

# FCC Test Report FCC ID:2AFMZ-RK-175

Product: RK-175

Trade Name: RTK

Model Number: RK-175

Serial Model: N/A

Report No.: NTEK- 2016NT05035459F4

#### Prepared for

ACCESS TELECOM 1882 NW 97TH AVE, DORAL, MIAMI, FL 33172, UNITED STATES OF AMERICA.

# Prepared by

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# **TEST RESULT CERTIFICATION**

Report No.: NTEK- 2016NT05035459F4

Applicant's name:	ACCESS TELECOM				
Address:	1882 NW 97th Ave, Doral, Miami, FI 33172, United States of America.				
Manufacturer's Name:	Locopo Technolgy Co.,Ltd.				
Address:	B Rm./Flat 1501(056), 15/F, Spa Centre,53-55 Lockhart Road, Wan Chai, Kong Kong.				
Product description					
Product name:	RK-175				
Model and/or type reference :	RTK				
Standards:	FCC Part ANSI C63	15B:01 Oct.2016 3.4:2014			
	complian	sted by NTEK, and the test results show that the ce with Part 15 of FCC Rules. And it is applicable only to			
document may be altered or rev	•	t in full, without the written approval of NTEK, this FEK, personnel only, and shall be noted in the revision of			
the document.					
Date of Test		02 May 2016 - 24 May 2016			
Date (s) of performance of tests		03 May. 2016 ~ 24 May. 2016			
Date of Issue	:	24 May. 2016			
Test Result	····::	Pass			
Testing Engine	eer :	Joile Li			
		(Jack Li) Juson chen			
Technical Man	ager :	(Jason Chen)			
Authorized Sig	natory :	(Sam Chen)			
		(Sam Sherry			





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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission							
Standard	Test Item	Limit	Judgment	Remark			
FCC Part15B:2014 ANSI C63.4: 2014	Conducted Emission	Class B	PASS				
	Radiated Emission	Class B	PASS				

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# NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.



#### 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 Number:238937; IC Registration Number:9270A-1

CNAS Registration Number:L5516

## 1.2 MEASUREMENT UNCERTAINTY

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

#### A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKC01	ANSI	150 KHz ~ 30MHz	3.2	

#### B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
NTEKA01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~12.4GHz	5.0	



# 2. GENERAL INFORMATION

# 2.1 GENERAL DESCRIPTION OF EUT

Equipment	RK-175					
Trade Name	RTK					
Model Name	RK-175					
Serial Model	N/A					
Model Difference	N/A					
Woder Difference	IN/A					
	The EUT is a Industrial F	RK-175.				
	Connecting I/O port:	USB, Earphone				
	Operation Frequency:	BT:2402~2480 MHz WIFI:802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz):2422~2452MHz GSM: 824.2-848.8MHz/1850.2-1909.8MHz				
		WCDMA: 826.4-846.6MHz/				
Product Description		1852.4-1907.6MHz				
Product Description	Modulation Type:	BT(1Mbps): GFSK BT EDR(2Mbps): π/4-DQPSK BT EDR(3Mbps): 8-DPSK IEEE 802.11b: DSSS (CCK, QPSK, DBPSK) IEEE 802.11g/n (HT20/HT40): OFDM (64QAM, 16QAM, QPSK, BPSK) GSM / DCS: GMSK WCDMA:QPSK				
Power Source	DC Voltage					
	Model: XHY050200UUCH	1				
Adapter	Input: 100-240V~, 50/60H	Iz, 0.5A MAX				
	Output: 5.0V===2A					
Battery	DC 3.7V, 2500mAh					



#### 2.1.1 DESCRIPTION OF TEST MODES

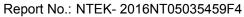
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration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

Pretest Mode	Description
Mode 1	Connect to PC
Mode 2	Camera
Mode 3	TF card Play
Mode 4	"H" Pattern

