ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C

For

iClick, Inc.

Qi200 Wireless Charger

MODEL No.: Qi50 (BY-1001)

FCC ID: 2AO5D-QI50BY1001

Trademark: N/A

REPORT NO: ES180117044E1

ISSUE DATE: February 28, 2018

Prepared for

iClick, Inc.
3931 1st Avenue South Seattle, WA 98134 USA

Prepared by
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VERIFICATION OF COMPLIANCE

Applicant:	iClick, Inc.
Manufacturer:	Beyond Sources
Product:	Qi200 Wireless Charger
Model Number:	Qi50 (BY-1001)
Trademark:	N/A
File Number:	ES180117044E
Date of Test:	January 17, 2018 to February 27, 2018

We hereby certify that:

The above equipment was tested by EMTEK(SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15C

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

Date of Test : January 17, 2018 to February 27, 2018

Prepared by : Yaping Shen

Yaping Shen/Editor

Reviewer : Joe Xia

Joe Xia/Supervisor

Approve & Authorized Signer :

Lisa Wang/Manager

Table of Contents

1 General Information

1.1 Product Description

A major technical descriptions of EUT is described as following:

Product	Qi200 Wireless Charger
Model Number	Qi50 (BY-1001)
Power Supply	Input: DC 5V by adapter or PC Output: DC 5V 1000mA Max
Operation Frequency	110-205 KHz
Modulation Technique	Induction
Antenna Type	Coil Antenna

1.2 Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended for FCC ID: 2AO5D-QI50BY1001 filing to comply with the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab.	:	Accredited by CNAS, 2016.10.24 The certificate is valid until 2022.10.28 The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005) The Certificate Registration Number is L2291. Accredited by TUV Rheinland Shenzhen 2016.5.19 The Laboratory has been assessed according to the requirements ISO/IEC 17025. Accredited by FCC, August 03, 2017 Designation Number: CN1204 Test Firm Registration Number: 882943 Accredited by Industry Canada, November 24, 2015 The Certificate Registration Number is 4480A. Accredited by A2LA, July 31, 2017 The Certificate Number is 4321.01.
Site Location	:	Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2 System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

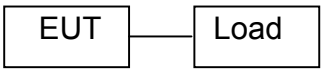


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	Adapter	BULL	GN-U2000	N/A	N/A	N/A

Note:

(1) Unless otherwise denoted as EUT in『Remark』column, device(s) used in tested system is a support equipment.

3 Summary of Test Results

FCC Rules	Description Of Test	Result
§15.207	AC Power Conducted Emission	Compliant
§15.209	Radiated Emission	Compliant

4 CONDUCTED EMISSION TEST

4.1 Applicable Standard

According to FCC Part 15.207(a)

4.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

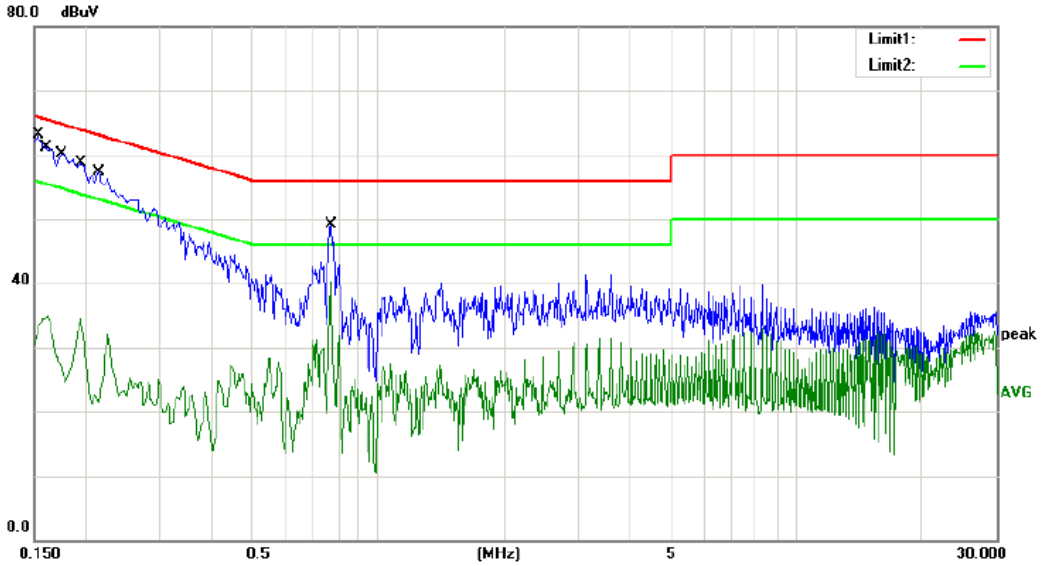
4.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.
Maximum procedure was performed on the highest emissions to ensure EUT compliance.
Repeat above procedures until all frequency measured were complete.

