



FCC RADIO TEST REPORT-BT

FCC ID: 2AHJX-JR1601

Product : Jimu Robot

Trade Name : Jimu Robot

Model Name : JR1601

Serial Model : JR0401, JR0402, JR0403, JR0404, JR0405,
JR0406, JR0407, JR0408, JR0409, JR0601,
JR0602, JR0603, JR0604, JR0605, JR0606,
JR0607, JR0608, JR0609, JR0701, JR0702,
JR0703, JR1001, JR1002, JR1003, JR1201,
JR1202, JR1203, JR1602, JR1603, JRS101,
JRP01, JRU01, JRU02, JRS201

Report No. : NTEK-2016NT02224381F2-02

Prepared for

UBTECH ROBOTICS CORP

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : UBTECH ROBOTICS CORP
Address : 16th & 22nd Floor, Block C1, Nanshan I Park, No.1001 Xueyuan Road, Nanshan District, Shenzhen City, PR. CHINA
Manufacture's Name..... : UBTECH ROBOTICS CORP BAOAN BRANCH
Address : 1-2/F, Building B, Huilongda Industry Park, Shilongzai, Shiyan Street, Baoan District, Shenzhen City

Product description

Product name : Jimu Robot
Model and/or type reference : JR1601
Serial Model : JR0401, JR0402, JR0403, JR0404, JR0405, JR0406, JR0407, JR0408, JR0409, JR0601, JR0602, JR0603, JR0604, JR0605, JR0606, JR0607, JR0608, JR0609, JR0701, JR0702, JR0703, JR1001, JR1002, JR1003, JR1201, JR1202, JR1203, JR1602, JR1603, JRS101, JRP01, JRU01, JRU02, JRS201

Standards : FCC Part15.247: 01 Oct. 2015

Test procedure..... ANSI C63.10-2013

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test :

Date (s) of performance of tests : 05 May. 2016 ~23 May. 2016

Date of Issue..... : 29 Jul. 2016

Test Result..... : **Pass**

Testing Engineer : Eileen Liu.
(Eileen Liu)

Technical Manager : Jason Chen
(Jason Chen)

Authorized Signatory : Sam. Chen
(Sam Chen)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(c)	Radiated Spurious Emission	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC Registration No.:238937; IC Registration No.:9270A-1

CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Jimu Robot	
Trade Name	Jimu Robot	
Model Name	JR1601	
Serial Model	JR0401, JR0402, JR0403, JR0404, JR0405, JR0406, JR0407, JR0408, JR0409, JR0601, JR0602, JR0603, JR0604, JR0605, JR0606, JR0607, JR0608, JR0609, JR0701, JR0702, JR0703, JR1001, JR1002, JR1003, JR1201, JR1202, JR1203, JR1602, JR1603, JRS101, JRP01, JRU01, JRU02, JRS201	
Model Difference	All the model are the same circuit and RF module, except the model name.	
Product Description	The EUT is a Jimu Robot	
	Operation Frequency:	2402~2480 MHz
	Modulation Type:	BT(1Mbps): GFSK BT EDR(2Mbps): $\pi/4$ -DQPSK BT EDR(3Mbps): 8-DPSK
	Bit Rate of Transmitter	1Mbps/2Mbps/3Mbps
	Number Of Channel	79 CH
	Antenna Designation:	Please see Note 3.
Channel List	Please refer to the Note 2.	
Adapter	Adapter-1: Mode: DSA-20PFE-12 FUS 096200 Input: 100-240V~, 50/60Hz, 0.7A Output: 9.6V---, 2A	
	Adapter-2: Mode: PS1012-096HIB 100 Input: 100-240V~, 50/60Hz, 0.4A Output: 9.6V---, 1.0A	
Battery	DC 7.4V, 1200mAh	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3.

Table for Filed Antenna

Ant .	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	PCB Antenna	N/A	1	BT Antenna

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH00
Mode 2	CH39
Mode 3	CH78
Mode 4	normal link

For Conducted Emission	
Final Test Mode	Description
Mode 4	normal link

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH39
Mode 3	CH78

Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The EUT use new battery.
- (3)The data rate was set in 3Mbps for radiated emission due to the highest RF output power.

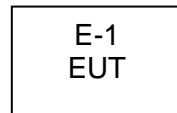
2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

Test software Version	Test program: Broadcom		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1/2/3Mbps)	DEF	DEF	DEF

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Conducted Emission Test



2.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Jimu Robot	Jimu Robot	JR1601	N/A	EUT
E-2	Adapter-1	N/A	DSA-20PFE-12 FUS 096200	N/A	
E-2	Adapter-2	N/A	PS1012-096HIB 100	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	Metal wire	NO	1.2m	USB Line

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.06.07	2016.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.07	2016.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.12.22	2016.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.08	2016.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year
12	Test Cable	N/A	R-01	N/A	2015.07.06	2016.07.05	1 year
13	Test Cable	N/A	R-02	N/A	2015.07.06	2016.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2015.06.06	2016.06.05	1 year
2	LISN	R&S	ENV216	101313	2015.08.24	2016.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2015.08.24	2016.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.06.07	2016.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.06.07	2016.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.06.08	2016.06.07	1 year
7	Test Cable	N/A	C01	N/A	2015.06.08	2016.06.07	1 year
8	Test Cable	N/A	C02	N/A	2015.06.08	2016.06.07	1 year
9	Test Cable	N/A	C03	N/A	2015.06.08	2016.06.07	1 year

1	Attenuation	MCE	24-10-34	BN9258	2015.06.08	2016.06.07	1 year
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3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

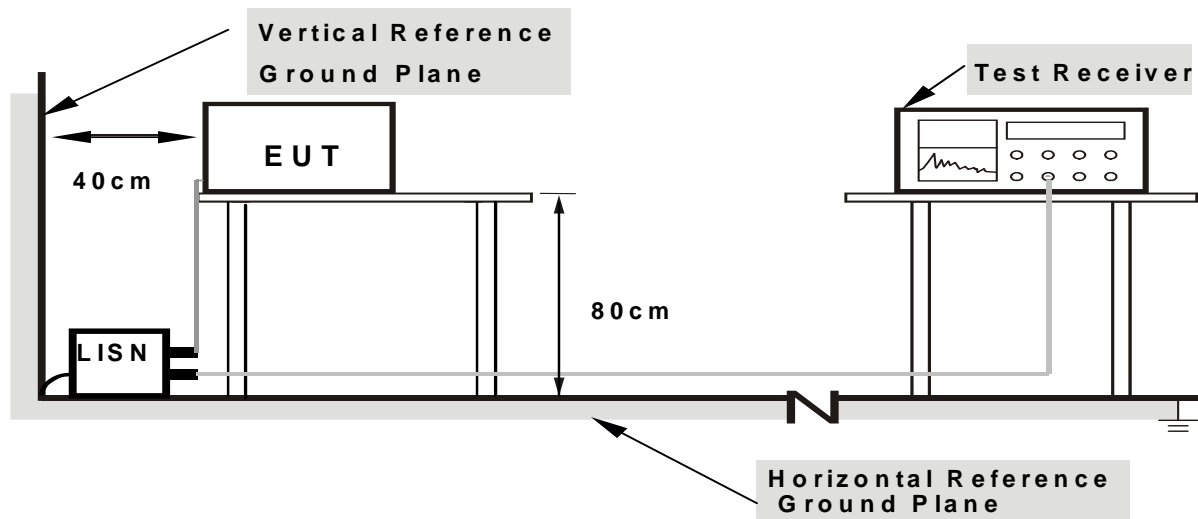
3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