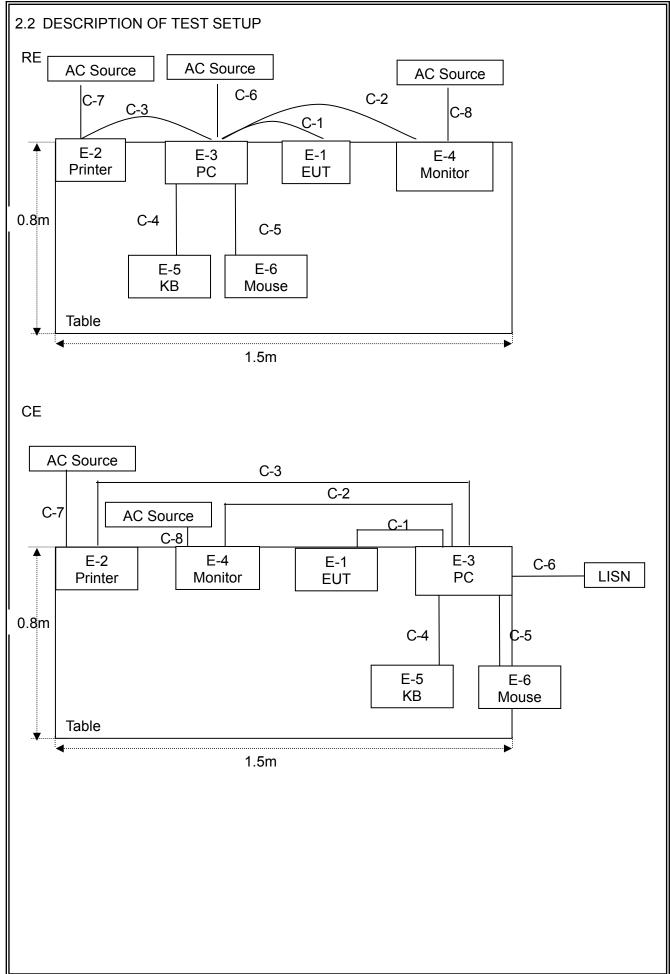
For Conducted Test				
Final Test Mode	Description			
Mode 1	Connect to PC			
Mode 2	Camera			
Mode 3	TF card Play			
Mode 4	"H" Pattern			

For Radiated Test				
Final Test Mode	Description			
Mode 1	Connect to PC			
Mode 2	Camera			
Mode 3	TF card Play			
Mode 4	"H" Pattern			

Note: Final Test Mode: Through Pre-scan, find the mode 1 is the worst case. Only the worst case mode is recorded in the report.









## 2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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	Brand	Model/Type No.	Series No.	Note
E-1	RK-175	N/A	RK-175	RLTP5567-BLACK ,RLTP556 7-CHAMPAGNE, RLTP5567-WHITE, T4016,T5016,T4515,T5015,T 4010,T5010,T5012,T6010	EUT
E-2	Printer	Canon	L11121E	LBP2900	
E-3	Personal computer	DELL	FT4Y23X	34413561645	
E-4	Monitor	DELL	IN2020MB	cn-0y6mhx-74261-11f-67e s	
E-5	Keyboard	DELL	SK-8185	OY526KUS	
E-6	Mouse	DELL	MS111-P	cn-011d3v-71581-11e-1th7	

Item	Cable Type	Shielded Type	Ferrite Core	Length	Note
C-1	USB Cable	unshielded	NO	1.2m	
C-2	VGA	unshielded	NO	1.0m	
C-3	USB Cable	unshielded	NO	1.2m	
C-4	USB Cable	unshielded	NO	1.0m	
C-5	USB Cable	unshielded	NO	1.0m	
C-6	Power Line	unshielded	NO	1.2m	
C-7	Power Line	unshielded	NO	1.2m	
C-8	Power Line	unshielded	NO	1.2m	