4.5 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	Due. CAL
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/20/2017	05/19/2018
L.I.S.N.	Schwarzbeck	NNLK8129	8129203	05/20/2017	05/19/2018
50Ω Coaxial Switch	Anritsu	MP59B	M20531	N/A	N/A

4.6 Test Result



Site site #1 Phase: *L1* Temperature: 21

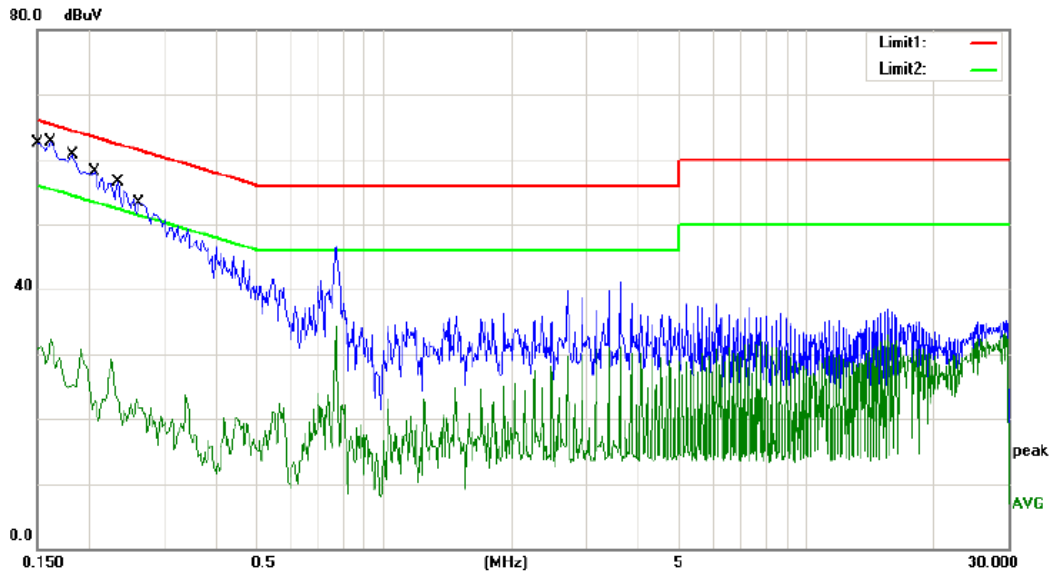
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 46 %

Mode: CHARGING

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1540	44.30	10.10	54.40	65.78	-11.38	QP	
2		0.1540	20.50	10.10	30.60	55.78	-25.18	AVG	
3		0.1620	43.70	10.10	53.80	65.36	-11.56	QP	
4		0.1620	22.90	10.10	33.00	55.36	-22.36	AVG	
5		0.1740	42.00	10.09	52.09	64.77	-12.68	QP	
6		0.1740	15.40	10.09	25.49	54.77	-29.28	AVG	
7		0.1940	40.70	10.09	50.79	63.86	-13.07	QP	
8		0.1940	22.60	10.09	32.69	53.86	-21.17	AVG	
9		0.2140	38.70	10.09	48.79	63.05	-14.26	QP	
10		0.2140	12.30	10.09	22.39	53.05	-30.66	AVG	
11	*	0.7740	36.30	10.03	46.33	56.00	-9.67	QP	
12		0.7740	26.30	10.03	36.33	46.00	-9.67	AVG	

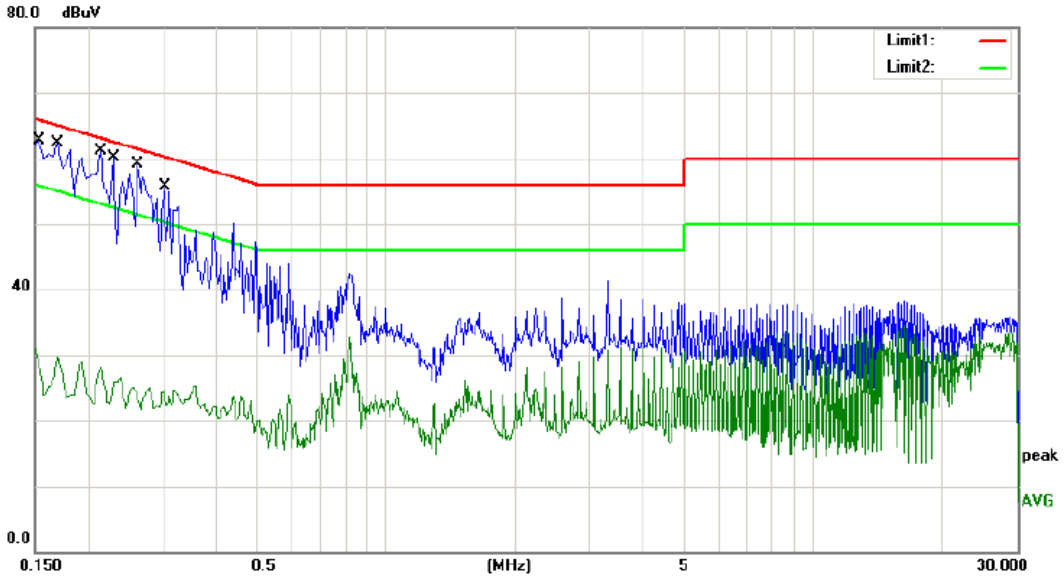
*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: YANG