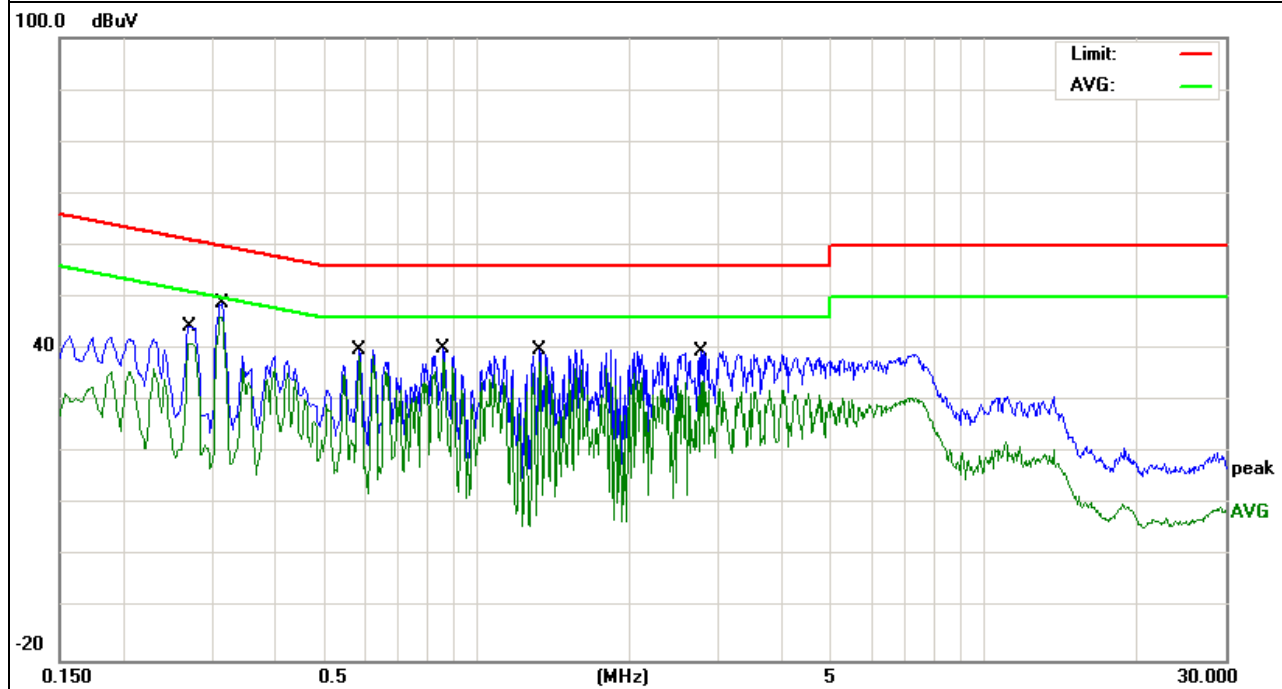
3.1.6 TEST RESULTS

EUT :	Jimu Robot	Model Name :	JR1601-Adapter-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2740	34.29	10.14	44.43	60.99	-16.56	QP
0.2740	30.97	10.14	41.11	50.99	-9.88	AVG
0.3100	38.60	10.13	48.73	59.97	-11.24	QP
0.3100	35.94	10.13	46.07	49.97	-3.90	AVG
0.5860	30.05	9.79	39.84	56.00	-16.16	QP
0.5860	28.87	9.79	38.66	46.00	-7.34	AVG
0.8580	30.34	9.82	40.16	56.00	-15.84	QP
0.8580	28.13	9.82	37.95	46.00	-8.05	AVG
1.3300	30.10	9.81	39.91	56.00	-16.09	QP
1.3300	27.52	9.81	37.33	46.00	-8.67	AVG
2.7820	29.75	9.74	39.49	56.00	-16.51	QP
2.7820	24.18	9.74	33.92	46.00	-12.08	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

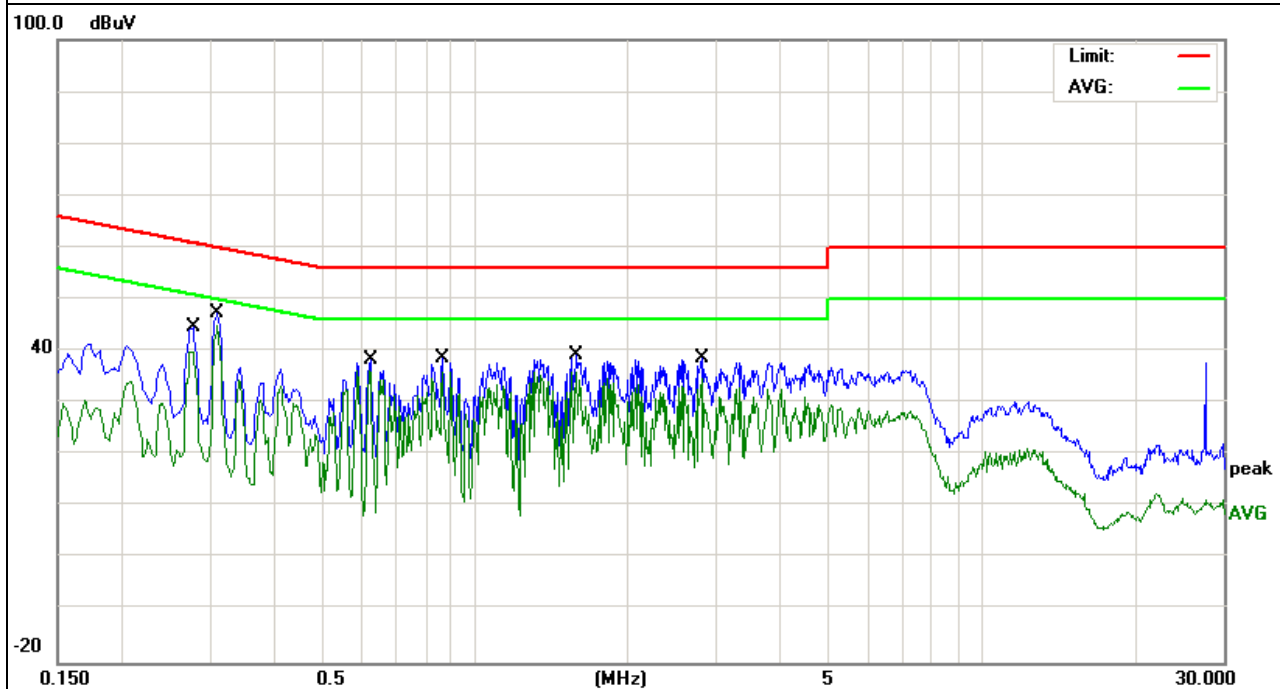


EUT :	Jimu Robot	Model Name :	JR1601-Adapter-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2779	34.42	10.11	44.53	60.88	-16.35	QP
0.2779	29.75	10.11	39.86	50.88	-11.02	AVG
0.3099	37.25	10.12	47.37	59.97	-12.60	AVG
0.3099	34.95	10.12	45.07	49.97	-4.90	QP
0.6179	28.46	9.81	38.27	56.00	-17.73	AVG
0.6179	26.58	9.81	36.39	46.00	-9.61	QP
0.8619	28.72	9.84	38.56	56.00	-17.44	QP
0.8619	26.25	9.84	36.09	46.00	-9.91	AVG
1.5900	29.33	9.80	39.13	56.00	-16.87	AVG
1.5900	26.22	9.80	36.02	46.00	-9.98	QP
2.7980	28.77	9.74	38.51	56.00	-17.49	QP
2.7980	25.13	9.74	34.87	46.00	-11.13	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