#### Note:

- The support equipment was authorized by Declaration of Confirmation. (1)
- (2) For detachable type I/O cable should be specified the length in cm in <code>"Length\_"</code> column.
- "YES" means "shielded" "with core"; "NO" means "unshielded" "without core". (3)



# 2.4 MEASUREMENT INSTRUMENTS LIST

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibratio n period
1	Spectrum Analyzer	Agilent	E4407B	MY4510804 0	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	620026441 6	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-101 80	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	2015.07.06	2016.07.05	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	Manufactu rer	Type No.	Serial No.	Last calibration	Calibrated until	Calibratio n 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	620026441 7	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



## 3. EMC EMISSION TEST

## 3.1 CONDUCTED EMISSION MEASUREMENT

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

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

#### 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



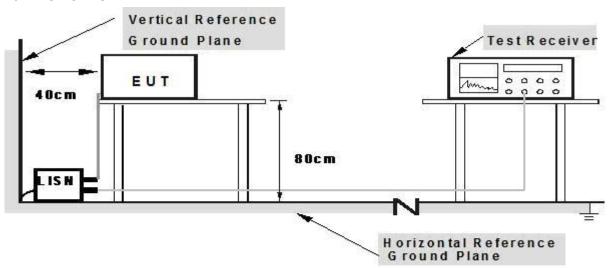
#### 3.1.2 TEST PROCEDURE

a. 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.

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- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 3.1.3 TEST SETUP



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

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

#### 3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.



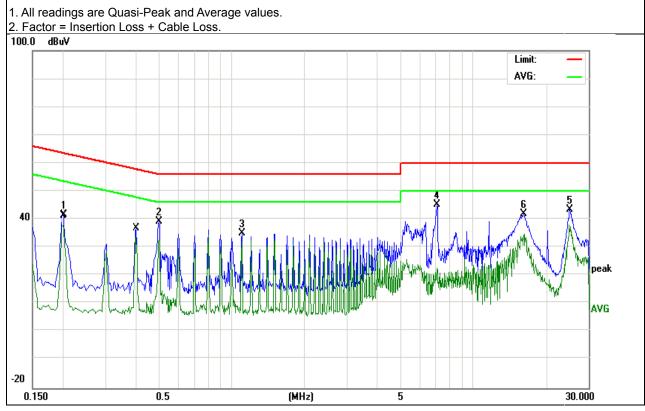
# 3.1.5 TEST RESULTS

EUT:	RK-175	Model Name. :	RK-175		
Temperature:	26 ℃	Relative Humidity:	54%		
Pressure:	1010hPa	Test Date:	2016-5-11		
Test Mode:	Mode 1 Phase : L				
Test Voltage:	DC 5V From PC AC 120V/60Hz				

Report No.: NTEK- 2016NT05035459F4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Domork
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.2020	31.27	10.28	41.55	63.52	-21.97	QP
0.5020	29.22	10.02	39.24	56.00	-16.76	AVG
1.1020	25.12	10.00	35.12	56.00	-20.88	QP
7.0779	35.23	9.88	45.11	60.00	-14.89	AVG
25.0660	33.41	10.18	43.59	60.00	-16.41	QP
16.1419	31.85	10.02	41.87	60.00	-18.13	AVG
0.1980	28.03	10.28	38.31	53.69	-15.38	QP
0.4020	23.52	10.24	33.76	47.81	-14.05	AVG
24.9620	27.97	10.18	38.15	50.00	-11.85	QP
16.2379	24.72	10.02	34.74	50.00	-15.26	AVG

#### Remark:





EUT: RK-175 RK-175 Model Name.: Temperature: 26 ℃ Relative Humidity: 54% Test Date: 2016-5-11 Pressure: 1010hPa Phase: Ν Test Mode: Mode 1 Test Voltage: DC 5V From PC AC 120V/60Hz