Site site #1 Phase: N Temperature: 21
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 46 %
Mode: CHARGING
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	44.80	10.07	54.87	66.00	-11.13	QP	
2		0.1500	18.30	10.07	28.37	56.00	-27.63	AVG	
3		0.1620	43.70	10.08	53.78	65.36	-11.58	QP	
4		0.1620	20.60	10.08	30.68	55.36	-24.68	AVG	
5		0.1820	41.50	10.08	51.58	64.39	-12.81	QP	
6		0.1820	13.60	10.08	23.68	54.39	-30.71	AVG	
7		0.2060	39.30	10.08	49.38	63.37	-13.99	QP	
8		0.2060	10.80	10.08	20.88	53.37	-32.49	AVG	
9		0.2340	37.10	10.08	47.18	62.31	-15.13	QP	
10		0.2340	11.30	10.08	21.38	52.31	-30.93	AVG	
11		0.2620	34.80	10.09	44.89	61.37	-16.48	QP	
12		0.2620	10.50	10.09	20.59	51.37	-30.78	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: YANG



Site site #1 Phase: N Temperature: 21

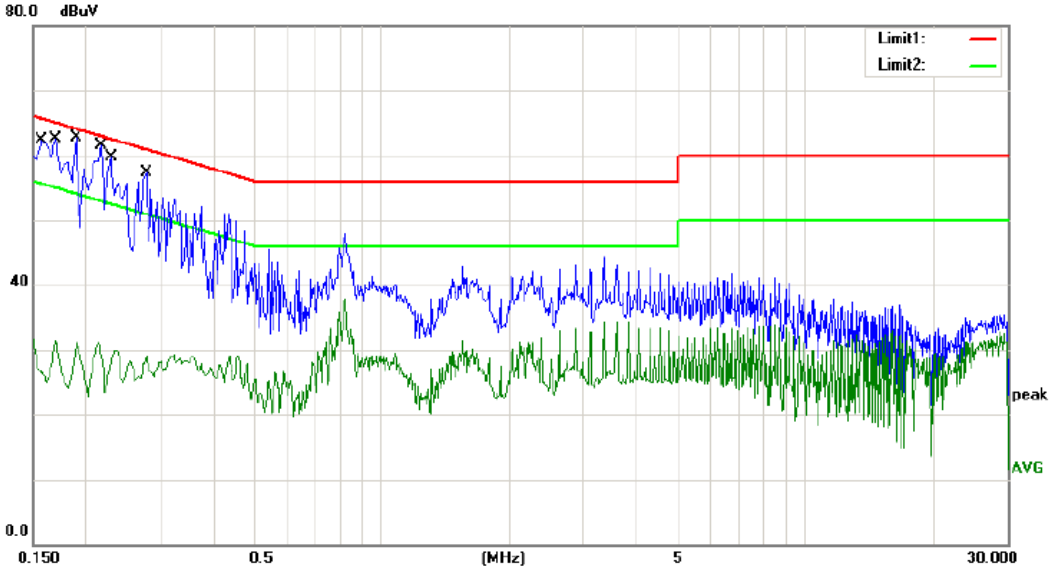
Limit: (CE)FCC PART 15 class B_QP Power: AC 240V/60Hz Humidity: 46 %

Mode: CHARGING

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1540	45.40	10.08	55.48	65.78	-10.30	QP	
2		0.1540	16.70	10.08	26.78	55.78	-29.00	AVG	
3		0.1700	41.70	10.08	51.78	64.96	-13.18	QP	
4		0.1700	18.70	10.08	28.78	54.96	-26.18	AVG	
5		0.2140	37.00	10.08	47.08	63.05	-15.97	QP	
6		0.2140	17.10	10.08	27.18	53.05	-25.87	AVG	
7		0.2300	37.40	10.08	47.48	62.45	-14.97	QP	
8		0.2300	17.10	10.08	27.18	52.45	-25.27	AVG	
9		0.2620	34.90	10.09	44.99	61.37	-16.38	QP	
10		0.2620	12.20	10.09	22.29	51.37	-29.08	AVG	
11		0.3020	30.30	10.09	40.39	60.19	-19.80	QP	
12		0.3020	12.70	10.09	22.79	50.19	-27.40	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: YANG



Site site #1 Phase: *L1* Temperature: 21

Limit: (CE)FCC PART 15 class B_QP Power: AC 240V/60Hz Humidity: 46 %

M/N: BY-1001

Mode: CHARGING

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1580	44.20	10.10	54.30	65.57	-11.27	QP	
2		0.1580	15.00	10.10	25.10	55.57	-30.47	AVG	
3		0.1700	43.30	10.09	53.39	64.96	-11.57	QP	
4		0.1700	21.00	10.09	31.09	54.96	-23.87	AVG	
5		0.1900	40.50	10.09	50.59	64.04	-13.45	QP	
6		0.1900	20.50	10.09	30.59	54.04	-23.45	AVG	
7		0.2180	38.10	10.09	48.19	62.89	-14.70	QP	
8		0.2180	17.00	10.09	27.09	52.89	-25.80	AVG	
9		0.2300	35.80	10.09	45.89	62.45	-16.56	QP	
10		0.2300	18.20	10.09	28.29	52.45	-24.16	AVG	
11		0.2780	32.90	10.09	42.99	60.88	-17.89	QP	
12		0.2780	17.80	10.09	27.89	50.88	-22.99	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: YANG