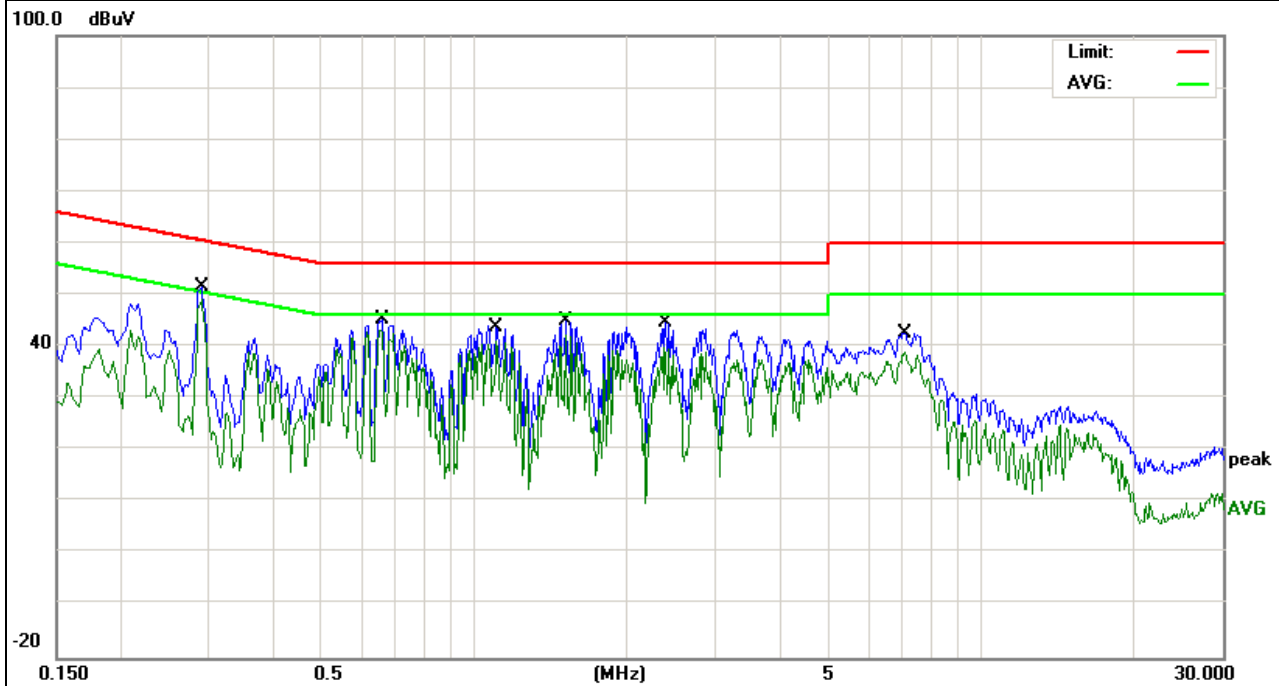


EUT :	Jimu Robot	Model Name :	JR1601-Adapter-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V from adapter AC 240V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2900	41.52	10.14	51.66	60.52	-8.86	QP
0.2900	39.14	10.14	49.28	50.52	-1.24	AVG
0.6540	35.34	9.78	45.12	56.00	-10.88	QP
0.6540	33.25	9.78	43.03	46.00	-2.97	AVG
1.1100	34.26	9.84	44.10	56.00	-11.90	QP
1.1100	31.18	9.84	41.02	46.00	-4.98	AVG
1.5180	35.11	9.79	44.90	56.00	-11.10	QP
1.5180	32.60	9.79	42.39	46.00	-3.61	AVG
2.3820	34.79	9.73	44.52	56.00	-11.48	QP
2.3820	29.99	9.73	39.72	46.00	-6.28	AVG
7.0940	32.86	9.77	42.63	60.00	-17.37	QP
7.0940	29.20	9.77	38.97	50.00	-11.03	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

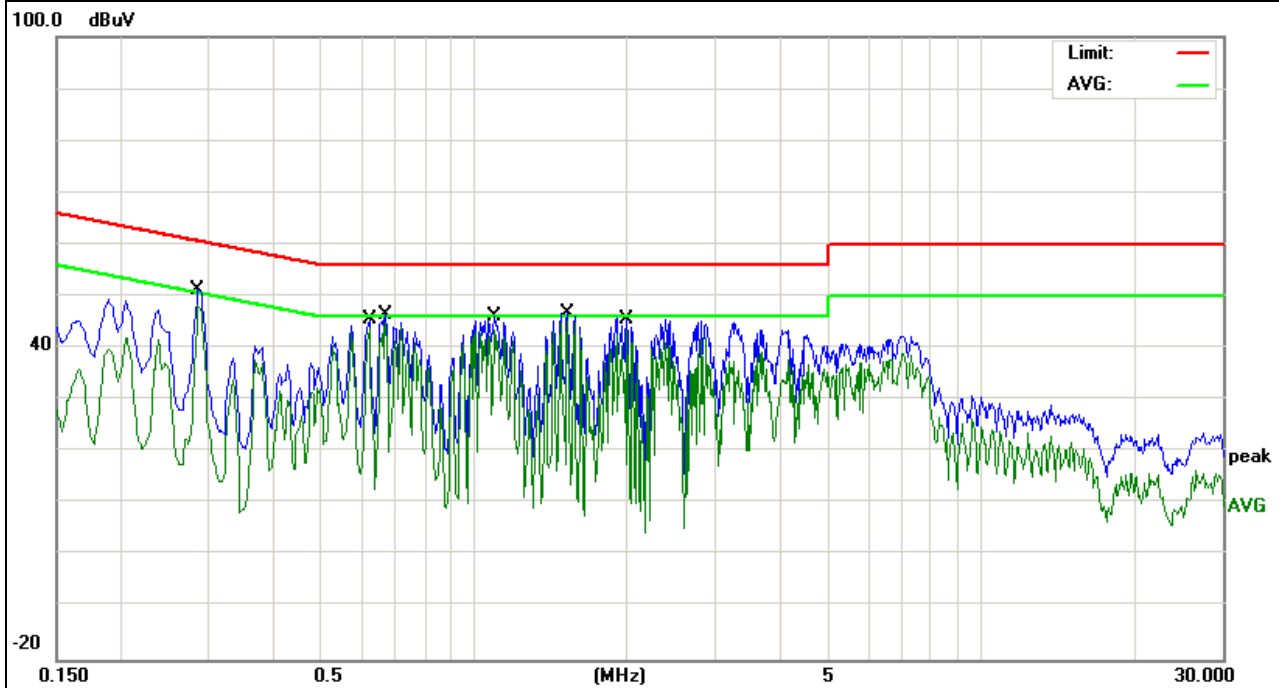


EUT :	Jimu Robot	Model Name :	JR1601-Adapter-1
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V from adapter AC 240V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2859	41.23	10.11	51.34	60.64	-9.30	QP
0.2859	38.00	10.11	48.11	50.64	-2.53	AVG
0.6219	35.80	9.81	45.61	56.00	-10.39	QP
0.6219	33.96	9.81	43.77	46.00	-2.23	AVG
0.6700	36.69	9.81	46.50	56.00	-9.50	QP
0.6700	35.09	9.81	44.90	46.00	-1.10	AVG
1.0980	36.15	9.86	46.01	56.00	-9.99	QP
1.0980	33.53	9.86	43.39	46.00	-2.61	AVG
1.5300	37.04	9.81	46.85	56.00	-9.15	QP
1.5300	35.40	9.81	45.21	46.00	-0.79	AVG
2.0099	35.98	9.75	45.73	56.00	-10.27	QP
2.0099	33.55	9.75	43.30	46.00	-2.70	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