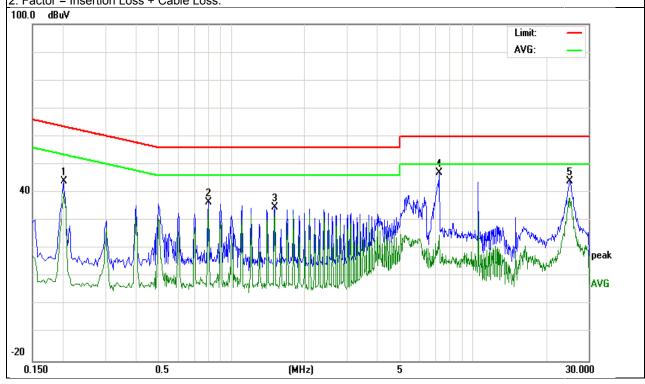
Report No.: NTEK- 2016NT05035459F4

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Domark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.2020	33.82	10.17	43.99	63.52	-19.53	QP
0.8020	26.60	10.03	36.63	56.00	-19.37	AVG
1.5060	24.96	9.94	34.90	56.00	-21.10	QP
7.2419	37.20	9.85	47.05	60.00	-12.95	AVG
25.1660	33.91	10.17	44.08	60.00	-15.92	QP
0.2020	29.55	10.17	39.72	53.52	-13.80	AVG
0.8020	24.53	10.03	34.56	46.00	-11.44	QP
25.1660	27.92	10.17	38.09	50.00	-11.91	AVG

#### Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.

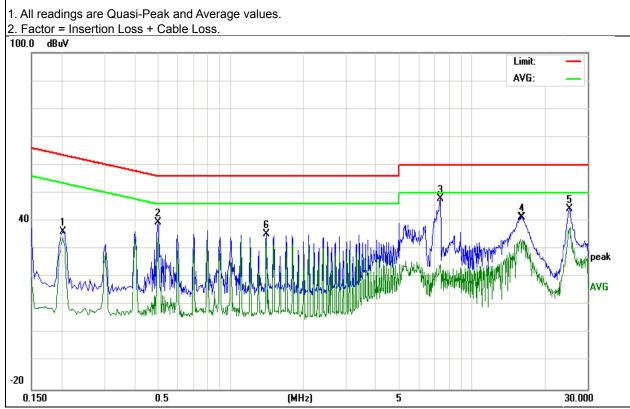




EUT:	RK-175	Model Name. :	RK-175		
Temperature:	26 ℃	Relative Humidity:	54%		
Pressure:	1010hPa	Test Date:	2016-5-11		
Test Mode:	Mode 1	Phase :	L		
Test Voltage:	t Voltage: DC 5V From PC AC 240V/60Hz				

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Domark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.2020	25.87	10.28	36.15	63.52	-27.37	QP
0.5020	29.43	10.02	39.45	56.00	-16.55	AVG
7.3739	38.14	9.88	48.02	60.00	-11.98	QP
16.0619	31.48	10.02	41.50	60.00	-18.50	AVG
25.1900	34.24	10.18	44.42	60.00	-15.58	QP
1.4060	25.46	9.94	35.40	56.00	-20.60	AVG
0.5020	24.26	10.02	34.28	46.00	-11.72	QP
1.4060	23.75	9.94	33.69	46.00	-12.31	AVG
15.8579	23.67	10.01	33.68	50.00	-16.32	QP
25.3900	27.45	10.18	37.63	50.00	-12.37	AVG

