

EIRP Test Report

Equipment : 802.11 ac/a/b/g/n + Bluetooth 4.2 module
(Please refer to section 1.1.1 for more details.)

Model No. : ST60-SIPT
(Please refer to section 1.1.1 for more details.)

Brand Name : Laird Connectivity


Applicant : Laird Connectivity, Inc.

Address : W66N220 Commerce Court, Cedarburg,
Wisconsin 53012, USA

Received Date : Nov. 17, 2020

Tested Date : Nov. 20, 2020

Reviewed by:


James Fan / Assistant Manager

Approved by:


Gary Chang / Manager

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Release Record

Report No.	Version	Description	Issued Date
740701-10	Rev. 01	Initial issue	Nov. 26, 2020

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description	
Laird Connectivity	ST60-SIPT	802.11 ac/a/b/g/n + Bluetooth 4.2 module	SIPT only	For marketing purpose
	SU60-SIPT			
	ST60-2230C	802.11 ac/a/b/g/n M.2 2230 + Bluetooth 4.2 module	with carrier board	
	SU60-2230C			
★ The above models, model SU60-2230C was selected as a representative one for the final test and only its data was recorded in this report.				

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
5725-5850	a	5745-5825	149-165 [5]	2	6-54 Mbps
5725-5850	n (HT20)	5745-5825	149-165 [5]	2	MCS 0-15
5725-5850	n (HT40)	5755-5795	151-159 [2]	2	MCS 0-15
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	2	MCS 0-9
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	2	MCS 0-9
5725-5850	ac (VHT80)	5775	155 [1]	2	MCS 0-9
Note: 802.11a/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.					

1.1.3 Antenna Details

Model	Type	Connector	Gain (dBi)
LSR/001-0009	Dipole	IPEX U.FL	2
Laird NanoBlade-IP04	PCB Dipole	IPEX U.FL	4
Laird MAF95310 Mini NanoBlade Flex	PCB Dipole	IPEX U.FL	3.38
LSR/FlexPIFA 001-0016	PIFA	IPEX U.FL	3
Ethertronics WLAN_1000146	Isolated Magnetic Dipole	IPEX U.FL	3.5
Laird/MIMO FlexPIFA Antenna	PIFA	IPEX U.FL	3

1.1.4 EUT Operational Condition

Power Supply Type	3.3Vdc from host
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1.1.5 Channel List

Frequency band (MHz)		5725~5850	
802.11 a / n HT20 / ac VHT20		802.11n HT40 / ac VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
149	5745	151	5755
153	5765	159	5795
157	5785	802.11ac VHT80	
161	5805	155	5775
165	5825	---	---

1.2 Test Equipment and Calibration Data

Test Item	Equivalent Isotropically Radiated Power (e.i.r.p.)				
Test Site	Fully-anechoic chamber 1 / (05CH01-WS)				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Power Meter	Anritsu	ML2495A	1241002	Nov. 04, 2020	Nov. 03, 2021
Power Sensor	Anritsu	MA2411B	1207366	Nov. 04, 2020	Nov. 03, 2021
Note: Calibration Interval of instruments listed above is one year.					

1.3 Testing Facility

Test Laboratory	International Certification Corp.
Test Site	05CH01-WS
Address of Test Site (Kwei Shan)	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

2 EIRP Test Results

2.1 Equivalent Isotropically Radiated Power (e.i.r.p.)

2.1.1 Test Setup



2.1.2 Test Result of EIRP

Ambient Condition	25°C / 65%	Tested By	Alan Tung
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Frequency	Mode	Channel	Data Rate	PLU Setting	Conducted Avg power (dBm)			Antenna Gain (dBi)	EIRP Avg Power (dBm)	EIRP Limit (mW)	EIRP Limit (dBm)
					Chain 0	Chain 1	Total				
5745MHz	11a	Ch149	6M	5	4.85	4.88	7.88	4	11.88	25	14
5785MHz	11a	Ch157	6M	5	4.68	4.88	7.79	4	11.79	25	14
5825MHz	11a	Ch165	6M	5	4.36	4.83	7.61	4	11.61	25	14
5745MHz	HT20	Ch149	MCS0	5	5.01	5.03	8.03	4	12.03	25	14
5785MHz	HT20	Ch157	MCS0	5	4.9	5.03	7.98	4	11.98	25	14
5825MHz	HT20	Ch165	MCS0	5	4.54	5	7.79	4	11.79	25	14
5755MHz	HT40	Ch151	MCS0	5	4.97	4.88	7.94	4	11.94	25	14
5795MHz	HT40	Ch159	MCS0	5	4.78	4.87	7.84	4	11.84	25	14
5745MHz	VHT20	Ch149	MCS0	5	5.04	4.99	8.03	4	12.03	25	14
5785MHz	VHT20	Ch157	MCS0	5	4.93	5.02	7.99	4	11.99	25	14
5825MHz	VHT20	Ch165	MCS0	5	4.53	4.97	7.77	4	11.77	25	14
5755MHz	VHT40	Ch151	MCS0	5	4.95	4.88	7.93	4	11.93	25	14
5795MHz	VHT40	Ch159	MCS0	5	4.8	4.86	7.84	4	11.84	25	14
5775MHz	VHT80	Ch155	MCS0	5	5.43	5.27	8.36	4	12.36	25	14