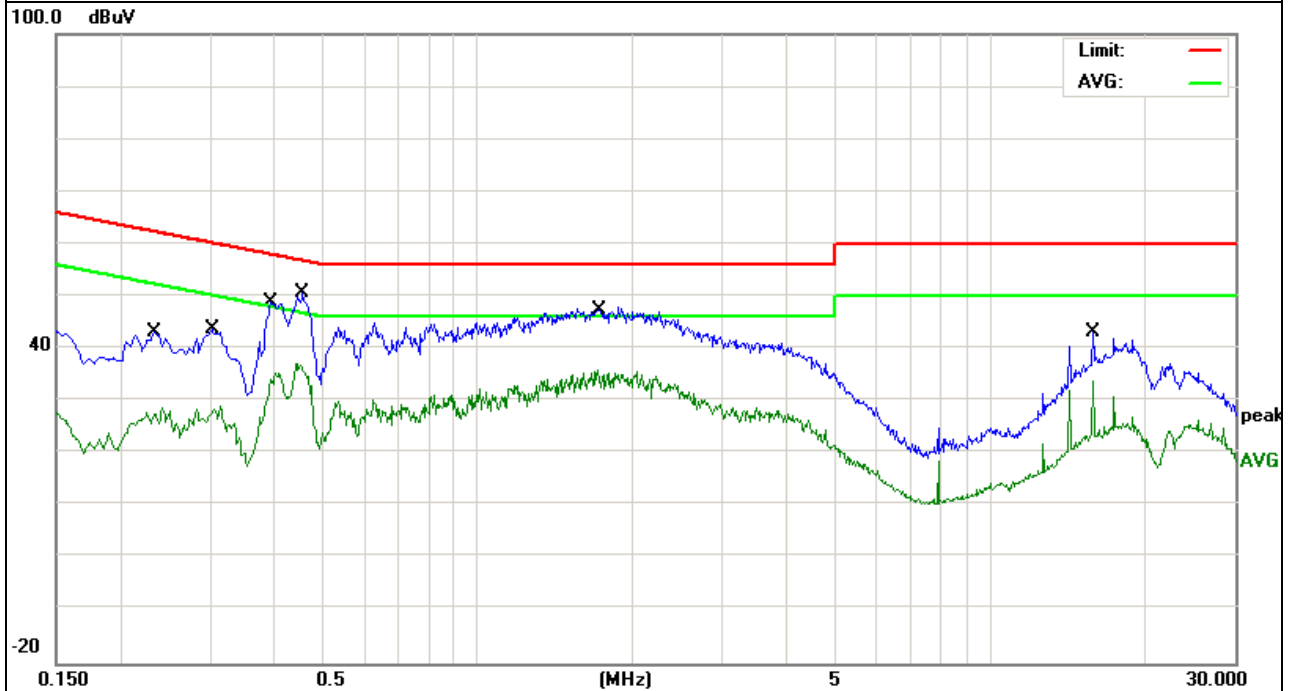
Note: pre-test all of charging mode, this mode is worst case, only provide the worst case in report.

EUT :	Jimu Robot	Model Name :	JR1601-Adapter-2
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2340	32.96	10.13	43.09	62.30	-19.21	QP
0.2340	18.49	10.13	28.62	52.30	-23.68	AVG
0.3019	33.54	10.14	43.68	60.19	-16.51	QP
0.3019	18.84	10.14	28.98	50.19	-21.21	AVG
0.3940	38.71	10.05	48.76	57.98	-9.22	QP
0.3940	25.38	10.05	35.43	47.98	-12.55	AVG
0.4540	40.71	9.91	50.62	56.80	-6.18	QP
0.4540	27.22	9.91	37.13	46.80	-9.67	AVG
1.7298	37.62	9.76	47.38	56.00	-8.62	QP
1.7298	26.25	9.76	36.01	46.00	-9.99	AVG
15.8376	33.35	9.87	43.22	60.00	-16.78	QP
15.8376	23.93	9.87	33.80	50.00	-16.20	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

