

Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 1 of 15

RADIO FREQUENCY RADIATION EXPOSURE REPORT

Mobiles /Fixed Base Station Maximum Permissible Exposure (MPE)

OF

Product Name: 802.11b/g/n RTL8191SU miniCard

Brand Name: N/A

Model Name: RTL8191SU

Model Different: N/A

FCC ID: **TX2-RTL8191SU**

IC: 6317A-RTL8191SU

ER/2009/90039~40 **Report No.:**

Issue Date: Sep. 23, 2009

Prepared for: Realtek Semiconductor Corp.

No. 2, Innovation Road II, Hsinchu Science

Park, Hsinchu 300, Taiwan

Prepared by: SGS Taiwan Ltd.

Electronics & Communication Laboratory

No. 134, Wu Kung Rd., Wuku Industrial Zone,

Taipei County, Taiwan.

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Report No: ER/2009/90039~40

Issue Date: Sep. 23, 2009

Page: 2 of 15

VERIFICATION OF COMPLIANCE

Applicant: Realtek Semiconductor Corp.

No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300,

Taiwan

Product Name: 802.11b/g/n RTL8191SU miniCard

Brand Name: Silex

FCC ID: TX2-RTL8191SU

6317A-RTL8191SU IC:

RTL8191SU Model No.:

Model Difference: N/A

File Number: ER/2009/90039~40

Date of test: Sep. 15, 2009 ~ Sep. 23, 2009

Date of EUT Received: Sep. 15, 2009

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd., Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in FCC OET Bulletin 65 Supplement C and 47 CFR §2.1091 and RSS102.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Jason Whe	Date	Sep. 23, 2009	
Prepared By:	Jason Wu / Asst. Supervisor	Date	Sep. 23, 2009	
Approved By:	Eva Kao / Asst. Supervisor Vincent Su/Manager	Date 	Sep. 23, 2009	

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Page: 3 of 15

Report Version

Version No.	Date	Description
00	Sep. 23, 2009	Initial creation of document

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Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 4 of 15

Table of Contents

1.	GENERAL INFORMATION	5
1.1	STANDARD APPLICABLE	11
1.2	MAXIMUM PERMISSIBLE EXPOSURE (MPE) EVALUATION	12

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Report No: ER/2009/90039~40

Issue Date: Sep. 23, 2009

Page: 5 of 15

1. GENERAL INFORMATION

General:

Product Name:	802.11b/g/n RTL8191SU miniCard
Brand Name:	N/A
Model Name:	RTL8191SU
Model Difference:	N/A
Power Supply	3.3Vdc

WLAN:

Frequency Range & Channel number:	802.11 b/g: 2412 – 2462 MHz, 11 channels 802.11 n_20MHz: 2412 – 2462 MHz, 11 channels 802.11 n_40MHz: 2422 – 2452 MHz, 9 channels		
Rated Power:	802.11 b: 19.92 dBm 802.11 g: 17.81 dBm 802.11 n_20MHz: 16.79 dBm 802.11 n_40MHz: 16.86 dBm		
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM		
Transmission Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 72.2Mbps 802.11 n_40MHz: 13.5 - 300Mbps		
Antenna Designation:	Max Antenna gain: 3.95 dBi, See next page for Antenna list		
Type of Emission:	36M0M7D		

This report applies for frequency IEEE 802.11 b/g/n.



Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 6 of 15

Anter	Antenna Specification							
Item	Antenna Vendor	Model name	Antenna Type	Gain (dBi) With cable loss	Cable loss (dB)	Connector Type		
1	wistron	DQ661500301(Main) DQ661500301(Aux)	PIFA	3.95 3.9	N/A	IPEX		
2	wistron	DQ661500115(Main) DQ661500115(Aux)	PIFA	1.10 0.64	1.89 2.55	IPEX		
3	wgt	AR830WIPI01A(L) AR830WIPI02A(R)	AR830WIPI02A(R) PIFA 2.39		-1.6 -2.03	IPEX		
4	wgt	AR320WIPI01B(L) AR320WIPI02B(R)	PIFA	0.86 2.11	-1.43 -1.78	IPEX		
5	wgt	ARW62WIPI01G(L) ARW62WIP102G(R)	PIFA	2.48 1.32	-2.39 -1.76	IPEX		
6	wgt	ARUMPWIPI02+C (L) ARUMPWIPI01+D (R)	PIFA	2.41 2.07	N/A	IPEX		
7	Foxconn	WDAN-GQMA6001-DF (Main) WDAN-GQMA6001-DF (Aux)	PIFA	2.32 1.10	-1.262 -1.813	IPEX		
8	Foxconn	WDAN-GQMA6002-DF (Main) WDAN-GQMA6002-DF (Aux)	PIFA	0.74 0.78	-1.446 -2.009	IPEX		
9	Galtronics	021020168NC3587 (Main) 021020168NC3587-1 (Aux)	PIFA	-0.25 3.64	1.75 2	U.FL		
10	Galtronics	021020168NC3586 (Main) 021020168NC3586-1 (Aux)	PIFA	-0.04 3.25	1.9 1.85	U.FL		
11	HIGH-TEK	AAFQ5050001LK0 (Main) AAFQ5050001RK0 (Aux)	PIFA	2.86 1.52	2.4 1.7	IPEX		
12	Hitachi	HFT40-IV17 (Main) HMG03-IV17 (Aux)	PIFA	0.48 0.64	N/A	IPEX		
13	WNC	81.EE215.016 (Main) 81.EE215.016 (Aux)	PIFA	0.34 0.79	2.52 3.17	IPEX		
14	WNC	ASAW 001(L) ASAW 001(R)	PIFA	1.34 1.25	N/A	IPEX		
15	Wgt	B1425050G00003 (Main) B1425050G00002 (Aux)	PIFA	0.03 0.63	-2.01 -2.05	IPEX		
16	tyco	ASAT 001 (L) ASAT 001 (R)	PIFA	0.61 0.16	N/A	IPEX		

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Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 7 of 15

		T	1			
17	ACON	ASAA 001 (L)	PIFA	1.56	N/A	IPEX
1,	710011	ASAA 001 (R)	11111	1.36	1 1/1 1	11 221
18	Hitachi	HFT40 (Main)	PIFA	0.58	1.42	IPEX
10	Tittaciii	HFT40 (Aux)	IIIA	1.12	2.12	пцх
19	Hitachi	HFT60 (Main)	PIFA	-1.65	1.48	IPEX
19	ппасш	HFT60 (Aux)	ГІГА	-0.92	2.18	IFEA
20	III:40 obi	HTL008 (Main)	DIEA	2.24	1.72	IPEX
20	Hitachi	HTL008 (Aux)	PIFA	1.84	2.20	IPEX
21	III:40 ob:	HTL017 (Main)	DIEV	2.82	1.94	IDEV
21	Hitachi	HTL017 (Aux)	PIFA	2.94	2.39	IPEX
22	WAIC	WNC001(Main)	DIEA	-1.10	1.17	IDEX
22	WNC	WNC001 (Aux)	PIFA	1.76	1.17	IPEX
22	Wale	WNC002(Main)	DIE	1.18	2.28	IDEM
23	WNC	WNC002(Aux)	PIFA	1.75	2.12	IPEX
2.4		TIAN01 (Main)	PIFA	0.57	-1.463	IDEII
24	Tyco	TIAN01 (Aux)		0.87	-1.865	IPEX
	_	TBN001 (Main)		3.45	1.45	IPEX
25	Tyco	TBN001 (Aux)	PIFA	2.41	2.13	
		TBN003 (Main)		-1.11	1.84	
26	Tyco	TBN003 (Aux)	PIFA	-1.11	2.16	IPEX
		2023935-1 (Main)				U.FL
27	Tyco	2023936-1 (Aux)	PIFA	2.95	1.88	
	,	2023936-1(MIMO)		1.90	2.03	
		2023937-1 (Main)				
28	Tyco	2023937-1 (Aux)	PIFA	1.60	1.85	U.FL
		2023934-1(MIMO)		0.05	2.00	0.12
		2023938-1 (Main)				
29	Тусо	2023938-1 (Aux)	PIFA	1.41	2.17	U.FL
	2) 1 yco	2023939-1(MIMO)		1.24	2.40	
		2023954-1 (Main)				
30	Tyco	2023954-1 (Aux)	PIFA	1.68	2.14	U.FL
30 1 y	1,500	2023955-1(MIMO)	FIFA	0.92	3.02	J.I L
		HBY07 (TX1)		2.19	0.95	
31	Hitachi	HBY07 (TX1)	PIFA	-0.33	0.95	IPEX
	110 107 (1714)		-0.55	0.73		



Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 8 of 15

		HBY051 (TX1)		2.91	0.95		
32	Hitachi	HBY051 (TX2)	PIFA	2.82	0.95	IPEX	
		, ,					
33	Hitachi	HBY052 (TX1)	PIFA	0.27	0.95	IPEX	
		HBY052 (TX2)		0.02	0.95		
34	Hitachi	HBY061 (TX1)	PIFA	1.30	0.95	IPEX	
		HBY061 (TX2)		2.42	0.95		
35	Hitachi	HBY062 (TX1)	PIFA	-1.04	0.95	IPEX	
33	Tittaciii	HBY062 (TX2)	IIIA	-1.19	0.95	II LA	
36	Hitaahi	HFT65 (TX1)	DIEA	-1.74	0.95	IDEV	
30	Hitachi	HFT65 (TX2)	PIFA	1.16	0.95	IPEX	
	077437774	AN-090-B (Tx1)	·	-1.4			
37	QUANTA	AN-090-A (Tx2)	PIFA	-2.2	-1	IPEX	
		HCT01 (Main)		0.87			
38	Hitachi	HCT01 (Aux)	PIFA	1.94	0.89	IPEX	
		WDAN-TQ (Tx1)		-0.43	2.5	IPEX	
39	FOXCONN	WDAN-TQ (Tx2)	PIFA	-0.7			
		T BN005	PIFA	0.7	N/A	IPEX	
40	Tyco	TBN006		-1.11			
		DQ652016100 (Tx1)		1.31	0.37		
41	Whayu	` ′	PIFA			FAF	
		DQ652016100 (Tx2)		0.09	0.92		
42	WNC	WNC004 (Main)	PIFA	2.40	1.53	IPEX	
		WNC004 (Aux)		1.50	1.92		
43	QUANTA	ON1 (Tx1)	PIFA	1.8	N/A	IPEX	
	QOTHVITI	ON1 (Tx2)	11171	0.1	1 1/2 1	11 221	
44	HON HAI	WDAN-DQZM1001-DF (Tx1)	PIFA	1.67	0.827	IPEX	
7-7	HONTIAL	WDAN-DQZM1001-DF (Tx2)	IIIA	-0.10	0.849	пцх	
15	ACON	AMM8P-700006(Tx1)	DIEA	1.29	0.97	IDEV	
45	ACON	AMM8P-700006 (Tx2)	PIFA	-0.8	0.9	IPEX	
1.5		CAN4313880012501B (Tx1)	DIE :	1.12	1.05	IDE:-	
46	Yageo	CAN4343880012501B (Tx2)	PIFA	0.7	1.08	IPEX	
47	Wanshih	1415-00JK000	PIFA	3.34	N/A	IPEX	
48	Wanshih	1415-00JL000	PIFA	2.05	N/A	IPEX	
	,, 411511111	WNC001 (Main)	11111	0.31	1.98		
49	49 WNC	WNC001 (Main) WNC001(Aux)	PIFA	-0.75		IPEX	
	WINCOUI(Aux)		-0.73	2.01			

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Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 9 of 15