Frequency	Mode	Channel	Data Rate	PLU Setting	Conducted Avg power (dBm)			Antenna Gain (dBi)	EIRP Avg Power (dBm)	EIRP Limit (mW)	EIRP Limit (dBm)
					Chain 0	Chain 1	Total				
5745MHz	11a	Ch149	6M	8	7.9	7.82	10.87	4	14.87	50	17
5785MHz	11a	Ch157	6M	8	7.7	7.74	10.73	4	14.73	50	17
5825MHz	11a	Ch165	6M	8	7.34	7.74	10.55	4	14.55	50	17
5745MHz	HT20	Ch149	MCS0	8	8.04	7.97	11.02	4	15.02	50	17
5785MHz	HT20	Ch157	MCS0	8	7.85	7.94	10.91	4	14.91	50	17
5825MHz	HT20	Ch165	MCS0	8	7.49	7.87	10.69	4	14.69	50	17
5755MHz	HT40	Ch151	MCS0	8	7.92	7.75	10.85	4	14.85	50	17
5795MHz	HT40	Ch159	MCS0	8	7.68	7.74	10.72	4	14.72	50	17
5745MHz	VHT20	Ch149	MCS0	8	8.07	7.93	11.01	4	15.01	50	17
5785MHz	VHT20	Ch157	MCS0	8	7.86	7.89	10.89	4	14.89	50	17
5825MHz	VHT20	Ch165	MCS0	8	7.51	7.9	10.72	4	14.72	50	17
5755MHz	VHT40	Ch151	MCS0	8	7.93	7.74	10.85	4	14.85	50	17
5795MHz	VHT40	Ch159	MCS0	8	7.7	7.76	10.74	4	14.74	50	17
5775MHz	VHT80	Ch155	MCS0	8	8.23	8.14	11.20	4	15.20	50	17

Frequency	Mode	Channel	Data Rate	PLU Setting	Conducted Avg power (dBm)			Antenna Gain (dBi)	EIRP Avg Power (dBm)	EIRP Limit (mW)	EIRP Limit (dBm)
					Chain 0	Chain 1	Total				
5745MHz	11a	Ch149	6M	11	10.88	10.75	13.83	4	17.83	100	20
5785MHz	11a	Ch157	6M	11	10.62	10.73	13.69	4	17.69	100	20
5825MHz	11a	Ch165	6M	11	10.29	10.69	13.50	4	17.50	100	20
5745MHz	HT20	Ch149	MCS0	11	11.07	10.88	13.99	4	17.99	100	20
5785MHz	HT20	Ch157	MCS0	11	10.8	10.86	13.84	4	17.84	100	20
5825MHz	HT20	Ch165	MCS0	11	10.46	10.8	13.64	4	17.64	100	20
5755MHz	HT40	Ch151	MCS0	11	10.89	10.61	13.76	4	17.76	100	20
5795MHz	HT40	Ch159	MCS0	11	10.61	10.59	13.61	4	17.61	100	20
5745MHz	VHT20	Ch149	MCS0	11	11.02	10.86	13.95	4	17.95	100	20
5785MHz	VHT20	Ch157	MCS0	11	10.78	10.83	13.82	4	17.82	100	20
5825MHz	VHT20	Ch165	MCS0	11	10.42	10.79	13.62	4	17.62	100	20
5755MHz	VHT40	Ch151	MCS0	11	10.9	10.66	13.79	4	17.79	100	20
5795MHz	VHT40	Ch159	MCS0	11	10.68	10.68	13.69	4	17.69	100	20
5775MHz	VHT80	Ch155	MCS0	11	11.15	10.97	14.07	4	18.07	100	20

