FCC Part 15B
Measurement and Test Report

For

Shenzhen LHYK Communication Technology Co., LTD

F2-006.Taiyi Building.NO.235 Haicheng West Road, Xixiang Street. Baoan District, Shenzhen, Guangdong, China

FCC ID: 2AI9PLK209

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	GPS Tracker
Tested Model:	LK209
Report No.:	STR16068152I-2
Tested Date:	2016-06-20 to 2016-07-16
Issued Date:	2016-07-16
Tested By:	Iven Guo / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy so / PSQ Manager

Prepared By:

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Shenzhen LHYK Communication Technology Co., LTD
Address of applicant:	F2-006.Taiyi Building.NO.235 Haicheng West Road, Xixiang Street. Baoan District, Shenzhen, Guangdong, China
Manufacturer:	Shenzhen LHYK Communication Technology Co., LTD
Address of manufacturer:	F2-006.Taiyi Building.No.235 Haicheng West Road, Xixiang Street. Baoan District, Shenzhen, Guangdong, China

General Description of EUT:	
Product Name:	GPS tracker
Brand Name:	OK
Model No.:	LK209
Adding Model(s):	LK106, LK108, LK109, LK110, LK120, LK206, LK208, LK210, LK330, LK610, LK620, LK630, LK660, LK710, LK720, LK730, LK910, LK920, LK930, LK960
Hardware version:	Lk209_V3.5
Software version:	Lk209_V3.5
Rated Voltage:	DC 3.7V Li-ion Battery
Battery:	10000mAh
Power Adaptor :	LD-A10
	Input: 100-240V~50/60Hz 0.5A; Output: DC5V /1.0A
Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model LK209 , but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V Li-ion Battery
Rated Current:	/
Highest Internal Frequency:	1.3GHz
Classification of ITE:	CLASS B

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen LHYK Communication Technology Co., LTD in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Charging	/
TM2	Downloading	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.0	Unshielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	LR-63C8R

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	±2.88dB
Transmitter Spurious Emissions	Radiated	±5.1dB

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
SEMT-1042	Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
SEMT-1121	Horn Antenna	ETS	3116B	00088203	2016-06-04	2017-06-03
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-04	2017-06-03
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2016-06-04	2017-06-03
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-04	2017-06-03