5 Radiated Emission Test

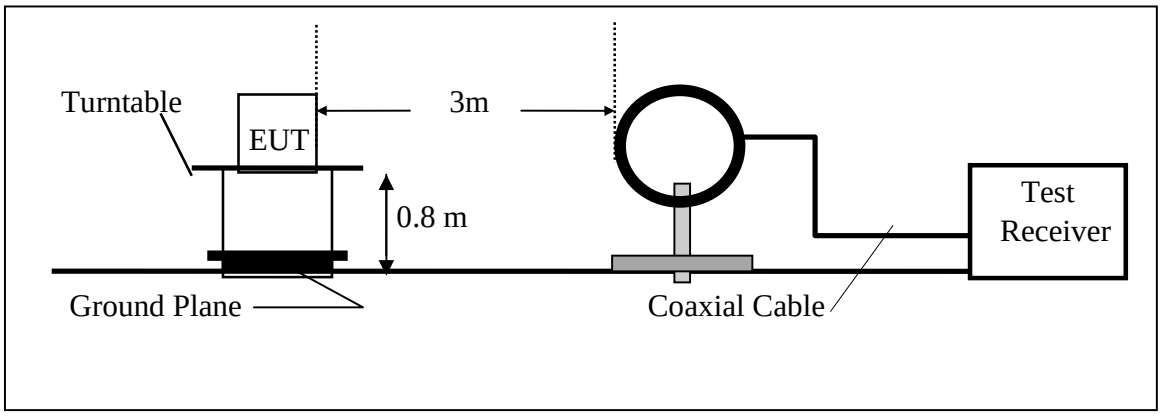
5.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.
5. Use the following receiver/spectrum analyzer settings:

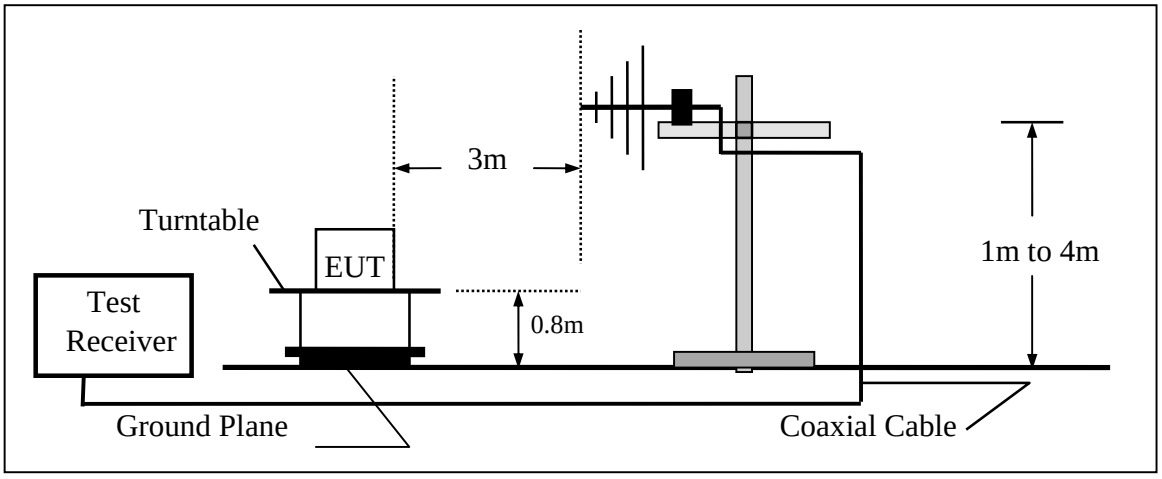
Span = wide enough to fully capture the emission being measured
RBW=200Hz for 9KHz to 150KHz,
RBW=9kHz for 150KHz to 30MHz,
RBW=120KHz for 30MHz to 1GHz
VBW ≥ 3*RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



5.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/20/2017	05/19/2018
Pre-Amplifier	HP	8447D	2944A07999	05/20/2017	05/19/2018
Bilog Antenna	Schwarzbeck	VULB9163	142	05/20/2017	05/19/2018
Loop Antenna	ARA	PLA-1030/B	1029	05/20/2017	05/19/2018
Cable	Schwarzbeck	AK9513	ACRX1	05/20/2017	05/19/2018
Cable	Rosenberger	N/A	FP2RX2	05/20/2017	05/19/2018
Cable	Schwarzbeck	AK9513	CRPX1	05/20/2017	05/19/2018
Cable	Schwarzbeck	AK9513	CRRX2	05/20/2017	05/19/2018