SO				,		,		
WNC003 (Aux)	50	WNC	WNC003 (Main)	DIEV	0.52	1.49	IDEX	
S1	30	WINC	WNC003 (Aux)	IIIA	1.07	2.13	II LA	
DQ652015800 (1x2)	51	Who Vu	DQ652015800 (Tx1)	DIEA	1.13	1.68	IDEV	
S2	31	wna i u	DQ652015800 (Tx2)	РІГА	0.74	2.29	IPEA	
Approach PE-AB0430 (Aux) 0.94 0.94 53 ARISTOTLE RFA-02-P23-70-300-L PIFA -5 N/A IPEX 54 ARISTOTLE RFA-02-P24-70-305-L PIFA -5 N/A IPEX 55 ARISTOTLE RFA-02-P24-70-305-L PIFA -5 N/A IPEX 56 ARISTOTLE RFA-02-P24-70B-340-R PIFA -5 N/A IPEX 56 ARISTOTLE RFA-02-P24-70B-340-R PIFA -5 N/A IPEX 1.86 IPEX 57 WNC 81.EEO15.001 (Main) WDAN-M10S1001-DF(Main) WDAN-M10S1001-DF(Main) WDAN-M10S1002-DF(Aux) PIFA 0.13 -1.871 IPEX 1.52 1.86 IPEX 1.72 2.03 IPEX 1.72 2.03 IPEX 1.72 2.03 IPEX 1.72 2.03 IPEX 1.74 1.75 IPEX 1.	52	Smart	PE-AB0370 (Main)	DIEA	2.95	NT/A	IDEX	
54 ARISTOTLE RFA-02-P23-70B-350-R PIFA -5 N/A IPEX 55 ARISTOTLE RFA-02-P24-70-305-L PIFA -5 N/A IPEX 56 ARISTOTLE RFA-02-P24-70B-340-R PIFA -5 N/A IPEX 57 WNC 81.EEO15.001 (Main) 81.EEO15.002 (Aux) PIFA 1.52 1.86 1.86 IPEX 58 HON HAI WDAN-MIOS1001-DF(Main) WDAN-MIOS1002-DF(Aux) PIFA -0.13 -0.13 -1.871 -0.13 PEX 59 Amphenol KAE SS-03-03-099 (Main) WAE PIFA 0.77 -0.90 1.76 IPEX 60 WNC 81.EHD15.003 (Main) 81.EHD15.003 (Main) 81.EHD15.002 (Aux) PIFA 0.94 -0.77 1.79 IPEX 61 Foxconn WDAN-MISN1001-DF(Main) WDAN-MISN1001-DF(Aux) PIFA 0.53 -0.53 -1.727 IPEX 62 HON HAI WDAN-MIBN1001-DF(Main) WDAN-MIBN1001-DF(Aux) PIFA 0.95 -0.49 1.82 IPEX 64 HON HAI WDAN-MIWC1001-DF(Main) WDAN-MIBN1001-DF(Aux) PIFA -0.28 -0.14 -1.	32	Approach	PE-AB0430 (Aux)	PIFA	0.94	IN/A	IPEX	
S5 ARISTOTLE RFA-02-P24-70-305-L PIFA -5 N/A IPEX 56 ARISTOTLE RFA-02-P24-70B-340-R PIFA -5 N/A IPEX 1.52 1.86 IPEX 1.72 2.03 IPEX 1.86 IPEX 1.86 IPEX 1.86 IPEX 1.87	53	ARISTOTLE	RFA-02-P23-70-300-L	PIFA	-5	N/A	IPEX	
56 ARISTOTLE RFA-02-P24-70B-340-R PIFA -5 N/A IPEX 57 WNC 81.EEO15.001 (Main) 81.EEO15.002 (Aux) PIFA 1.52 1.86 1.72 2.03 1.86 IPEX 58 HON HAI WDAN-M1OS1001-DF(Main) WDAN-M1OS1002-DF(Aux) PIFA 0.13 -0.13 -0.013 -0.13 -0.013 -0.013 -0.013 -0.013 -0.013 -0.013 -0.013 -0.013 -0.013 -0.013 -0.090 -0	54	ARISTOTLE	RFA-02-P23-70B-350-R	PIFA	-5	N/A	IPEX	
ST	55	ARISTOTLE	RFA-02-P24-70-305-L	PIFA	-5	N/A	IPEX	
S7	56	ARISTOTLE	RFA-02-P24-70B-340-R	PIFA	-5	N/A	IPEX	
SI.EEO15.002 (Aux)	-7	WALC	81.EEO15.001 (Main)	DIE	1.52	1.86	IDEM	
58 HON HAI WDAN-MIOS1002-DF(Aux) PIFA -0.13 -2.072 IPEX 59 Amphenol KAE SS-03-03-099 (Main) PIFA 0.77 1.59 IPEX 60 WNC 81.EHD15.003 (Main) 81.EHD15.002 (Aux) PIFA 0.94 1.39 IPEX 61 Foxconn WDAN-MISN1002-DF(Main) WDAN-MISN1002-DF(Main) WDAN-MISN1001-DF(Aux) PIFA 0.93 -1.357 IPEX 62 HON HAI WDAN-MISN1001-DF(Aux) PIFA 0.56 -0.054 U.FL 63 WNC 81.EHD15.004 (Main) PIFA 0.95 1.07 IPEX 64 HON HAI WDAN-MIWC1001-DF(Main) WDAN-MIBN1001-DF(Main) WDAN-MIBN1001-DF(Aux) PIFA -0.28 -1.407 IPEX 65 WNC 81.EHD15.004 (Main) PIFA -0.09 1.60 IPEX 66 HON HAI WDAN-MIWC1001-DF(Main) WDAN-MIWC1001-DF(Main) WDAN-MIMM1001-DF(Aux) PIFA -0.28 -1.407 IPEX 67 WNC 81.EHD15.G09 (Tx1) NDAN-MIPB1001-DF (Tx1) PIFA -1.21 1.39 IPEX <	5/	WNC	81.EEO15.002 (Aux)	PIFA	1.72	2.03	IPEX	
