A Test Lab Techno Corp.

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MPE Report

Test Report No.	：	1502FS14-01
Applicant	：	ONYX Healthcare Inc.
Manufacturer	：	ONYX Healthcare Inc.
Product Type	：	Medical Station
Trade Name	：	ONYX Healthcare
Model Number	：	ONYX-1521DTy-xxxxxxx (Where “y” T or blank, “x” in 0~9,A~Z or blank)
Date of Received	：	Dec. 30, 2014
Test Period	：	Jan. 21 ~ Jan. 24, 2015
Date of Issued	：	Apr. 29, 2015
Test Specification	：	47 CFR § 2.1091
		47 CFR §1.1310
		ANSI / IEEE Std.C95.1-1992
Location of Test Lab.	：	Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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4. This document may be altered or revised by A Test Lab Techno. Corp. personnel only, and shall be noted in the revision section of the document.

Approved By ： Bill Hu (Bill Hu)　　Tested By ： Sky Chou (Sky Chou)

Contents

1. Description of Equipment under Test (EUT)

Applicant	ONYX Healthcare Inc.			
Applicant Address	2F,No.135,Lane235,Pao chiao Rd., HSIN-Tien City, Taipei, Taiwan 231			
Manufacturer	ONYX Healthcare Inc.			
Manufacturer Address	2F,No.135,Lane235,Pao chiao Rd., HSIN-Tien City, Taipei, Taiwan 231			
Product Type	Medical Station			
Trade Name	ONYX Healthcare			
Model Number	ONYX-1521DTy-xxxxxxx (Where “y” T or blank, “x” in 0~9,A~Z or blank)			
FCC ID	RZ51521DTT-C1			
Frequency Range	IEEE 802.11b / 802.11g / 802.11n 2.4GHz (20MHz): 2412 ~ 2462 MHz IEEE 802.11n 2.4GHz (40MHz): 2422 ~ 2452 MHz IEEE 802.11a / 802.11n 5GHz (20MHz): 5180 ~ 5825 MHz IEEE 802.11n 5GHz (40MHz): 5190 ~ 5795 MHz Bluetooth v3.0, Bluetooth v4.0 LE: 2402 ~ 2480 MHz			
Transmit Power (conducted power)	IEEE 802.11b: 0.061 W / 17.83 dBm IEEE 802.11g: 0.028 W / 14.49 dBm IEEE 802.11n 2.4GHz (20MHz): 0.025 W / 13.91 dBm IEEE 802.11n 2.4GHz (40MHz): 0.010 W / 10.18 dBm IEEE 802.11a: 0.039 W / 15.88 dBm IEEE 802.11n 5GHz (20MHz): 0.040 W / 16.03 dBm IEEE 802.11n 5GHz (40MHz): 0.010 W / 10.21 dBm Bluetooth v3.0: 0.00143 W / 1.55 dBm Bluetooth v4.0 LE: 0.00138 W / 1.40 dBm			
Antenna Specification	Type	Band	Max Gain (dBi)	
			ANT-0	ANT-1
	Internal Antenna	IEEE 802.11b, IEEE 802.11g IEEE 802.11n 2.4GHz 20MHz/40MHz	1.02	2.05
		IEEE 802.11a IEEE 802.11n 5GHz 20MHz / 40MHz	3.28	3.81
		Bluetooth v3.0/ Bluetooth v4.0 LE	1.02	---
RF Evaluation	0.02 W/m^2			

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 & 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties

2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR §1.1310 titled “Radiofrequency radiation exposure limits”, generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as “a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons. ” This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: “IMPORTANT: To meet the FCC’s RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna”. Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a “mobile device” as defined in section § 2.1091 paragraph (b).

Exposure evaluation
$$S = \frac{PG}{4\pi R^2}$$ Where S: power density P: power input to the 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.