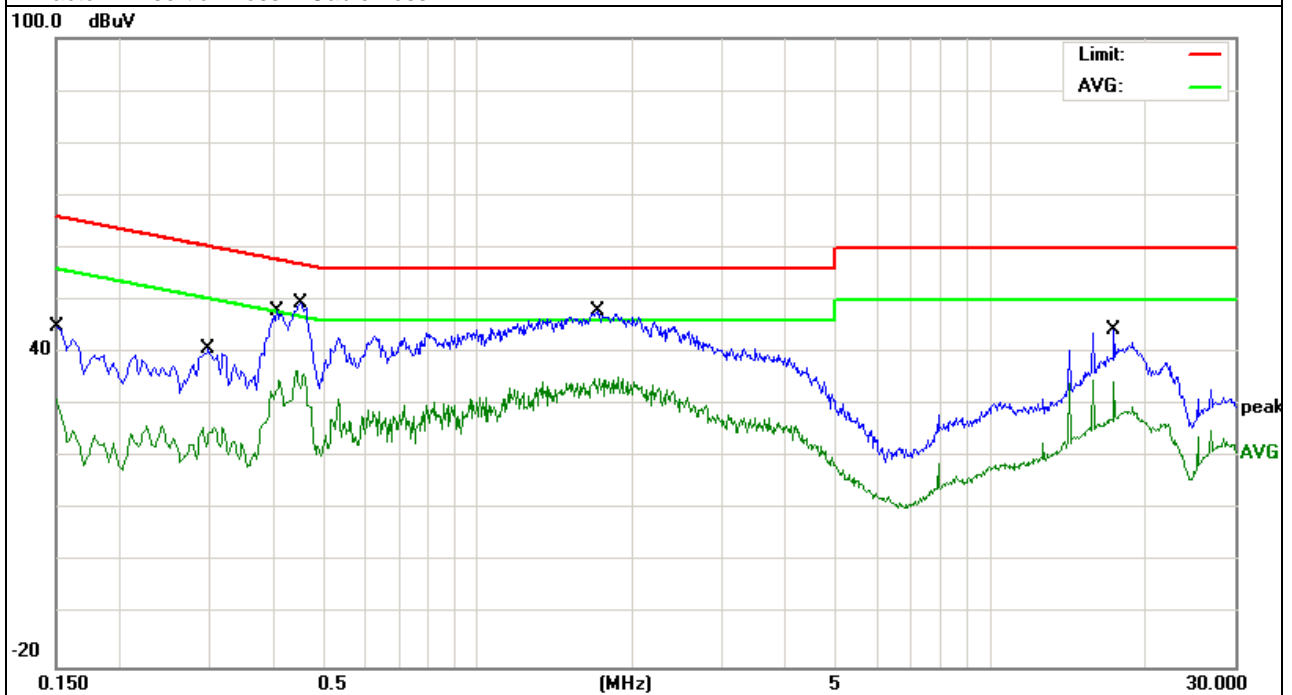


EUT :	Jimu Robot	Model Name :	JR1601-Adapter-2
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1500	34.87	10.12	44.99	65.99	-21.00	QP
0.1500	21.01	10.12	31.13	55.99	-24.86	AVG
0.2977	30.49	10.14	40.63	60.30	-19.67	AVG
0.2977	15.69	10.14	25.83	50.30	-24.47	QP
0.4060	37.80	10.03	47.83	57.73	-9.90	AVG
0.4060	24.82	10.03	34.85	47.73	-12.88	QP
0.4500	39.56	9.92	49.48	56.87	-7.39	QP
0.4500	26.65	9.92	36.57	46.87	-10.30	AVG
1.7138	38.07	9.76	47.83	56.00	-8.17	AVG
1.7138	25.52	9.76	35.28	46.00	-10.72	QP
17.4219	34.31	9.90	44.21	60.00	-15.79	QP
17.4219	24.67	9.90	34.57	50.00	-15.43	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

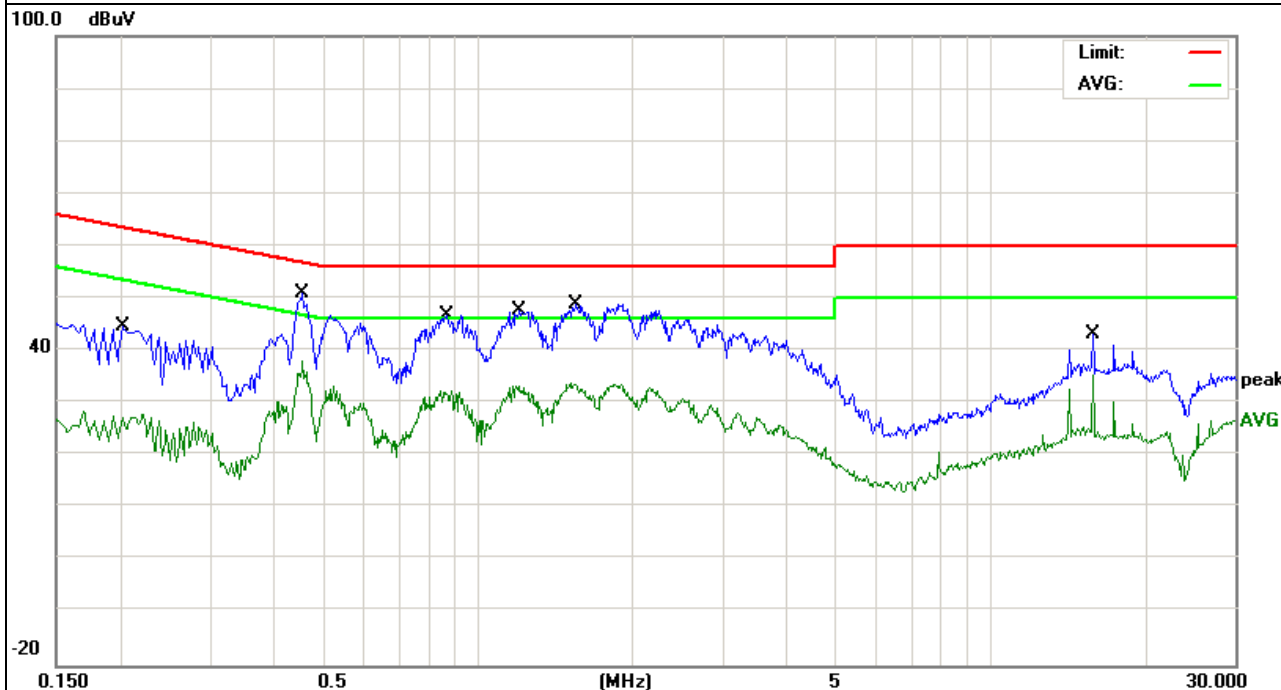


EUT :	Jimu Robot	Model Name :	JR1601-Adapter-2
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V from adapter AC 240V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2020	34.44	10.13	44.57	63.52	-18.95	QP
0.2020	17.76	10.13	27.89	53.52	-25.63	AVG
0.4540	41.07	9.91	50.98	56.80	-5.82	QP
0.4540	28.04	9.91	37.95	46.80	-8.85	AVG
0.8699	37.02	9.82	46.84	56.00	-9.16	QP
0.8699	22.66	9.82	32.48	46.00	-13.52	AVG
1.2057	37.81	9.83	47.64	56.00	-8.36	QP
1.2057	23.37	9.83	33.20	46.00	-12.80	AVG
1.5580	38.93	9.78	48.71	56.00	-7.29	QP
1.5580	24.07	9.78	33.85	46.00	-12.15	AVG
15.8376	33.17	9.87	43.04	60.00	-16.96	QP
15.8376	25.37	9.87	35.24	50.00	-14.76	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