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

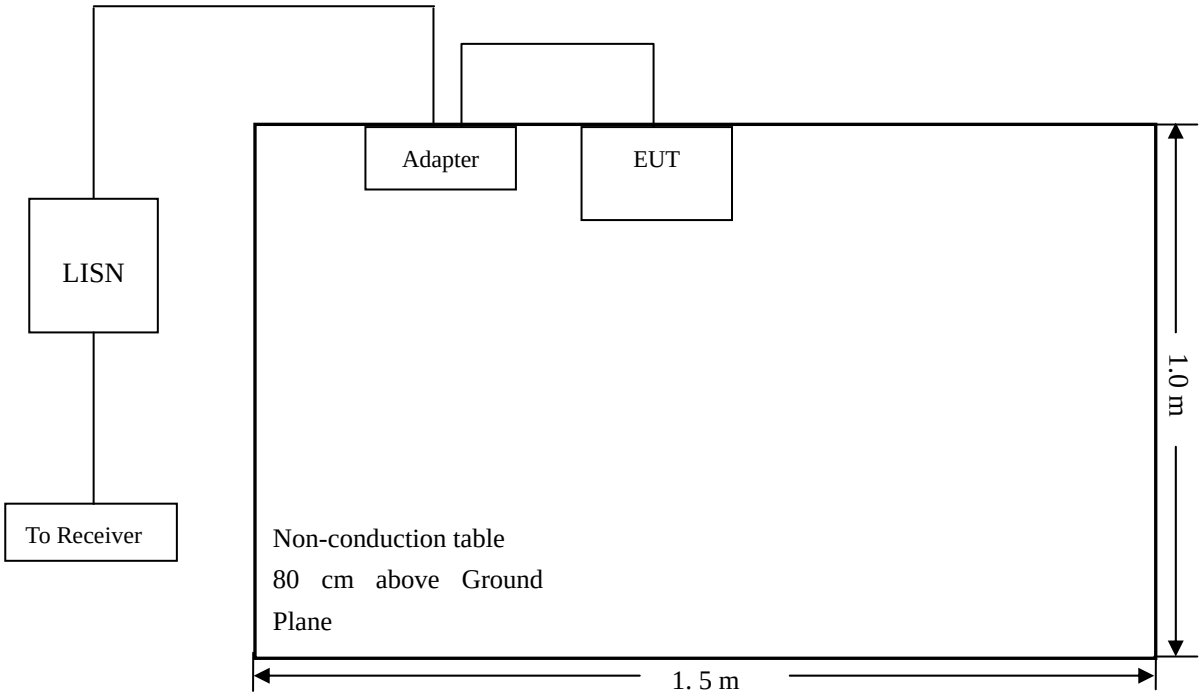
N/A: not applicable

3. Conducted Emissions

3.1 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.4 Summary of Test Results/Plots

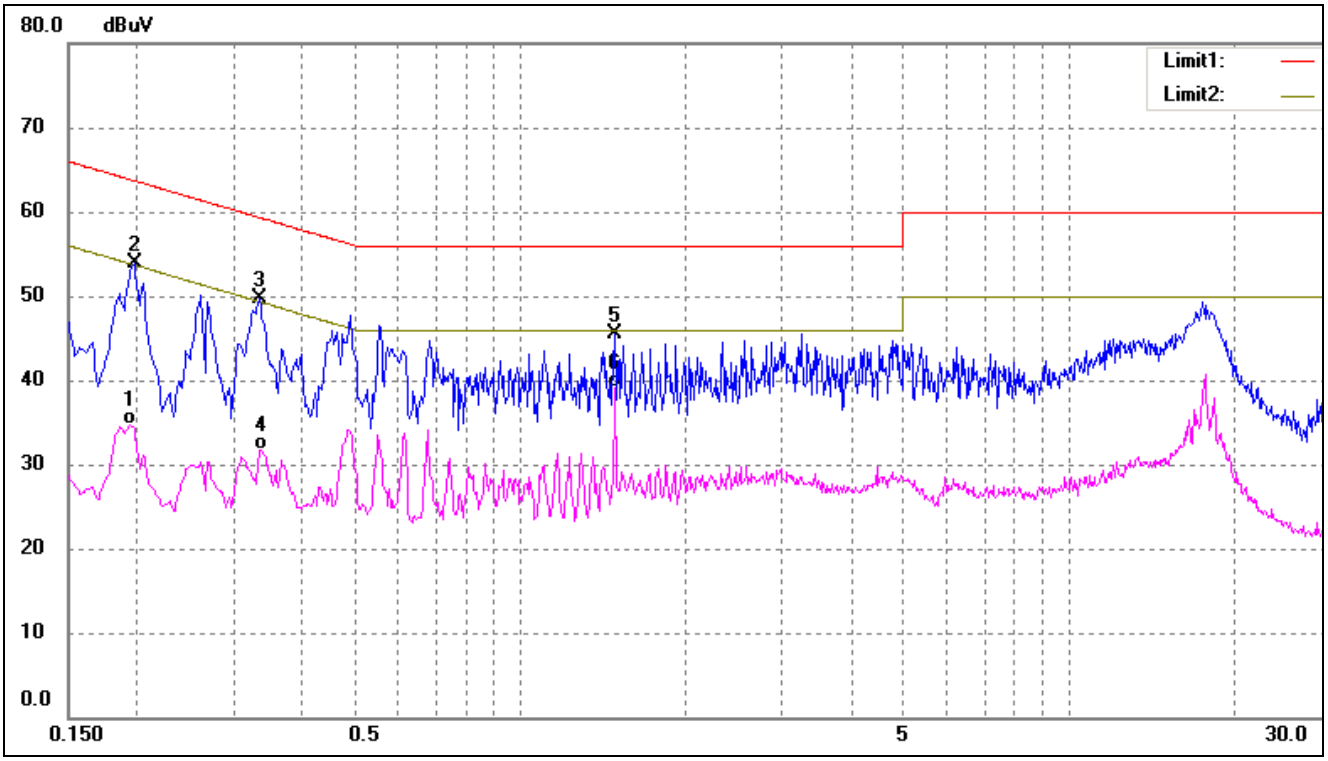
According to the data in section 3.5, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