#### Remark:

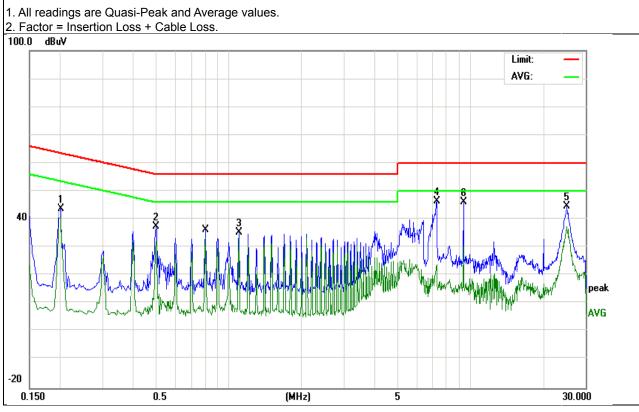




EUT:	RK-175	Model Name.:	RK-175		
Temperature:	26 ℃	Relative Humidity:	54%		
Pressure:	1010hPa	Test Date:	2016-5-11		
Test Mode:	Mode 1	Mode 1 Phase : N			
Test Voltage:	DC 5V From PC AC 240V/60Hz				

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.2020	33.50	10.17	43.67	63.52	-19.85	QP
0.5020	27.34	10.04	37.38	56.00	-18.62	AVG
1.1020	25.41	10.02	35.43	56.00	-20.57	QP
7.2659	36.48	9.85	46.33	60.00	-13.67	AVG
25.1740	34.58	10.17	44.75	60.00	-15.25	QP
9.3939	36.31	9.88	46.19	60.00	-13.81	AVG
0.2020	30.66	10.17	40.83	53.52	-12.69	QP
0.8020	23.42	10.03	33.45	46.00	-12.55	AVG
25.1740	27.32	10.17	37.49	50.00	-12.51	QP

#### Remark:





#### 3.2 RADIATED EMISSION MEASUREMENT

#### 3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

	Class A (at 10m)	Class B (at 3m)	
FREQUENCY (MHz)	dBuV/m	dBuV/m	
30 ~ 88	39.0	40.0	
88 ~ 216	43.5	43.5	
216 ~ 960	46.5	46.0	
Above 960	49.5	54.0	

#### Notes:

- (1) The limit for radiated test was performed according to as following: FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

#### 3.2.2 TEST PROCEDURE

#### Test Arrangement for Radiated Emissions up to 1 GHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

#### Test Arrangement for Radiated Emissions above 1 GHz.

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength.Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Note: For the hand-held device, the EUT should be measured for all 3 axes and only the worst case is recorded in the report



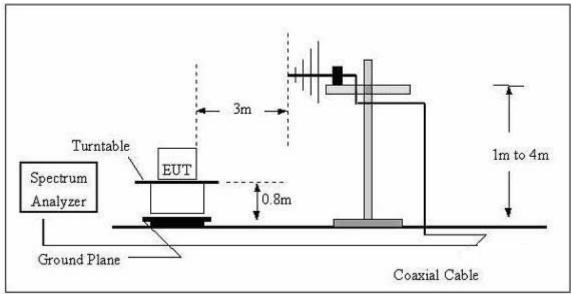
During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

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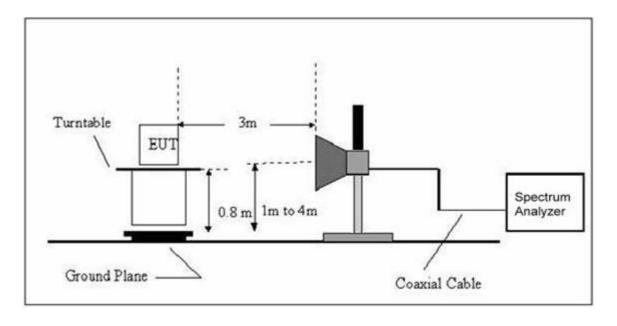
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
	Peak	1 MHz	1 MHz
Above 1000	Avg	1 MHz	10 Hz