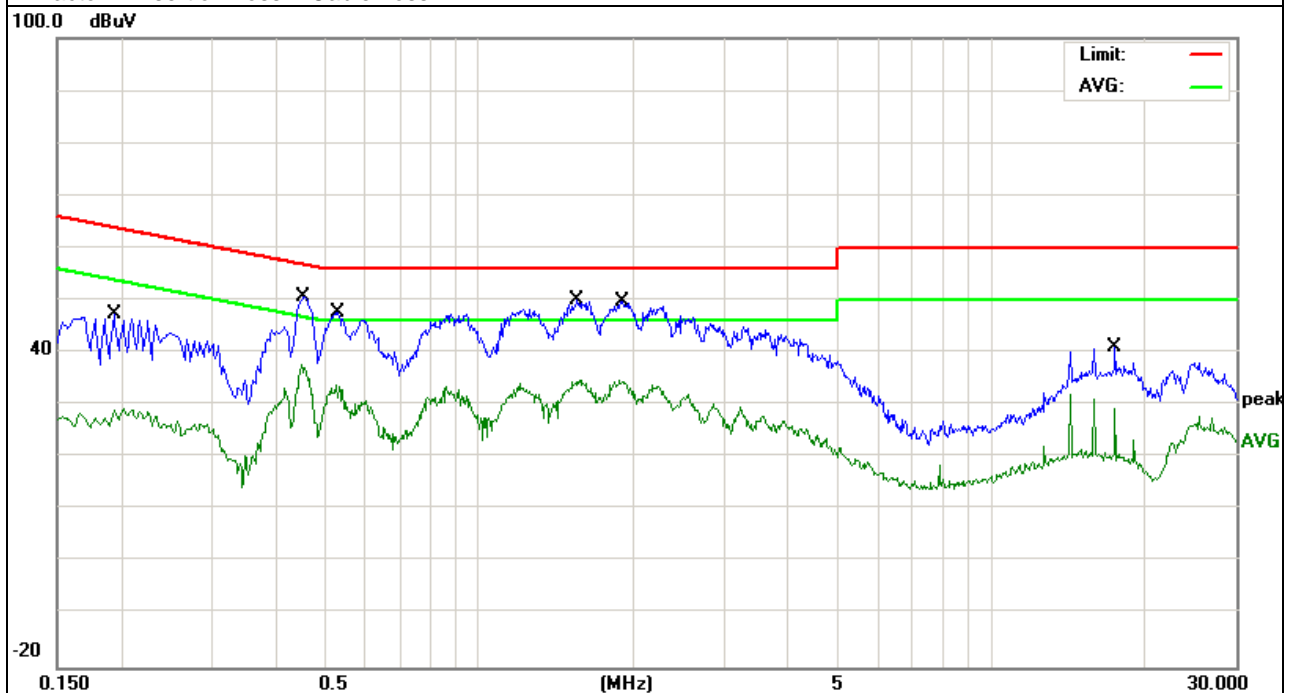


EUT :	Jimu Robot	Model Name :	JR1601-Adapter-2
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V from adapter AC 240V/60Hz	Test Mode :	Mode 4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1940	37.13	10.13	47.26	63.86	-16.60	QP
0.1940	19.32	10.13	29.45	53.86	-24.41	AVG
0.4540	40.89	9.91	50.80	56.80	-6.00	QP
0.4540	27.96	9.91	37.87	46.80	-8.93	AVG
0.5299	37.76	9.80	47.56	56.00	-8.44	QP
0.5299	23.98	9.80	33.78	46.00	-12.22	AVG
1.5580	40.26	9.78	50.04	56.00	-5.96	QP
1.5580	25.12	9.78	34.90	46.00	-11.10	AVG
1.9056	40.11	9.74	49.85	56.00	-6.15	QP
1.9056	25.14	9.74	34.88	46.00	-11.12	AVG
17.4219	31.08	9.90	40.98	60.00	-19.02	QP
17.4219	19.57	9.90	29.47	50.00	-20.53	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



Note: pre-test all of charging mode, this mode is worst case, only provide the worst case in report.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

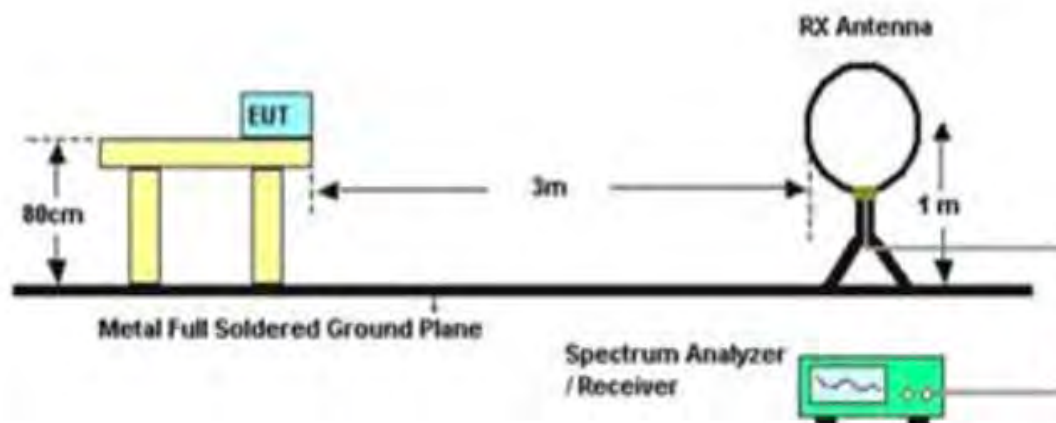
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Peak	1 MHz	10 Hz

3.2.3 DEVIATION FROM TEST STANDARD

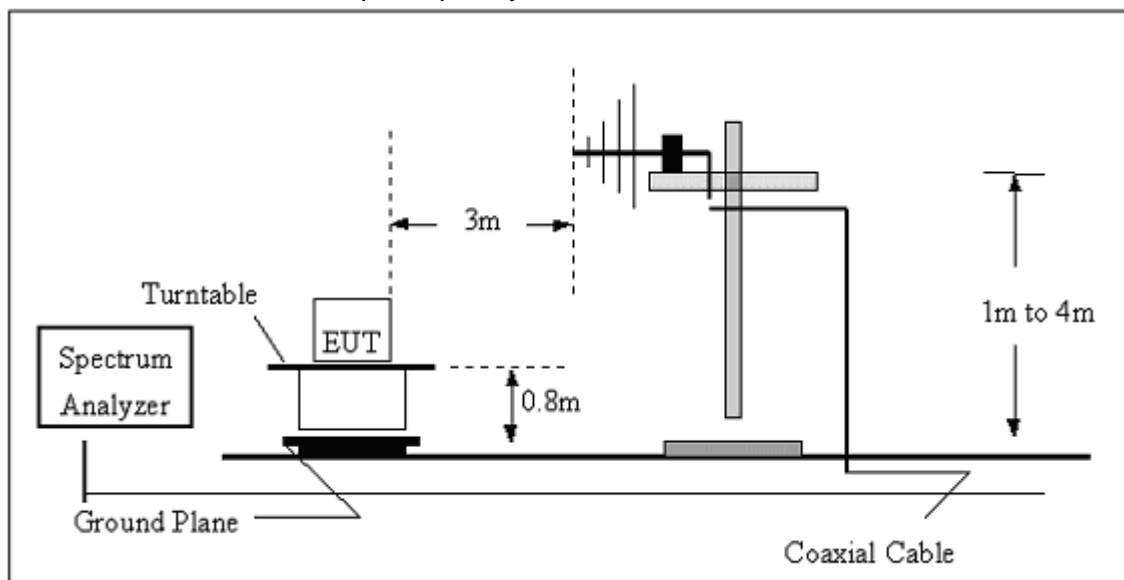
No deviation

3.2.4 TEST SETUP

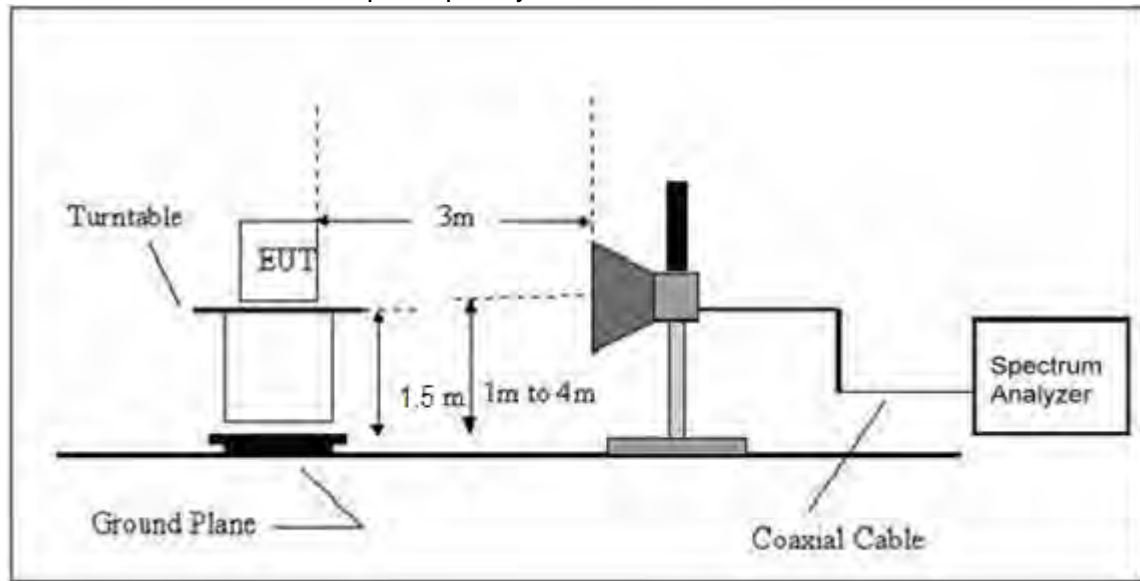
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BELOW 30 MHZ)