WDAN-M10S1002-DF(Aux)	50	HOMEL	WDAN-M1OS1001-DF(Main)	DIE	0.13	-1.871	IDEM	
S9 KAE SS-03-03-100 (Aux) PIFA -0.90 1.76 IPEX	58	HON HAI	HAI WDAN-M1OS1002-DF(Aux) PIF		-0.13	-2.072	IPEX	
KAE SS-03-03-100 (Aux) -0.90 1.76	50	Amphenol	SS-03-03-099 (Main)	DIE	0.77	1.59	IPEX	
60 WNC 81.EHD15.002 (Aux) PIFA -0.77 1.71 IPEX 61 Foxconn WDAN-M1SN1002-DF(Main) WDAN-M1SN1001-DF(Aux) PIFA 0.93 -1.357 IPEX 62 HON HAI WDAN-M1NY1001-DF PIFA 0.56 -0.054 U.FL 63 WNC 81.EHD15.004 (Main) 81.EHD15.006 (Aux) PIFA 0.95 1.07 IPEX 64 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1BN1001-DF(Aux) PIFA -0.28 -1.407 IPEX 65 WNC 81.EHD15.004 (Main) 81.EHD15.007 (Aux) PIFA 0.95 1.07 IPEX 66 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1WC1001-DF(Main) WDAN-M1MM1001-DF(Aux) PIFA -0.28 -1.407 IPEX 67 WNC 81.EHD15.G09 (Tx1) 81.EHD15.G00 (Tx2) PIFA 0.31 1.08 IPEX 68 HON HAI WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF(Tx2) PIFA -1.40 1.36 IPEX	39	KAE	SS-03-03-100 (Aux)	PIFA	-0.90	1.76		
S1.EHD15.002 (Aux)	60		81.EHD15.003 (Main)	PIFA	0.94	1.39	IPEX	
61 Foxconn WDAN-M1SN1001-DF(Aux) PIFA -0.53 -1.727 IPEX 62 HON HAI WDAN-M1NY1001-DF PIFA 0.56 -0.054 U.FL 63 WNC 81.EHD15.004 (Main) 81.EHD15.006 (Aux) PIFA 0.95 1.07 IPEX 64 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1BN1001-DF(Aux) PIFA -0.28 -1.407 IPEX 65 WNC 81.EHD15.004 (Main) 81.EHD15.007 (Aux) PIFA 0.95 1.07 IPEX 66 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1MM1001-DF(Aux) PIFA -0.28 -1.407 IPEX 67 WNC 81.EHD15.G09 (Tx1) 81.EHD15.G10 (Tx2) PIFA 0.31 1.08 IPEX 68 HON HAI WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF(Tx2) PIFA 0.54 0.99 IPEX 81 EHD15.004 (Main) PIFA -1.40 1.36 IPEX	60	WNC	81.EHD15.002 (Aux)		-0.77	1.71		
WDAN-M1SN1001-DF(Aux) -0.53 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -	61	Б	WDAN-M1SN1002-DF(Main)	DIEA	0.93	-1.357	IDEIL	
63 WNC 81.EHD15.004 (Main) PIFA 0.95 1.07 IPEX 64 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1BN1001-DF(Aux) PIFA 0.14 2.3 IPEX 65 WNC 81.EHD15.004 (Main) PIFA 0.95 1.07 IPEX 66 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1WC1001-DF(Main) WDAN-M1WC1001-DF(Main) WDAN-M1WC1001-DF(Main) WDAN-M1WC1001-DF(Aux) PIFA 0.28 -1.407 IPEX 67 WNC 81.EHD15.G09 (Tx1) PIFA 0.31 1.08 IPEX 68 HON HAI WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF (Tx2) PIFA 0.54 0.99 IPEX 68 HON HAI WDAN-M1PB1002-DF (Tx2) PIFA 0.54 0.99 IPEX 69 HON HAI WDAN-M1PB1002-DF (Tx2) PIFA 0.54 0.99 IPEX	01	Foxconn	WDAN-M1SN1001-DF(Aux)	PIFA	-0.53	-1.727	IPEX	