## 3.2.3 TEST SETUP

For Radiated Emission 30~1000MHz



## (B) Radiated Emission Test Set-Up Frequency Above 1GHz





# 3.2.4 TEST RESULTS

# TEST RESULTS (30~1000 MHz)

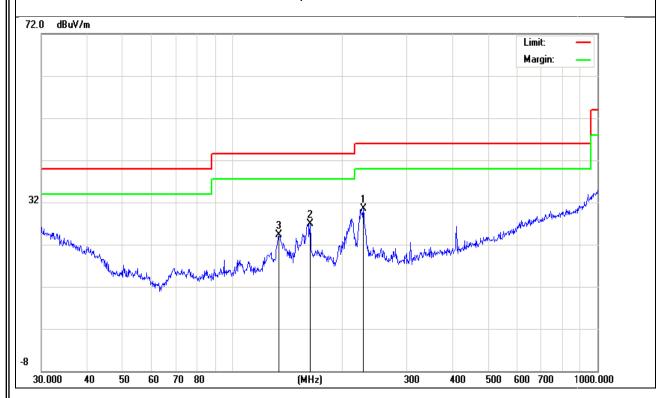
EUT:	RK-175	Model Name. :	RK-175		
Temperature:	<b>24</b> ℃	Relative Humidity:	54%		
Pressure:	1010 hPa	Test Date :	2016-5-11		
Test Mode :	Mode 1	Polarization :	Horizontal		
Test Power :	DC 5V From PC AC 120V/60Hz				

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Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Н	228.4904	19.61	10.85	30.46	46.00	-15.54	QP
Н	163.1818	15.34	11.63	26.97	43.50	-16.53	QP
Н	133.6188	13.45	10.95	24.40	43.50	-19.10	QP

#### Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.



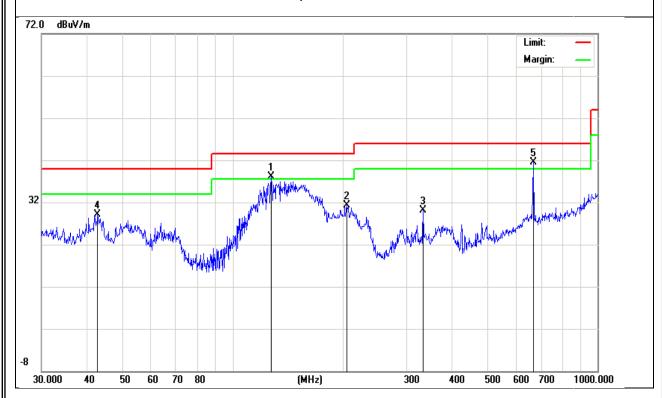


EUT:	RK-175	Model Name.:	RK-175	
Temperature:	<b>24</b> ℃	Relative Humidity:	54%	
Pressure:	1010 hPa	Test Date :	2016-5-11	
Test Mode:	Mode 1	Polarization:	Vertical	
Test Power:	DC 5V From PC AC 120V/60Hz			

Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	1101110111
V	127.2176	27.26	10.76	38.02	43.50	-5.48	QP
V	204.9550	19.73	11.57	31.30	43.50	-12.20	QP
V	332.5187	16.36	13.72	30.08	46.00	-15.92	QP
V	42.7496	15.99	13.16	29.15	40.00	-10.85	QP
V	665.8034	20.69	20.77	41.46	46.00	-4.54	QP

## Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.





## 3.2.5 TEST RESULTS(1000~12400MHz)

All the modulation modes have been tested, and the worst result was report as below:

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	4823.05	48.80	1.34	50.14	74.00	-23.86	peak
V	4823.05	50.47	-12.49	37.98	54.00	-16.02	AVG
V	2347.56	51.09	-10.84	40.25	74.00	-33.75	peak
V	2347.56	50.48	-4.88	45.60	54.00	-8.40	AVG
Н	4866.45	47.90	1.52	49.42	74.00	-24.58	peak
Н	4866.45	51.19	-4.66	46.53	54.00	-7.47	AVG
Н	4433.62	49.71	-0.56	49.15	74.00	-24.85	peak
Н	4433.62	50.38	-12.69	37.69	54.00	-16.31	AVG

#### Remark:

<sup>1.</sup> Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level – Limit All other emissions more than 20dB below the limit.



# 4. EUT TEST PHOTO









# **Conducted Measurement Photos**