EUT :	Jimu Robot	Model Name :	JR1601
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 7.4V
Test Mode :	TX	Polarization :	---

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $20 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

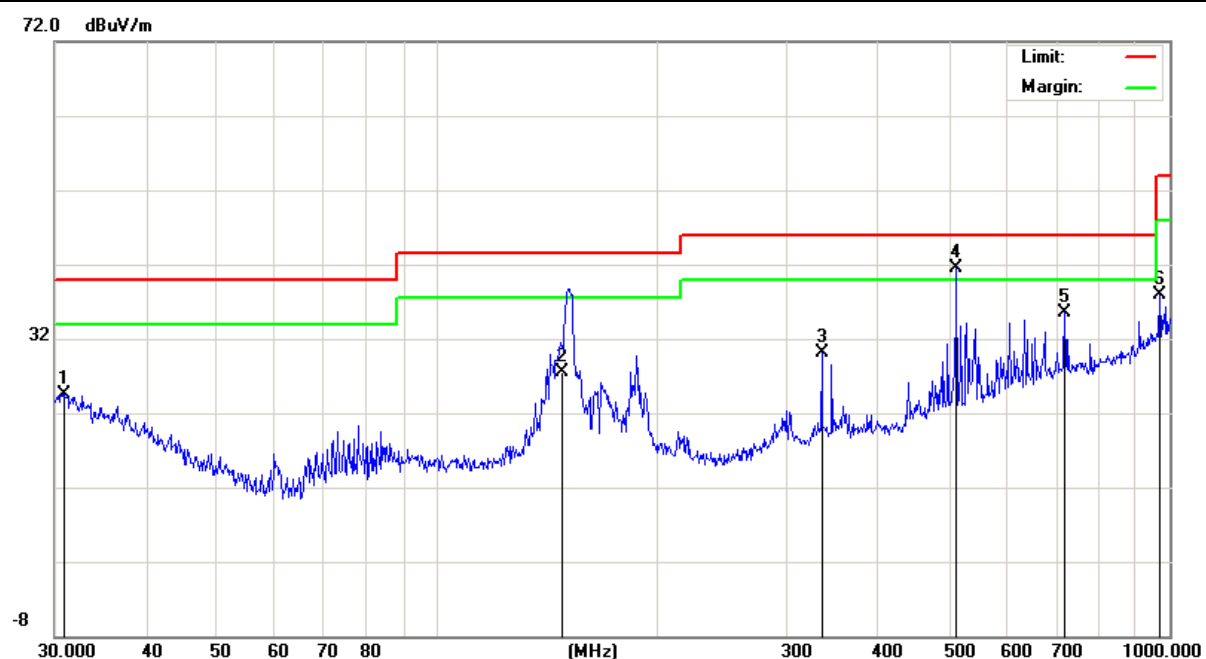
3.2.7 TEST RESULTS (BETWEEN 30M – 1000 MHZ)

EUT :	Jimu Robot	Model Name :	JR1601
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010hPa	Test Mode :	TX-1Mbps(High CH)
Test Voltage :	DC 7.4V		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	30.9618	5.34	19.22	24.56	40.00	-15.44	QP
V	148.3778	15.86	11.57	27.43	43.50	-16.07	QP
V	334.8589	16.28	13.78	30.06	46.00	-15.94	QP
V	511.8352	24.34	17.18	41.52	46.00	-4.48	QP
V	719.1992	14.11	21.34	35.45	46.00	-10.55	QP
V	968.9338	11.10	26.77	37.87	54.00	-16.13	QP

Remark:

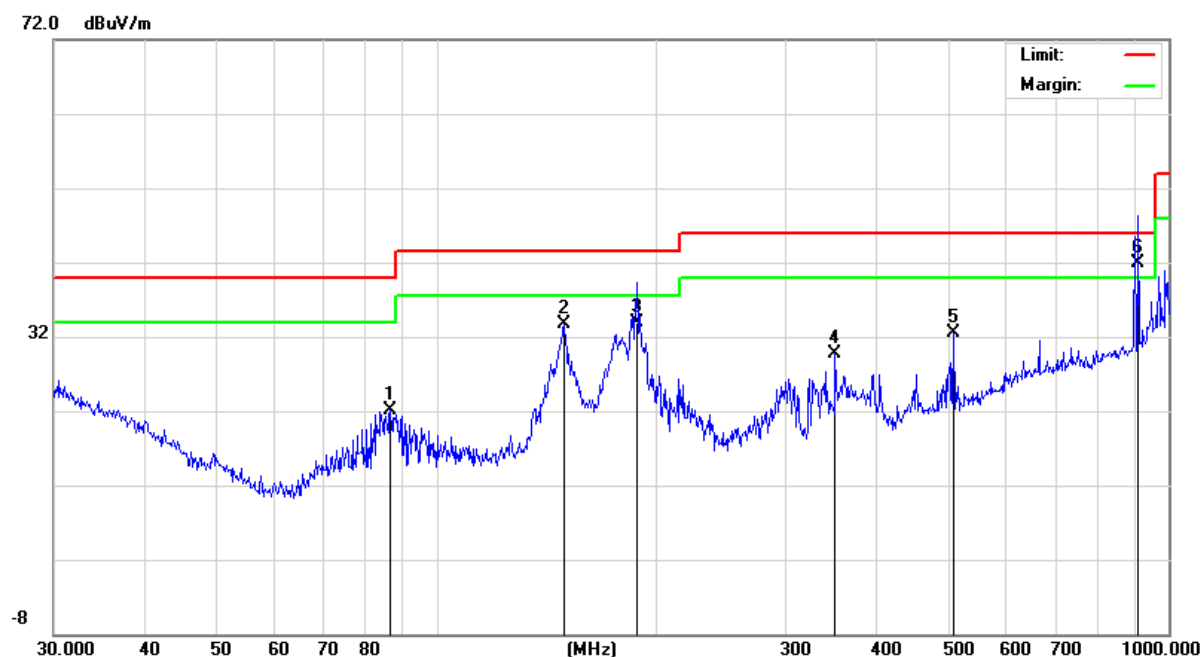
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	86.5027	12.76	9.31	22.07	40.00	-17.93	QP
H	149.4857	22.12	11.66	33.78	43.50	-9.72	QP
H	187.7530	22.48	11.52	34.00	43.50	-9.50	QP
H	350.4768	15.54	14.12	29.66	46.00	-16.34	QP
H	508.2581	15.22	17.23	32.45	46.00	-13.55	QP
H	909.6667	17.39	24.50	41.89	46.00	-4.11	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