5.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

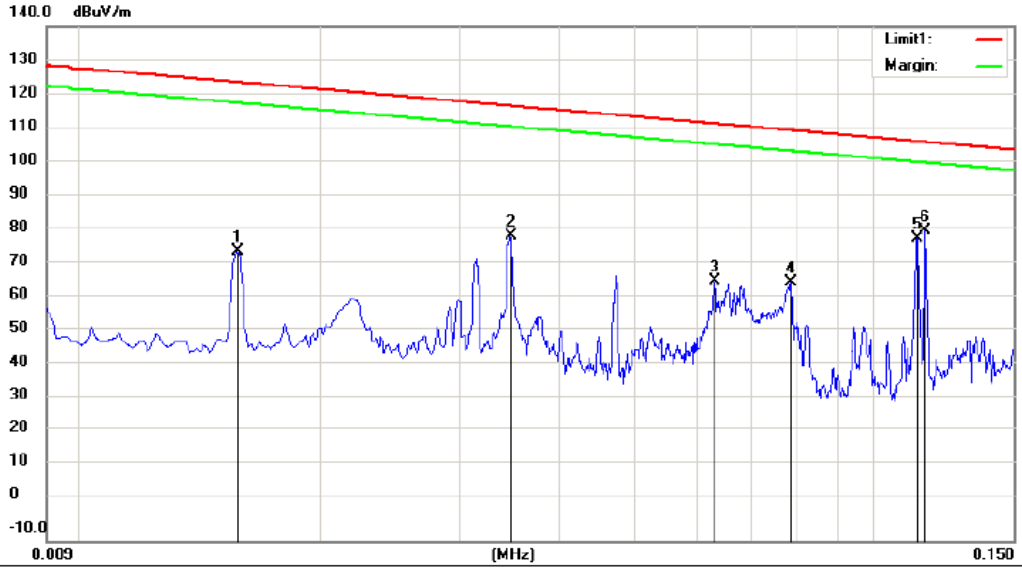
FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency tion at 3m Measurement Dist	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

5.5 Measurement Result



Site site #1 Polarization: X Temperature: 22 C

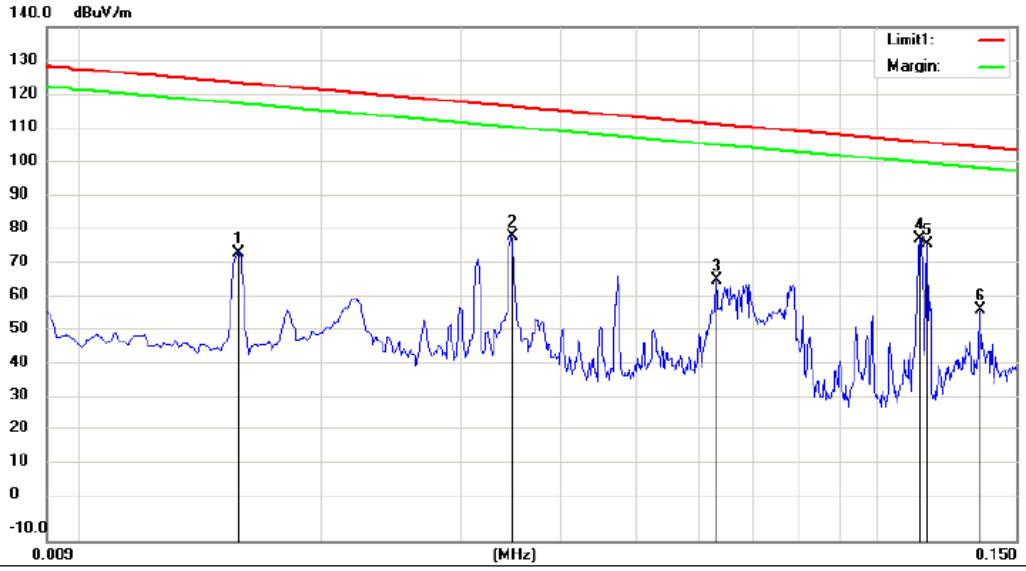
Limit: (RE)FCC PART 15.209(9K-30M) Power: AC 120V/60Hz Humidity: 50 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0156	53.97	20.54	74.51	123.72	-49.21	peak			
2		0.0347	58.30	20.69	78.99	116.78	-37.79	peak			
3		0.0630	45.51	20.53	66.04	111.61	-45.57	peak			
4		0.0786	45.53	20.22	65.75	109.69	-43.94	peak			
5		0.1133	57.81	20.65	78.46	106.51	-28.05	peak			
6	*	0.1163	59.85	20.65	80.50	106.29	-25.79	peak			