63 WNC 81.EHD15.006 (Aux) PIFA -0.49 1.82 IPEX 64 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1BN1001-DF(Aux) PIFA -0.28 -1.407 IPEX 65 WNC 81.EHD15.004 (Main) 81.EHD15.007 (Aux) PIFA -0.09 1.60 IPEX 66 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1MM1001-DF(Aux) PIFA -0.28 -1.407 IPEX 67 WNC 81.EHD15.G09 (Tx1) 81.EHD15.G10 (Tx2) PIFA 0.31 1.08 IPEX 68 HON HAI WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF (Tx2) PIFA -1.21 1.39 IPEX 81.EHD15.004 (Main) PIFA 0.54 0.99 IPEX 81.EHD15.004 (Main) PIFA 0.99 IPEX 81.EHD15.004 (Main) PIFA 0.99 IPEX 81.EHD15.006 (Main)	62	HON HAI	WDAN-M1NY1001-DF	PIFA	0.56	-0.054	U.FL	
SI.EHD15.006 (Aux)	(2	WALC	81.EHD15.004 (Main)		0.95	1.07	IDEII	
HON HAI WDAN-M1BN1001-DF(Aux) PIFA -0.14 2.3 IPEX	0.3	WNC	81.EHD15.006 (Aux)	PIFA	-0.49	1.82	IPEX	
WDAN-M1BN1001-DF(Aux) -0.14 2.3	C 1	HOMEL	WDAN-M1WC1001-DF(Main)	DIE	-0.28	-1.407	IDEM	
65 WNC 81.EHD15.007 (Aux) PIFA -0.09 1.60 IPEX 66 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1MM1001-DF(Aux) PIFA -1.24 1.99 IPEX 67 WNC 81.EHD15.G09 (Tx1) PIFA 0.31 1.08 IPEX 68 HON HAI WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF (Tx1) PIFA 0.54 0.99 IPEX 81.EHD15.004 (Main) PIFA 0.54 1.36 IPEX	04	HON HAI	WDAN-M1BN1001-DF(Aux)	PIFA	-0.14	2.3	IPEX	
81.EHD15.007 (Aux) 66 HON HAI WDAN-M1WC1001-DF(Main) WDAN-M1MM1001-DF(Aux) 67 WNC 81.EHD15.G09 (Tx1) 81.EHD15.G10 (Tx2) WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF(Tx2) 81.EHD15.004 (Main) PIFA -0.28 -1.407 -1.24 1.99 IPEX 0.31 -1.21 1.39 IPEX 1.40 1.40 1.50 1.60	65	WNG	81.EHD15.004 (Main)	DICA	0.95	1.07	IDEX	
66 HON HAI WDAN-M1MM1001-DF(Aux) PIFA -1.24 1.99 IPEX 67 WNC 81.EHD15.G09 (Tx1) PIFA 0.31 1.08 IPEX 68 HON HAI WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF(Tx2) PIFA 0.54 0.99 IPEX 81.EHD15.004 (Main) 0.95 1.07	03	WNC	81.EHD15.007 (Aux)	PIFA	-0.09	1.60	IPEX	
WDAN-M1MM1001-DF(Aux) -1.24 1.99 81.EHD15.G09 (Tx1) PIFA 0.31 1.08 IPEX 81.EHD15.G10 (Tx2) PIFA -1.21 1.39 WDAN-M1PB1001-DF (Tx1) VDAN-M1PB1002-DF(Tx2) PIFA 0.54 0.99 IPEX 81.EHD15.004 (Main) 0.95 1.07	66	HOMHAI	WDAN-M1WC1001-DF(Main)	DIEA	-0.28	-1.407	IDEX	
67 WNC 81.EHD15.G10 (Tx2) PIFA -1.21 1.39 IPEX 68 HON HAI WDAN-M1PB1001-DF (Tx1) WDAN-M1PB1002-DF(Tx2) PIFA 0.54 0.99 IPEX 81.EHD15.004 (Main) 0.95 1.07	00	HON HAI	WDAN-M1MM1001-DF(Aux)	PIFA	-1.24	1.99	IPEX	
81.EHD15.G10 (Tx2) -1.21 1.39	67	WALC	81.EHD15.G09 (Tx1)	DICA	0.31	1.08	IDEX	
68 HON HAI WDAN-M1PB1002-DF(Tx2) PIFA -1.40 1.36 IPEX 81 FHD15 004 (Main) 0.95 1.07	0/	WNC	81.EHD15.G10 (Tx2)	PIFA	-1.21	1.39	IPEX	
WDAN-M1PB1002-DF(Tx2) -1.40 1.36	60	HONIHAI	WDAN-M1PB1001-DF (Tx1)	DIEA	0.54	0.99	IDEM	
69 WNC 81.EHD15.004 (Main) DIEA 0.95 1.07 IDEY	08	HUN HAI	WDAN-M1PB1002-DF(Tx2)	PIFA	-1.40	1.36	IPEX	
	60	WNC	81.EHD15.004 (Main)	DIEA	0.95	1.07	IDEM	
81.EHD15.005 (Aux) -1.51 1.61	09	WNC	81.EHD15.005 (Aux)	PIFA	-1.51	1.61	IPEX	

