 -1.19 dBV/m	Grid 2 M4 3.23 dBV/m	Grid 3 M4 3.33 dBV/m
Grid 4 M4 1.52 dBV/m	Grid 5 M4 4.94 dBV/m	Grid 6 M4 4.94 dBV/m
Grid 7 M4 3.94 dBV/m	Grid 8 M4 6.34 dBV/m	Grid 9 M4 6.26 dBV/m

Cursor:

Total = 6.34 dBV/m

E Category: M4

Location: -6, 25, 8.7 mm



Document

**Annex A to Hearing Aid Compatibility RF Emissions Test Report
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Author Data

Daoud Attayi

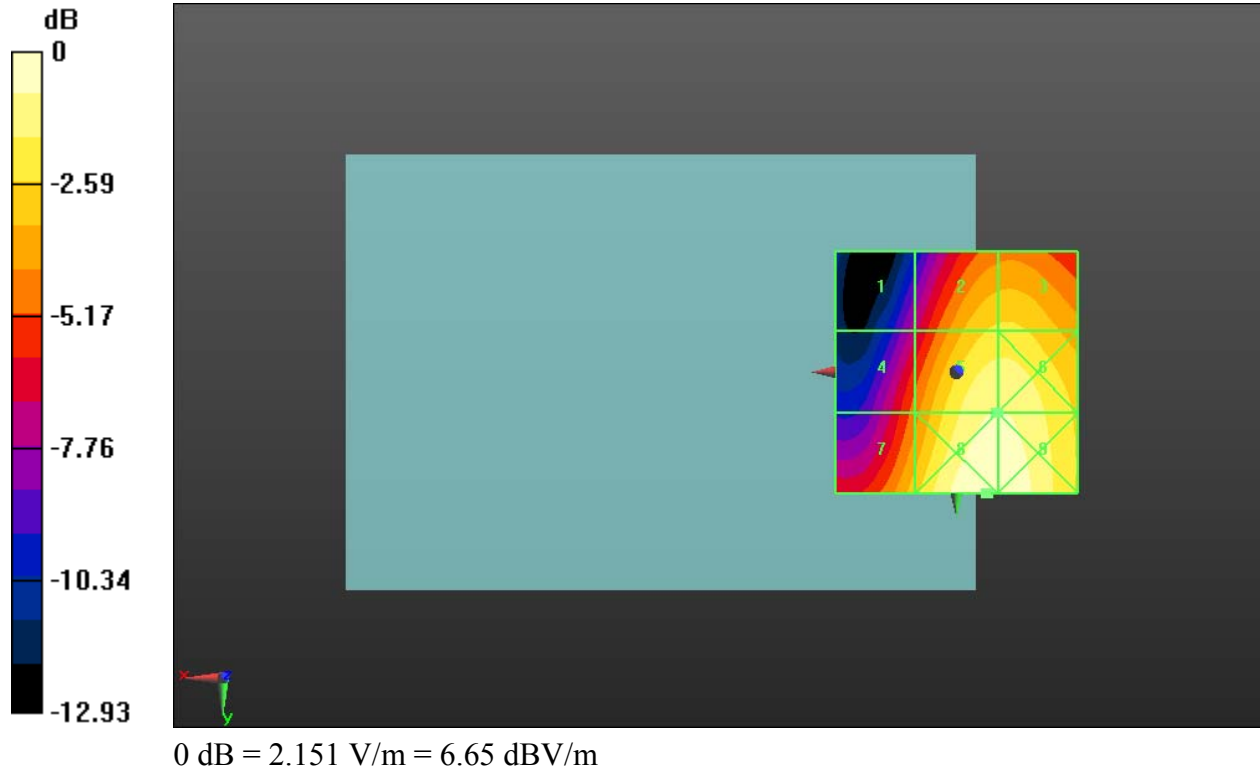
Dates of Test

March 18-24, Nov. 05-14, 2014

Report No

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FCC ID

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Date/Time: 11/5/2014 11:06:20 PM

Test Laboratory: BlackBerry RTS

HAC RF_E-Field_UMTS_II_Telecoil

DUT: BlackBerry Smartphone; Type: Sample ; Serial: 2FFEDD03

Communication System: UID 0, WCDMA FDD II (0); Frequency: 1852.4 MHz

Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 0$ kg/m³

Phantom section: RF Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY Configuration:

- Probe: ER3DV6 - SN2286; ConvF(1, 1, 1); Calibrated: 1/17/2014;
- Sensor-Surface: (Fix Surface), $z = 8.7$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: HAC RF Test Arch with AMCC; Type: SD HAC P01 BA;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Device E-Field UMTS band II measurement with ER probe/E Scan - ER3D - 2011: 15 mm from Probe Center to the Device_Low_Chan_telecoil/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 = 38.96 V/m; Power Drift = 0.00 dB

Applied MIF = -25.91 dB

RF audio interference level = 6.55 dBV/m

Emission category: M4

MIF scaled E-field

Grid 1 M4 1.85 dBV/m	Grid 2 M4 5.65 dBV/m	Grid 3 M4 5.65 dBV/m
Grid 4 M4 3.71 dBV/m	Grid 5 M4 6.55 dBV/m	Grid 6 M4 6.51 dBV/m

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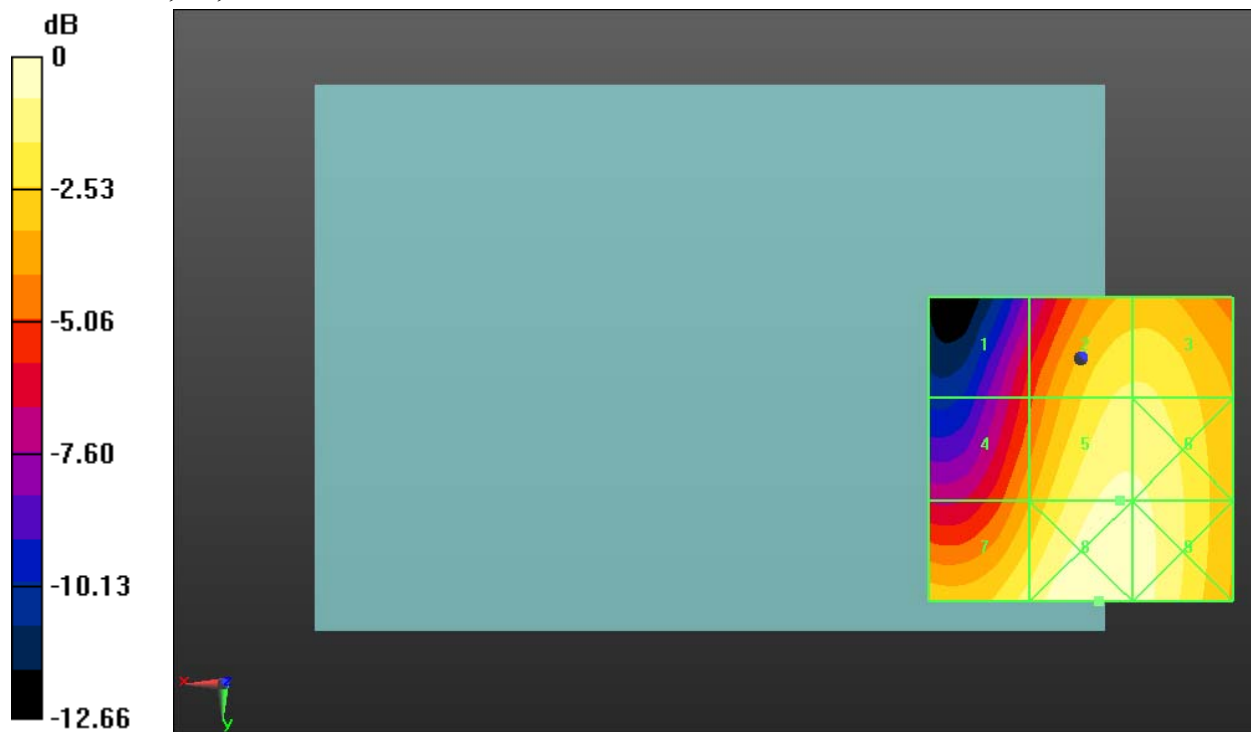
Grid 7 M4 5.87 dBV/m	Grid 8 M4 7.15 dBV/m	Grid 9 M4 6.84 dBV/m
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Cursor:

Total = 7.15 dBV/m

E Category: M4

Location: -3, 40, 8.7 mm



0 dB = 2.278 V/m = 7.15 dBV/m