Frequency	Mode	Channel	Data Rate	PLU Setting	Conducted Avg power (dBm)			Antenna Gain (dBi)	EIRP Avg Power (dBm)	EIRP Limit (mW)	EIRP Limit (dBm)
					Chain 0	Chain 1	Total				
5745MHz	11a	Ch149	6M	14	13.83	13.73	16.79	4	20.79	200	23
5785MHz	11a	Ch157	6M	14	13.58	13.62	16.61	4	20.61	200	23
5825MHz	11a	Ch165	6M	14	13.25	13.61	16.44	4	20.44	200	23
5745MHz	HT20	Ch149	MCS0	14	14.06	13.91	17.00	4	21.00	200	23
5785MHz	HT20	Ch157	MCS0	14	13.76	13.79	16.79	4	20.79	200	23
5825MHz	HT20	Ch165	MCS0	14	13.34	13.78	16.58	4	20.58	200	23
5755MHz	HT40	Ch151	MCS0	14	13.82	13.64	16.74	4	20.74	200	23
5795MHz	HT40	Ch159	MCS0	14	13.56	13.55	16.57	4	20.57	200	23
5745MHz	VHT20	Ch149	MCS0	14	13.95	13.87	16.92	4	20.92	200	23
5785MHz	VHT20	Ch157	MCS0	14	13.7	13.81	16.77	4	20.77	200	23
5825MHz	VHT20	Ch165	MCS0	14	13.39	13.73	16.57	4	20.57	200	23
5755MHz	VHT40	Ch151	MCS0	14	13.87	13.66	16.78	4	20.78	200	23
5795MHz	VHT40	Ch159	MCS0	14	13.58	13.61	16.61	4	20.61	200	23
5775MHz	VHT80	Ch155	MCS0	14	14.12	13.91	17.03	4	21.03	200	23

Frequency	Mode	Channel	Data Rate	PLU Setting	Conducted Avg power (dBm)			Antenna Gain (dBi)	EIRP Avg Power (dBm)	EIRP Limit (mW)	EIRP Limit (dBm)
					Chain 0	Chain 1	Total				
5745MHz	11a	Ch149	6M	15	14.78	14.66	17.73	4	21.73	250	24
5785MHz	11a	Ch157	6M	15	14.48	14.6	17.55	4	21.55	250	24
5825MHz	11a	Ch165	6M	15	14.22	14.55	17.40	4	21.40	250	24
5745MHz	HT20	Ch149	MCS0	15	14.93	14.81	17.88	4	21.88	250	24
5785MHz	HT20	Ch157	MCS0	15	14.71	14.79	17.76	4	21.76	250	24
5825MHz	HT20	Ch165	MCS0	15	14.38	14.79	17.60	4	21.60	250	24
5755MHz	HT40	Ch151	MCS0	15	14.79	14.63	17.72	4	21.72	250	24
5795MHz	HT40	Ch159	MCS0	15	14.62	14.56	17.60	4	21.60	250	24
5745MHz	VHT20	Ch149	MCS0	15	14.96	14.83	17.91	4	21.91	250	24
5785MHz	VHT20	Ch157	MCS0	15	14.74	14.75	17.76	4	21.76	250	24
5825MHz	VHT20	Ch165	MCS0	15	14.39	14.76	17.59	4	21.59	250	24
5755MHz	VHT40	Ch151	MCS0	15	14.84	14.65	17.76	4	21.76	250	24
5795MHz	VHT40	Ch159	MCS0	15	14.59	14.62	17.62	4	21.62	250	24
5775MHz	VHT80	Ch155	MCS0	15	15.11	14.96	18.05	4	22.05	250	24

Frequency	Mode	Channel	Data Rate	PLU Setting	Conducted Avg power (dBm)			Antenna Gain (dBi)	EIRP Avg Power (dBm)	EIRP Limit (mW)	EIRP Limit (dBm)
					Chain 0	Chain 1	Total				
5745MHz	11a	Ch149	6M	18	17.63	17.49	20.57	4	24.57	500	27
5785MHz	11a	Ch157	6M	18	17.3	17.46	20.39	4	24.39	500	27
5825MHz	11a	Ch165	6M	18	17.2	17.43	20.33	4	24.33	500	27
5745MHz	HT20	Ch149	MCS0	18	17.8	17.73	20.78	4	24.78	500	27
5785MHz	HT20	Ch157	MCS0	18	17.58	17.65	20.63	4	24.63	500	27
5825MHz	HT20	Ch165	MCS0	18	17.41	17.68	20.56	4	24.56	500	27
5755MHz	HT40	Ch151	MCS0	18	17.71	17.5	20.62	4	24.62	500	27
5795MHz	HT40	Ch159	MCS0	18	17.44	17.44	20.45	4	24.45	500	27
5745MHz	VHT20	Ch149	MCS0	18	17.79	17.68	20.75	4	24.75	500	27
5785MHz	VHT20	Ch157	MCS0	18	17.59	17.65	20.63	4	24.63	500	27
5825MHz	VHT20	Ch165	MCS0	18	17.39	17.65	20.53	4	24.53	500	27
5755MHz	VHT40	Ch151	MCS0	18	17.75	17.52	20.65	4	24.65	500	27
5795MHz	VHT40	Ch159	MCS0	18	17.52	17.47	20.51	4	24.51	500	27
5775MHz	VHT80	Ch155	MCS0	18	17.98	17.72	20.86	4	24.86	500	27

3 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

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Kwei Shan

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Kwei Shan Site II

Tel: 886-3-271-8640

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If you have any suggestion, please feel free to contact us as below information

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