-4.81 dB at 0.1980 MHz in the **Neutral** mode**, PK** detector, **0.15-30MHz, TM1**

3.5 Conducted Emissions Test Data

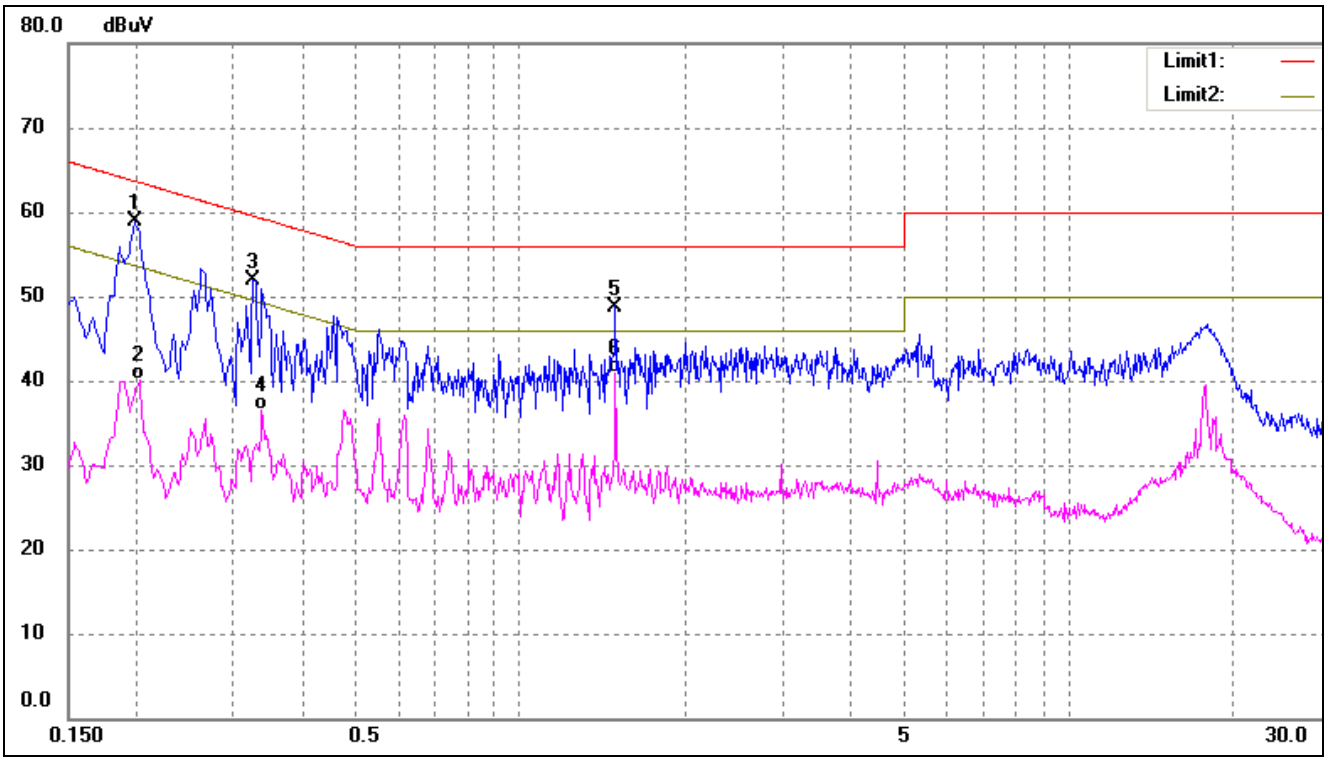
Plot of Conducted Emissions Test Data

EUT: *GPS tracker*
Tested Model: *LK209*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz; Adapter DC 5V*
Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1940	22.24	12.50	34.74	53.86	-19.12	AVG
2*	0.1980	41.50	12.50	54.00	63.69	-9.69	peak
3	0.3340	37.25	12.50	49.75	59.35	-9.60	peak
4	0.3380	19.27	12.50	31.77	49.25	-17.48	AVG
5	1.4900	32.43	13.00	45.43	56.00	-10.57	peak
6	1.4900	26.17	13.00	39.17	46.00	-6.83	AVG