3. RF Output Power

Band	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11b	1M	1	2412.0	15.00	14.64	17.83
		6	2437.0	14.93	14.38	17.67
		11	2462.0	14.54	14.05	17.31
	2M	6	2437.0	14.76	14.31	17.55
	5.5M	6	2437.0	14.71	14.26	17.50
	11M	6	2437.0	14.69	14.15	17.44
IEEE 802.11g	6M	1	2412.0	11.64	11.32	14.49
		6	2437.0	11.33	10.48	13.94
		11	2462.0	10.76	10.02	13.42
	9M	6	2437.0	10.95	10.10	13.56
	12M	6	2437.0	11.13	10.28	13.74
	18M	6	2437.0	11.02	10.17	13.63
	24M	6	2437.0	10.83	9.98	13.44
	36M	6	2437.0	11.15	10.30	13.76
	48M	6	2437.0	11.00	10.15	13.61
	54M	6	2437.0	11.09	10.24	13.70
IEEE 802.11n 2.4GHz (20MHz)	13M	1	2412.0	11.28	10.48	13.91
		6	2437.0	11.00	10.28	13.67
		11	2462.0	10.63	9.70	13.20
	26M	6	2437.0	10.67	9.75	13.24
	39M	6	2437.0	10.58	9.66	13.15
	52M	6	2437.0	10.44	9.52	13.01
	78M	6	2437.0	10.43	9.51	13.00
	104M	6	2437.0	10.54	9.62	13.11
	117M	6	2437.0	10.72	9.80	13.29
	130M	6	2437.0	10.69	9.77	13.26
IEEE 802.11n 2.4GHz (40MHz)	27M	3	2422.0	7.50	6.82	10.18
		6	2437.0	7.34	6.39	9.90
		9	2452.0	6.48	5.97	9.24
	54M	6	2437.0	6.67	5.62	9.19
	81M	6	2437.0	6.82	5.77	9.34
	108M	6	2437.0	6.89	5.84	9.41
	162M	6	2437.0	6.77	5.72	9.29
	216M	6	2437.0	6.84	5.79	9.36
	243M	6	2437.0	6.71	5.66	9.23
	270M	6	2437.0	6.75	5.70	9.27

Band	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11a	6M	36	5180.0	11.23	11.12	14.19
		40	5200.0	11.18	11.19	14.20
		44	5220.0	11.52	11.52	14.53
		48	5240.0	11.40	11.42	14.42
		52	5260.0	11.51	11.46	14.50
		56	5280.0	11.90	11.79	14.86
		60	5300.0	11.76	11.78	14.78
		64	5320.0	11.61	11.56	14.60
		100	5500.0	12.64	12.67	15.67
		104	5520.0	12.88	12.86	15.88
		108	5540.0	12.35	12.31	15.34
		112	5560.0	12.00	11.88	14.95
		116	5580.0	11.63	11.49	14.57
		120	5600.0	11.46	11.38	14.43
		124	5620.0	11.40	11.27	14.35
		128	5640.0	11.28	11.29	14.30
		132	5660.0	11.79	11.67	14.74
		136	5680.0	11.89	11.89	14.90
		140	5700.0	12.05	12.05	15.06
		149	5745.0	11.90	11.90	14.91
		153	5765.0	11.74	11.70	14.73
		157	5785.0	12.44	12.33	15.40
		161	5805.0	12.60	12.53	15.58
		165	5825.0	12.71	12.61	15.67

Band	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11a	54M	36	5180.0	11.10	10.99	14.06
		40	5200.0	11.02	11.03	14.04
		44	5220.0	11.39	11.39	14.40
		48	5240.0	11.27	11.29	14.29
		52	5260.0	11.38	11.33	14.37
		56	5280.0	11.73	11.62	14.69
		60	5300.0	11.62	11.64	14.64
		64	5320.0	11.46	11.41	14.45
		100	5500.0	12.46	12.49	15.49
		104	5520.0	12.76	12.74	15.76
		108	5540.0	12.21	12.17	15.20
		112	5560.0	11.83	11.71	14.78
		116	5580.0	11.45	11.31	14.39
		120	5600.0	11.33	11.25	14.30
		124	5620.0	11.25	11.12	14.20
		128	5640.0	11.12	11.13	14.14
		132	5660.0	11.68	11.56	14.63
		136	5680.0	11.77	11.77	14.78
		140	5700.0	11.93	11.93	14.94
		149	5745.0	11.76	11.76	14.77
		153	5765.0	11.59	11.55	14.58
		157	5785.0	12.27	12.16	15.23
		161	5805.0	12.42	12.35	15.40
		165	5825.0	12.60	12.50	15.56