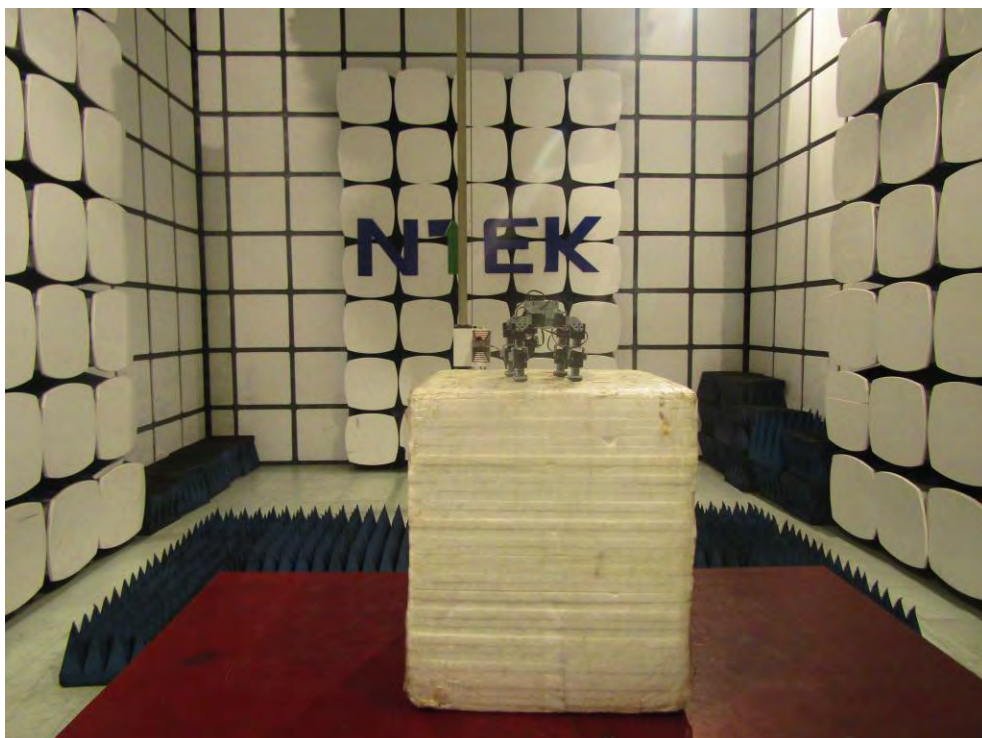
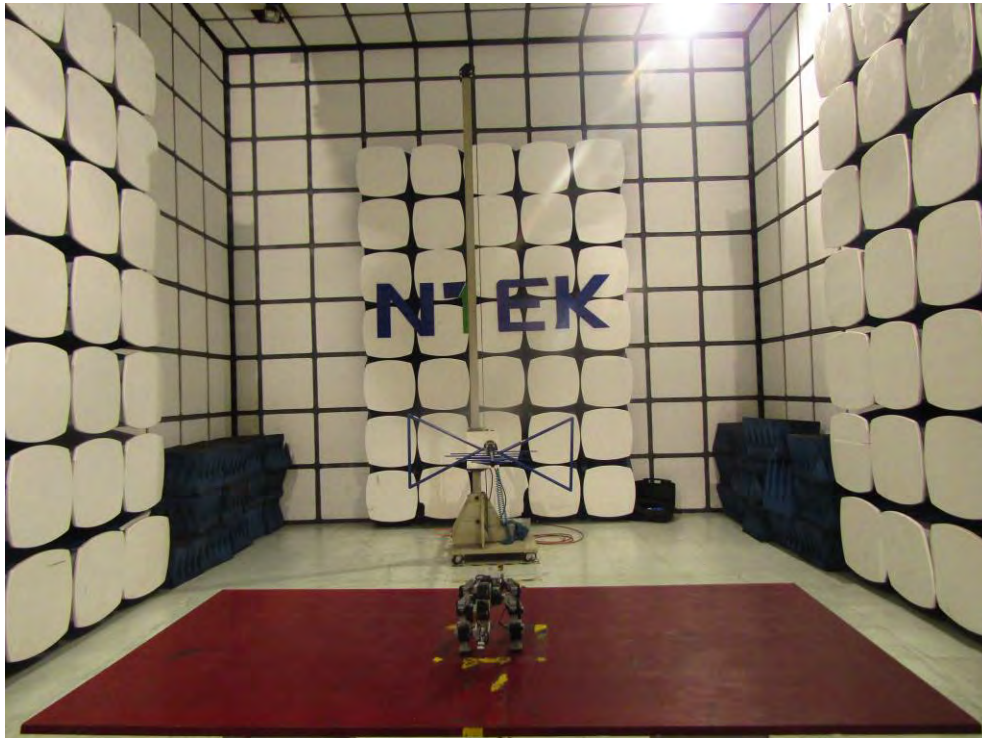
EUT :	Jimu Robot	Model Name :	JR1601
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010hPa	Test Mode :	TX
Test Mode :	DC 7.4V		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	Comment
Low Channel (2402 MHz)-Above 1G							
4803.901	63.40	-3.64	59.76	74.00	-14.24	Pk	Vertical
4803.901	48.74	-3.64	45.10	54.00	-8.90	AV	Vertical
7206.049	57.41	-0.95	56.46	74.00	-17.54	Pk	Vertical
7206.049	41.26	-0.95	40.31	54.00	-13.69	AV	Vertical
4804.227	64.87	-3.64	61.23	74.00	-12.77	Pk	Horizontal
4804.227	44.58	-3.64	40.94	54.00	-13.06	AV	Horizontal
7206.791	58.31	-0.96	57.35	74.00	-16.65	Pk	Horizontal
7206.791	42.58	-0.96	41.62	54.00	-12.38	AV	Horizontal
Mid Channel (2441 MHz)-Above 1G							
4882.116	65.98	-3.67	62.31	74.00	-11.69	Pk	Vertical
4882.116	46.58	-3.67	42.91	54.00	-11.09	AV	Vertical
7323.318	59.84	-0.82	59.02	74.00	-14.98	Pk	Vertical
7323.318	43.26	-0.82	42.44	54.00	-11.56	AV	Vertical
4882.744	64.05	-3.67	60.38	74.00	-13.62	Pk	Horizontal
4882.744	44.74	-3.67	41.07	54.00	-12.93	AV	Horizontal
7323.285	60.34	-0.82	59.52	74.00	-14.48	Pk	Horizontal
7323.285	42.54	-0.82	41.72	54.00	-12.28	AV	Horizontal
High Channel (2480 MHz)- Above 1G							
4960.284	63.92	-3.59	60.33	74.00	-13.67	Pk	Vertical
4960.284	44.65	-3.59	41.06	54.00	-12.94	AV	Vertical
7440.32	56.87	-0.68	56.19	74.00	-17.81	Pk	Vertical
7440.32	41.85	-0.68	41.17	54.00	-12.83	AV	Vertical
4960.741	60.35	-3.59	56.76	74.00	-17.24	Pk	Horizontal
4960.741	44.92	-3.59	41.33	54.00	-12.67	AV	Horizontal
7440.376	59.75	-0.68	59.07	74.00	-14.93	Pk	Horizontal
7440.376	44.55	-0.68	43.87	54.00	-10.13	AV	Horizontal

Note: Mode 1Mbps is the worst mode.

4. EUT TEST PHOTO

Radiated Measurement Photos



CONDUCTED EMISSION Photos