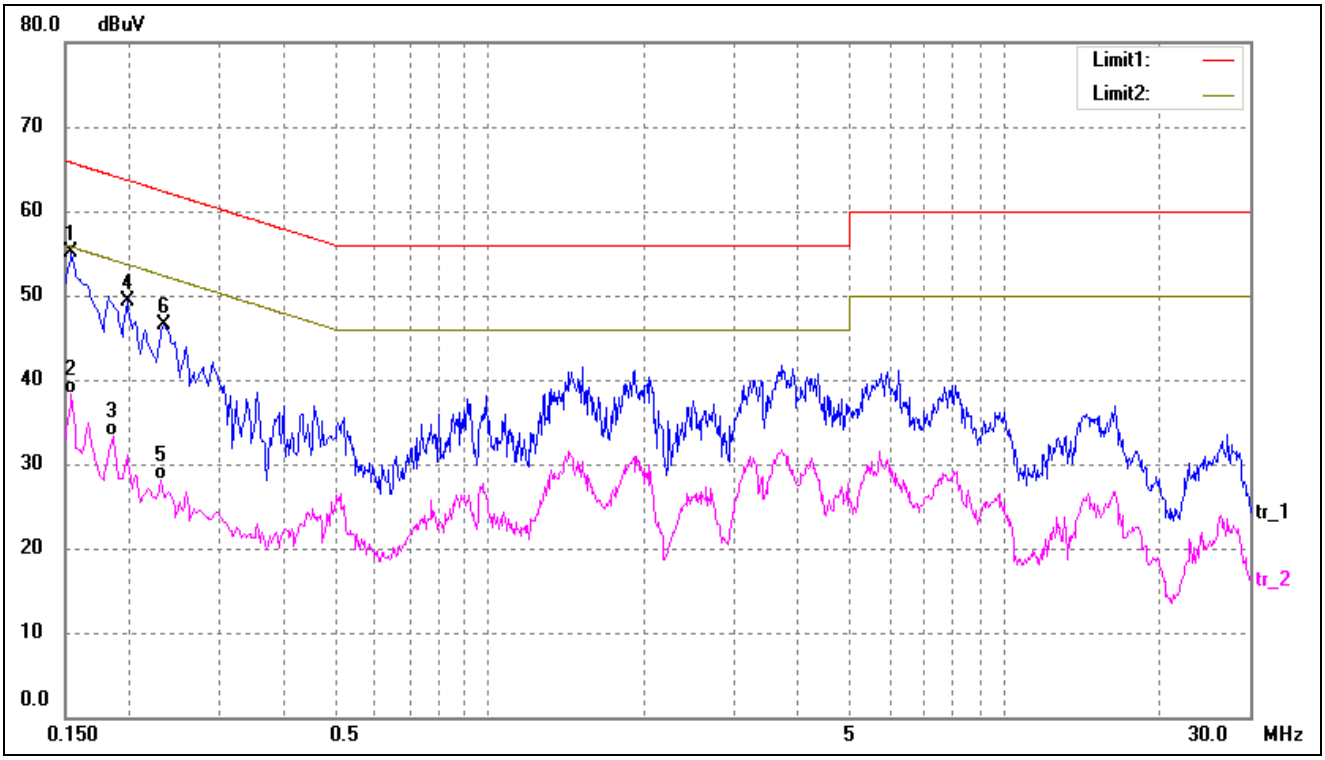
Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1980	46.38	12.50	58.88	63.69	-4.81	peak
2	0.2020	27.51	12.50	40.01	53.53	-13.52	AVG
3	0.3260	39.36	12.50	51.86	59.55	-7.69	peak
4	0.3380	24.09	12.50	36.59	49.25	-12.66	AVG
5	1.4940	35.80	13.00	48.80	56.00	-7.20	peak
6	1.4940	27.88	13.00	40.88	46.00	-5.12	AVG

