

MPE CALCULATION

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EUT DESCRIPTION 12" LCD ProScribe Xper Module Intel Atom

EUT TRADEMARK 

EUT MODEL CMPD12CV-A

REFERENCE STANDARDS : 47 CFR FCC part 15.247
47 CFR FCC part 1.1310
OET BULLETIN 65

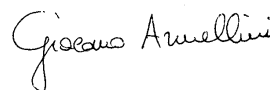
TEST REPORT NUMBER MPETR_111477A-1

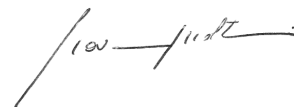
DATE OF ISSUE 08/12/2012

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The calculation results reported in this document shall refer only to Test Report above indicated and relevant tested sample

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1. RELEASE CONTROL RECORD

TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
MPETR_111477A-0	Original Release	08/02/2012
MPETR_111477A-1	Added Wi-Fi Module description	08/02/2012

2. EUT TECHNICAL DATA

Brand name:	
Manufacturer:	FIMI S.r.l
Equipment :	CMPD12CV-A : 12" LCD ProScribe Xper Module Intel Atom
Serial number :	1DAEVTQGZZO-A00008
FCC ID :	GZM802161
FCC class:	47 CFR FCC Part 15 Subpart C § 15.247
Radio type:	Intentional radiators
Power type :	24vdc – 1A
Auxiliary Equipment:	None
Wi-Fi module	AW-NE139H IEEE 802.11b/g/n Wi-Fi Half Mini Card
Modulation Type:	AW-NE139H module adopts Realtek RTL8188CE-VL solution. The module design is based on the Realtek RTL8188CE-VL solution CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11 / 5.5 / 2 / 1Mbps 802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps 802.11n (20MHz, 800ns GI): 65 / 58.5 / 52 / 39 / 26 / 19.5 / 13 / 6.5Mbps 802.11n (40MHz, 800ns GI): 135 / 121.5 / 108 / 81 / 54 / 40.5 / 27 / 13.5Mbps 802.11n (20MHz, 400ns GI): 72.2 / 65 / 57.8 / 43.3 / 28.9 / 21.7 / 14.4 / 7.2Mbps 802.11n (40MHz, 400ns GI): 150 / 135 / 120 / 90 / 60 / 45 / 30 / 15Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
Maximum Output Power	802.11b: 75.9mW 802.11g: 281.8mW 802.11n (20MHz): 269.2mW 802.11n (40MHz): 169.8mW
Antenna Type:	Dipole
Antenna Manufacturer	Brito
Antenna Model	WPB-01-110
Antenna Assembly Gain	-0.48 dBi

3. ASSESSMENT METHOD

EM reference level: Power flux density calculation in the Far Field region

4. REFERENCE DOCUMENTS

FCC TEST REPORT no. RF981230H01Z issued by Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory on Nov. 09, 2011

5. MEASUREMENTS AND CALCULATION RESULTS

5.1 Calculation Method

Far Field Power flux Calculation model.

This model is applicable in the far-field region and over-estimates in the radiating near-field region. The far-field calculations are accurate when the distance, r , from an antenna of length D to a point of investigation is greater than

$$r = \frac{2D^2}{\lambda}$$

The Power Flux is

$$S = \frac{PG}{4\pi r^2} \quad \text{or equivalent} \quad S = \frac{EIRP}{4\pi r^2}$$

where

P = input power of the antenna

G = antenna gain relative to an isotropic antenna

r = distance from the antenna to the point of investigation.

EIRP = Effective Isotropic Radiated Power

5.2 Limits

The FCC's MPE limits for field strength and power density are given in Table 1 (and in 47 CFR § 1.1310)

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

5.3 Calculation Results

Channel 11 802.11b (worst case)

	Conducted (Antenna Connector)	
Power at the Antenna	0,0759	
Antenna Gain in dB	-0.48 dBi	
Distance to the Area of Interest	0.656 feet 0.1999 metres	
Frequency of Operation	2462 MHz	
Are Ground reflections Calculated	Yes	
Estimated RF Power Density	0.0346 mW/cm ²	
	Controlled Environment	Uncontrolled Environment
Maximum Permissible Exposure (MPE)	5.005 mW/cm ²	1.005 mW/cm ²
Distance to Compliance From Centre of Antenna	0.1046 feet 0.0319 metres	0.172 feet 0.0524 metres
Does the Area of Interest Appear to be in Compliance	yes	yes

Channel 6 802.11g (worst case)

	Conducted (Antenna Connector)	
Power at the Antenna	0.2818	
Antenna Gain in dB	-0.48 dBi	
Distance to the Area of Interest	0.656 feet 0.1999 metres	
Frequency of Operation	2437 MHz	
Are Ground reflections Calculated	Yes	
Estimated RF Power Density	0.1286 mW/cm²	
	Controlled Environment	Uncontrolled Environment
Maximum Permissible Exposure (MPE)	5.005 mW/cm²	1.005 mW/cm²
Distance to Compliance From Centre of Antenna	0.1552 feet 0.0473 metres	0.2852 feet 0.0869 metres
Does the Area of Interest Appear to be in Compliance	yes	yes

Channel 6 802.11n (20MHz) (worst case)

	Conducted (Antenna Connector)	
Power at the Antenna	0.269	
Antenna Gain in dB	-0.48 dBi	
Distance to the Area of Interest	0.656 feet 0.1999 metres	
Frequency of Operation	2437 MHz	
Are Ground reflections Calculated	Yes	
Estimated RF Power Density	0.1229 mW/cm²	
	Controlled Environment	Uncontrolled Environment
Maximum Permissible Exposure (MPE)	5.005 mW/cm²	1.005 mW/cm²
Distance to Compliance From Centre of Antenna	0.1528 feet 0.0466 metres	0.2799 feet 0.0853 metres
Does the Area of Interest Appear to be in Compliance	yes	yes

Channel 6 802.11n (40MHz) (worst case)

	Conducted (Antenna Connector)	
Power at the Antenna	0.169	
Antenna Gain in dB	-0.48 dBi	
Distance to the Area of Interest	0.656 feet 0.1999 metres	
Frequency of Operation	2437 MHz	
Are Ground reflections Calculated	Yes	
Estimated RF Power Density	0.0775 mW/cm ²	
	Controlled Environment	Uncontrolled Environment
Maximum Permissible Exposure (MPE)	5.005 mW/cm ²	1.005 mW/cm ²
Distance to Compliance From Centre of Antenna	0.1316 feet 0.0401 metres	0.2326 feet 0.0709 metres
Does the Area of Interest Appear to be in Compliance	yes	yes

6. EUT PHOTOGRAPHIC DOCUMENTATION

PHOTO N° 1 – SYSTEM IDENTIFICATION





PRIMA
RICERCA & SVILUPPO

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