Band	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11n 5GHz (20MHz)	13M	36	5180.0	11.46	11.40	14.44
		40	5200.0	11.66	11.57	14.63
		44	5220.0	11.24	11.21	14.24
		48	5240.0	11.40	11.29	14.36
		52	5260.0	11.77	11.76	14.78
		56	5280.0	11.77	11.77	14.78
		60	5300.0	11.27	11.22	14.26
		64	5320.0	11.71	11.52	14.63
		100	5500.0	13.08	12.43	15.78
		104	5520.0	13.10	12.93	16.03
		108	5540.0	13.04	12.42	15.75
		112	5560.0	11.71	11.17	14.46
		116	5580.0	12.03	11.97	15.01
		120	5600.0	12.06	11.97	15.03
		124	5620.0	12.11	12.08	15.11
		128	5640.0	12.39	12.28	15.35
		132	5660.0	12.58	12.57	15.59
		136	5680.0	12.43	12.43	15.44
		140	5700.0	12.41	12.36	15.40
		149	5745.0	11.74	11.55	14.66
		153	5765.0	12.85	12.70	15.79
		157	5785.0	12.93	13.06	16.01
		161	5805.0	12.75	13.00	15.89
		165	5825.0	11.56	11.52	14.55

Band	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11n 5GHz (20MHz)	130M	36	5180.0	11.27	11.21	14.25
		40	5200.0	11.51	11.42	14.48
		44	5220.0	11.14	11.11	14.14
		48	5240.0	11.30	11.19	14.26
		52	5260.0	11.66	11.65	14.67
		56	5280.0	11.60	11.60	14.61
		60	5300.0	11.11	11.56	14.35
		64	5320.0	11.52	11.33	14.44
		100	5500.0	12.97	12.32	15.67
		104	5520.0	12.96	12.79	15.89
		108	5540.0	12.89	12.27	15.60
		112	5560.0	11.53	11.99	14.78
		116	5580.0	11.92	11.86	14.90
		120	5600.0	11.93	11.84	14.90
		124	5620.0	11.91	11.88	14.91
		128	5640.0	12.21	12.10	15.17
		132	5660.0	12.46	12.45	15.47
		136	5680.0	12.27	12.27	15.28
		140	5700.0	12.29	12.24	15.28
		149	5745.0	11.62	11.43	14.54
		153	5765.0	12.75	12.60	15.69
		157	5785.0	12.76	12.89	15.84
		161	5805.0	12.65	12.90	15.79
		165	5825.0	11.38	11.34	14.37

Band	Date Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11n 5GHz (40MHz)	27M	38	5190.0	7.27	6.60	9.96
		46	5230.0	6.79	6.29	9.56
		54	5270.0	6.60	6.02	9.33
		62	5310.0	6.20	5.58	8.91
		102	5510.0	7.09	7.09	10.10
		110	5550.0	7.27	7.10	10.20
		118	5590.0	6.47	6.41	9.45
		126	5630.0	6.54	6.44	9.50
		134	5670.0	7.05	7.02	10.05
		151	5755.0	7.20	7.08	10.15
		159	5795.0	7.29	7.11	10.21
	270M	38	5190.0	7.16	6.49	9.85
		46	5230.0	6.65	6.15	9.42
		54	5270.0	6.45	5.87	9.18
		62	5310.0	6.01	5.39	8.72
		102	5510.0	6.94	6.94	9.95
		110	5550.0	7.11	6.94	10.04
		118	5590.0	6.28	6.22	9.26
		126	5630.0	6.35	6.25	9.31
		134	5670.0	6.91	6.88	9.91
		151	5755.0	7.07	6.95	10.02
		159	5795.0	7.10	6.92	10.02