*:Maximum data x:Over limit !:over margin Operator: skj



Site site #1 Polarization: Y Temperature: 22 C

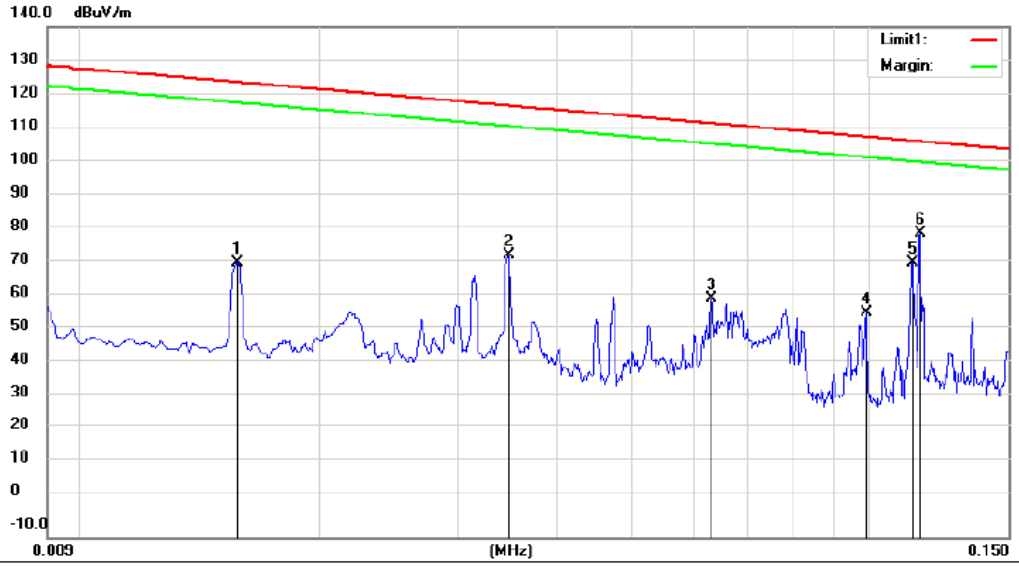
Limit: (RE)FCC PART 15.209(9K-30M) Power: AC 120V/60Hz Humidity: 50 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0156	53.82	20.54	74.36	123.72	-49.36	peak			
2		0.0347	58.24	20.69	78.93	116.78	-37.85	peak			
3		0.0630	45.80	20.53	66.33	111.61	-45.28	peak			
4	*	0.1136	57.55	20.65	78.20	106.49	-28.29	peak			
5		0.1160	56.03	20.65	76.68	106.31	-29.63	peak			
6		0.1351	37.07	20.65	57.72	104.98	-47.26	peak			

*:Maximum data x:Over limit !:over margin Operator: skj



Site site #1 Polarization: Z Temperature: 22 C

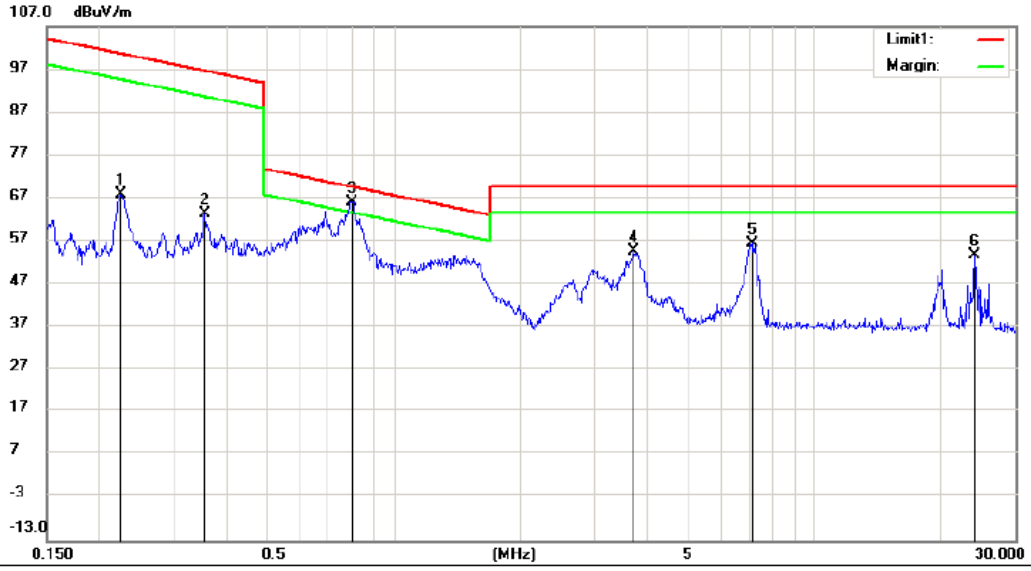
Limit: (RE)FCC PART 15.209(9K-30M) Power: AC 120V/60Hz Humidity: 50 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0156	50.36	20.54	70.90	123.72	-52.82	peak			
2		0.0347	52.23	20.69	72.92	116.78	-43.86	peak			
3		0.0630	39.72	20.53	60.25	111.61	-51.36	peak			
4		0.0990	35.45	20.63	56.08	107.68	-51.60	peak			
5		0.1132	50.13	20.65	70.78	106.52	-35.74	peak			
6	*	0.1160	58.92	20.65	79.57	106.31	-26.74	peak			