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Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 10 of 15

		T			1		
70	HON HAI	WDAN-M1WC1002-DF (Main)	PIFA	0.18	-0.866	IPEX	
70	110111111	MDAN-M1WC1001-DF(Aux)	ппл	-0.28	-1.407	II LA	
71	JEM	M810L (WM1)	PIFA	-2.04	-1.46	IPEX	
/ 1	JEWI	M810L (WM2)	РІГА	0.83	-1.14		
72		M810L (WM1)	DIEA	2.1	NT/A	IDEV	
12	wgt	M810L (WM2)	PIFA	2.99	N/A	IPEX	
73	at	M980N (WM1)	DIEA	2.94	N/A	IPEX	
73	wgt	M980N (WM2)	PIFA	2.04	IN/A	IPEA	
74	FVC	TN120R-WLAN-1	PIFA	0.9	N/A	IPEX	
/4	FVC	TN120R-WLAN-2	ПГА	2.8	IN/A	IFEA	
75	FVC	W760 (WM1)	PIFA	2.87	N/A	IPEX	
13	FVC	W760 (WM2)	ПГА	2.08	IN/A	IFEA	
76	Kim Well	89G 17356Z 61 PIFA		1.04	N/A	IPEX	
77	ACON	APP6P-700261	PIFA	3.08	N/A	IPEX	
78	TYCO	TBN007 (Tx1)	PIFA	1.98	-0.97	IPEX	
76	1100	TBN007 (Tx2)		1.97	-0.97	IFEA	
79	Favortron	K05007010501 (WM-1)	PIFA	1.54	-2.71	IPEX	
1)	Tavortion	K05007010601 (WM-2)	TITA	2.68	-1.36		
80	Well Green	SKR13WMPB01+A (Tx1)	PIFA	0.73	-2.01	IDEV	
00	Well Gleen	SKR13WMPB01+A (Rx2)	TITA	-0.98	-2.01	IPEX	
81	Well Green	SK840WMPB01+B (Tx1)	PIFA	-0.16	-1.81	IPEX	
01	Well Gleen	SK840WMPB01+B (Rx2)	rii A	0.74	-1.62	IFLA	
82	Favortron	N01001146001 (WM-1)	PIFA	0.71	-2.69	IPEX	
02	Tavortion	N01001146001 (WM-2)	TITA	2.05	-2.71	IFLA	
83	Favortron	K05007009701 (WM-1)	PIFA	0.46	-2.73	IPEX	
0.5	ravortion	K05007009801 (WM-2)	III'A	-0.29	-3.87	пца	
84	wot	C4800 (WM1)	PIFA	2.6	N/A	IPEX	
04	wgt	C4800 (WM2)	гиА	3.04	1 N / A	IFEA	
85	wgt	D900F (WM1)	PIFA	2.76	N/A	IPEX	
0.5	wgı	D900F (WM2)	1117	1.13	1 1/ /1	псл	
86	wot	T890M (WM1)	PIFA	2.93	N/A	IPEX	
00	86 wgt	T890M (WM2)	1117	-0.32	1 1/ 1/1	псл	