Band	CH	Frequency (MHz)	Packet Type	Average Conducted power (dBm)
Bluetooth GFSK	0	2402	DH1	0.77
			DH3	0.81
			DH5	0.85
	39	2441	DH1	1.29
			DH3	1.32
			DH5	1.35
	78	2480	DH1	0.84
			DH3	0.87
			DH5	0.89
Bluetooth π /4-DQPSK	0	2402	DH1	1.17
			DH3	1.19
			DH5	1.23
	39	2441	DH1	1.28
			DH3	1.31
			DH5	1.34
	78	2480	DH1	0.84
			DH3	0.86
			DH5	0.91
Bluetooth 8DPSK	0	2402	DH1	1.03
			DH3	1.06
			DH5	1.10
	39	2441	DH1	1.48
			DH3	1.51
			DH5	1.55
	78	2480	DH1	1.09
			DH3	1.12
			DH5	1.14
Bluetooth v4.0 LE	0	2402	---	1.06
	19	2440	---	1.40
	39	2480	---	0.93

4. Test Result

Band	Data Rate	Frequency (MHz)	Limit (mw/cm^2)	Distance (cm) [R]	Max Tune-up power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G] (dBi)	Duty Cycle	[P] x [G] With Duty Cycle (mW) [TP]	Power Density [S] (mw/cm^2)
IEEE 802.11b	1 M	2412	1.00	20	18.00	2.05	1.60	1	100.95	0.020
		2437	1.00	20	18.00	2.05	1.60	1	100.95	0.020
		2462	1.00	20	18.00	2.05	1.60	1	100.95	0.020
IEEE 802.11g	6 M	2412	1.00	20	15.00	2.05	1.60	1	50.60	0.010
		2437	1.00	20	15.00	2.05	1.60	1	50.60	0.010
		2462	1.00	20	15.00	2.05	1.60	1	50.60	0.010
IEEE 802.11n 2.4GHz (20MHz)	13 M	2412	1.00	20	14.50	2.05	1.60	1	45.09	0.009
		2437	1.00	20	14.50	2.05	1.60	1	45.09	0.009
		2462	1.00	20	14.50	2.05	1.60	1	45.09	0.009
IEEE 802.11n 2.4GHz (40MHz)	27 M	2422	1.00	20	10.50	2.05	1.60	1	17.95	0.004
		2437	1.00	20	10.50	2.05	1.60	1	17.95	0.004
		2452	1.00	20	10.50	2.05	1.60	1	17.95	0.004
IEEE 802.11n 5GHz (20MHz)	13M	5180	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5200	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5220	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5240	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5260	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5280	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5300	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5320	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5500	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5520	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5540	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5560	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5580	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5600	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5620	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5640	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5660	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5680	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5700	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5745	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5765	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5785	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5805	1.00	20	16.20	3.81	2.40	1	100.05	0.020
		5825	1.00	20	16.20	3.81	2.40	1	100.05	0.020

Note: The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).

Band	Data Rate	Frequency (MHz)	Limit (mw/cm^2)	Distance (cm) [R]	Max Tune-up power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G] (dBi)	Duty Cycle	[P] x [G] With Duty Cycle (mW) [TP]	Power Density [S] (mw/cm^2)
Bluetooth v3.0	---	2402	1.00	20	2.00	1.02	1.26	1	2.00	0.000
		2441	1.00	20	2.00	1.02	1.26	1	2.00	0.000
		2480	1.00	20	2.00	1.02	1.26	1	2.00	0.000
Bluetooth v4.0 LE	---	2402	1.00	20	2.00	1.02	1.26	1	2.00	0.000
		2440	1.00	20	2.00	1.02	1.26	1	2.00	0.000
		2480	1.00	20	2.00	1.02	1.26	1	2.00	0.000

Note: The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).