*:Maximum data x:Over limit !:over margin Operator: skj



Site site #1 Polarization: X Temperature: 22 C

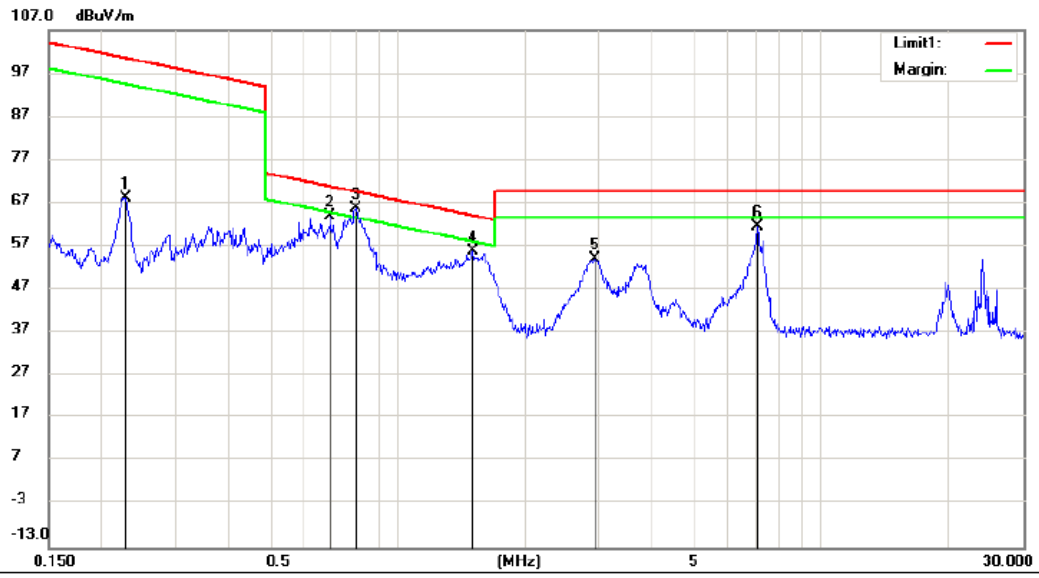
Limit: (RE)FCC PART 15.209(9K-30M) Power: AC 120V/60Hz Humidity: 50 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.2244	47.02	20.81	67.83	100.58	-32.75	peak			
2		0.3558	42.59	20.86	63.45	96.58	-33.13	peak			
3	*	0.7960	45.42	20.77	66.19	69.60	-3.41	peak			
4		3.7198	34.33	20.25	54.58	69.50	-14.92	peak			
5		7.0997	36.14	20.37	56.51	69.50	-12.99	peak			
6		24.0147	34.13	19.48	53.61	69.50	-15.89	peak			

*:Maximum data x:Over limit !:over margin Operator: skj



Site site #1 Polarization: Y Temperature: 22 C

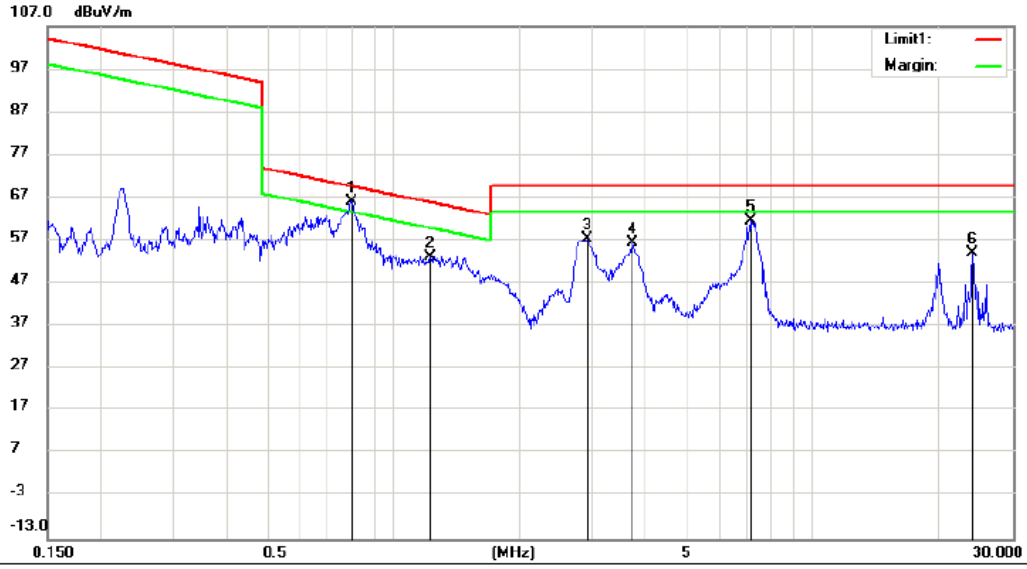
Limit: (RE)FCC PART 15.209(9K-30M) Power: AC 120V/60Hz Humidity: 50 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.2280	47.43	20.82	68.25	100.44	-32.19	peak			
2		0.6936	43.17	20.79	63.96	70.79	-6.83	peak			
3	*	0.7960	44.93	20.77	65.70	69.60	-3.90	peak			
4		1.5033	35.20	20.64	55.84	64.09	-8.25	peak			
5		2.9307	33.85	20.25	54.10	69.50	-15.40	peak			
6		7.0622	41.18	20.36	61.54	69.50	-7.96	peak			