The max antenna gain is 3.95dBi which was choosing for MPE calculation.



Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 11 of 15

Standard Applicable 1.1

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time		
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm^2)	(minute)		
Limits for General Population/Uncontrolled Exposure						
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		
1500-15000	/	/	1.0	30		

F = frequency in MHz

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^{* =} Plane-wave equipment power density



Report No: ER/2009/90039~40

Issue Date: Sep. 23, 2009

Page: 12 of 15

Maximum Permissible Exposure (MPE) Evaluation

802.11b Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	19.92	0.00	19.92	0.09817	1
2437.00	19.90	0.00	19.90	0.09772	1
2462.00	19.71	0.00	19.71	0.09354	1

MPE Prediction (802.11b)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S=PG/4 \pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	19.92	(dBm)
Maximum peak output power at antenna input terminal:	98.1747943	(mW)
Duty cycle:	100	(%)
Maximum Pav :	98.1747943	(mW)
Antenna gain (typical):	3.95	(dBi)
Maximum antenna gain:	2.483133105	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0485233	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0485 mW/cm². This is below the uncontrolled exposure limit of 1 mW/cm² at 2412MHz.

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Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 13 of 15

802.11g Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	17.73	0.00	17.73	0.05929	1
2437.00	17.80	0.00	17.80	0.06026	1
2462.00	17.81	0.00	17.81	0.06039	1

MPE Prediction (802.11g)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S=PG/4 \pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	17.81	(dBm)
Maximum peak output power at antenna input terminal:	60.39486294	(mW)
Duty cycle:	100	(%)
Maximum Pav :	60.39486294	(mW)
Antenna gain (typical):	3.95	(dBi)
Maximum antenna gain:	2.483133105	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0298504	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0299 mW/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 2462.

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Report No: ER/2009/90039~40 **Issue Date: Sep. 23, 2009**

Page: 14 of 15

802.11n_20M Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2412.00	16.71	0.00	16.71	0.04688	1
2437.00	16.37	0.00	16.37	0.04335	1
2462.00	16.79	0.00	16.79	0.04775	1

MPE Prediction (802.11n_20M)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S=PG/4 \pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	16.79	(dBm)
Maximum peak output power at antenna input terminal:	47.75292737	(mW)
Duty cycle:	100	(%)
Maximum Pav :	47.75292737	(mW)
Antenna gain (typical):	3.95	(dBi)
Maximum antenna gain:	2.483133105	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0236021	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0236 mW/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 2462.

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GS Taiwan Ltd.



Report No: ER/2009/90039~40 Issue Date: Sep. 23, 2009

Page: 15 of 15

802.11n 40M Power Table

Frequency (MHz)	Reading Power (dBm)	Cable Loss	Output Power (dBm)	Output Power (W)	Limit (W)
2422.00	16.70	0.00	16.70	0.04677	1
2437.00	16.86	0.00	16.86	0.04853	1
2452.00	16.75	0.00	16.75	0.04732	1

MPE Prediction (802.11n_40M)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S=PG/4 \pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	16.86	(dBm)
Maximum peak output power at antenna input terminal:	48.52885002	(mW)
Duty cycle:	100	(%)
Maximum Pav :	48.52885002	(mW)
Antenna gain (typical):	3.95	(dBi)
Maximum antenna gain:	2.483133105	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2437	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0239856	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0240 mW/cm2. This is below the uncontrolled exposure limit of 1 mW/cm2 at 2437.

~ End of Report ~

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