*:Maximum data x:Over limit !:over margin Operator: skj



Site site #1 Polarization: Z Temperature: 22 C

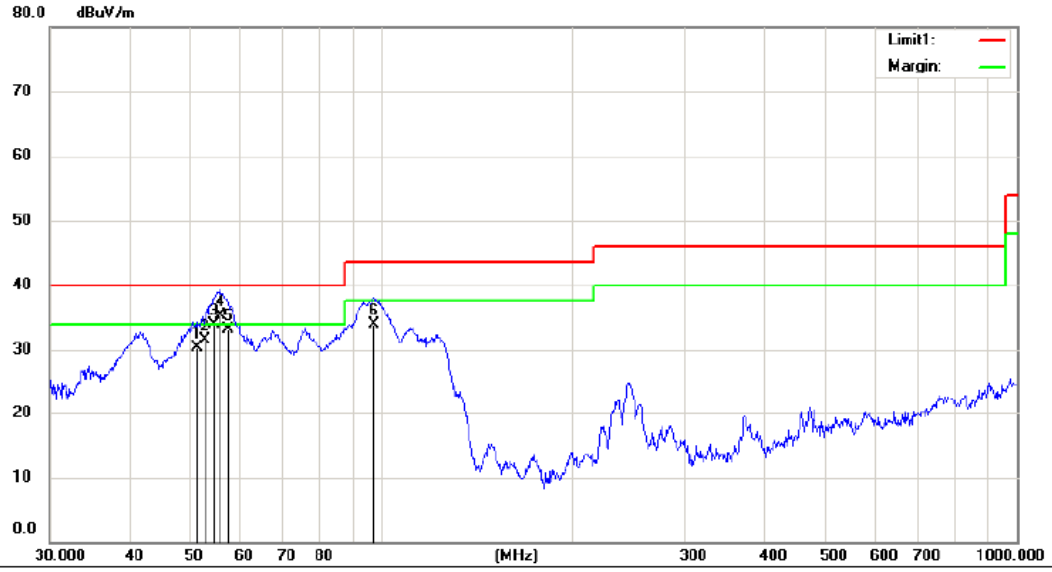
Limit: (RE)FCC PART 15.209(9K-30M) Power: AC 120V/60Hz Humidity: 50 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	0.7960	45.32	20.77	66.09	69.60	-3.51	peak			
2		1.2291	32.47	20.71	53.18	65.83	-12.65	peak			
3		2.8998	37.00	20.26	57.26	69.50	-12.24	peak			
4		3.7198	36.18	20.25	56.43	69.50	-13.07	peak			
5		7.1374	41.26	20.37	61.63	69.50	-7.87	peak			
6		24.0147	34.59	19.48	54.07	69.50	-15.43	peak			

*:Maximum data x:Over limit !:over margin Operator: skj



Site site #1 Polarization: ***Vertical*** Temperature: 21 C

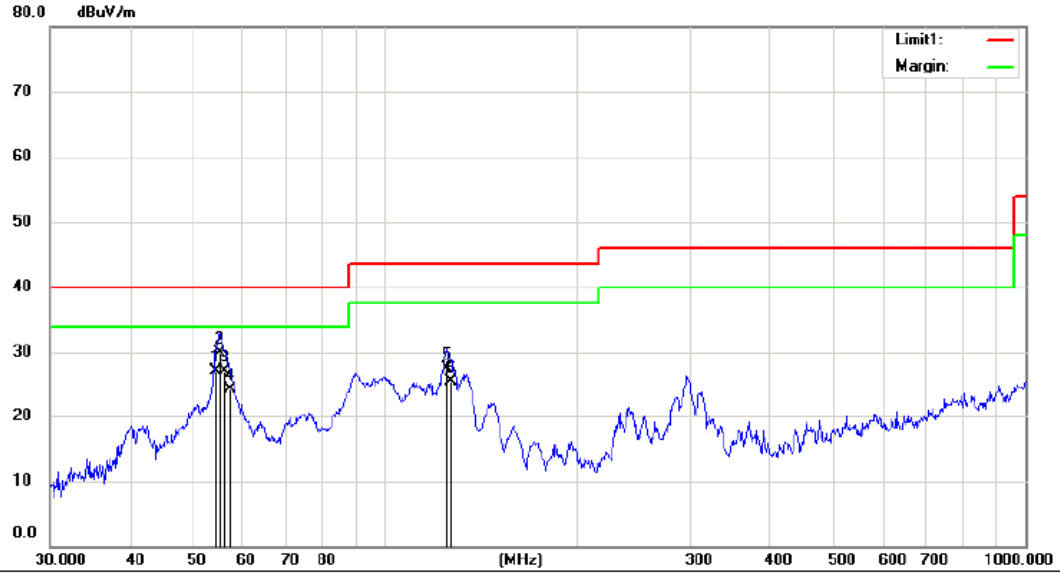
Limit: FCC Part15 Class B 3M Radiation Power: AC 120V/60Hz Humidity: 47 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		51.3005	49.77	-19.47	30.30	40.00	-9.70	QP			
2		52.7600	51.07	-19.57	31.50	40.00	-8.50	QP			
3		54.4515	53.56	-19.66	33.90	40.00	-6.10	QP			
4	*	55.6094	55.34	-19.94	35.40	40.00	-4.60	QP			
5		57.3923	54.20	-21.00	33.20	40.00	-6.80	QP			
6		97.1148	56.23	-22.23	34.00	43.50	-9.50	QP			

*:Maximum data x:Over limit !:over margin Operator: Moses



Site site #1 Polarization: *Horizontal* Temperature: 21 C

Limit: FCC Part15 Class B 3M Radiation Power: AC 120V/60Hz Humidity: 47 %

Mode:TX Mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		54.4515	46.86	-19.66	27.20	40.00	-12.80	QP			
2	*	55.2207	49.75	-19.85	29.90	40.00	-10.10	QP			
3		56.1974	47.38	-20.18	27.20	40.00	-12.80	QP			
4		57.3923	45.40	-21.00	24.40	40.00	-15.60	QP			
5		125.0065	51.47	-23.97	27.50	43.50	-16.00	QP			
6		126.7723	50.00	-24.40	25.60	43.50	-17.90	QP			

*:Maximum data x:Over limit !:over margin Operator: Moses

5.6 Photos of setup

CONDUCTED EMISSION TEST

Radiated Measurement Photos