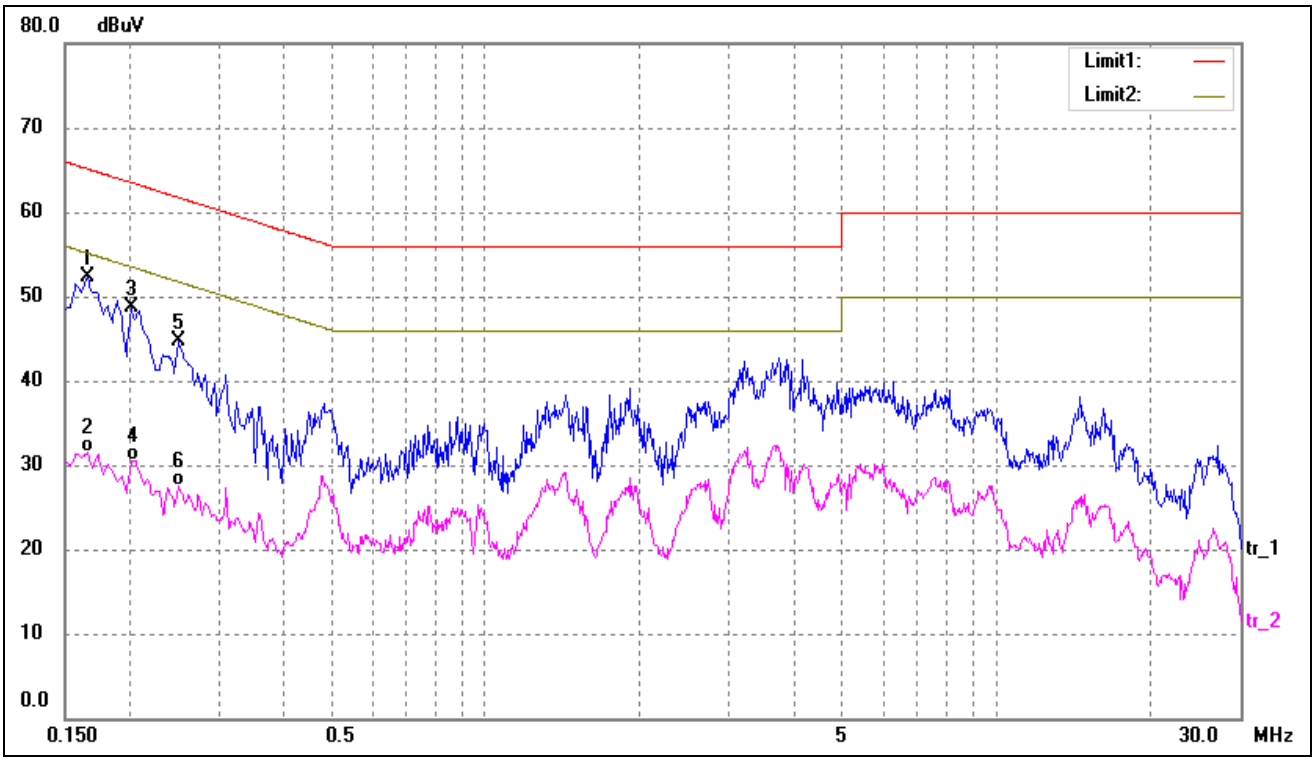
Plot of Conducted Emissions Test Data

EUT: *GPS tracker*
Tested Model: *LK209*
Operating Condition: *TM2*
Comment: *AC 120V/60Hz; USB 5V*
Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1540	45.54	9.50	55.04	65.78	-10.74	peak
2	0.1540	28.72	9.50	38.22	55.78	-17.56	AVG
3	0.1860	23.83	9.50	33.33	54.21	-20.88	AVG
4	0.1980	39.83	9.50	49.33	63.69	-14.36	peak
5	0.2300	18.60	9.50	28.10	52.45	-24.35	AVG
6	0.2340	37.06	9.50	46.56	62.31	-15.75	peak

Test Specification: *Line*

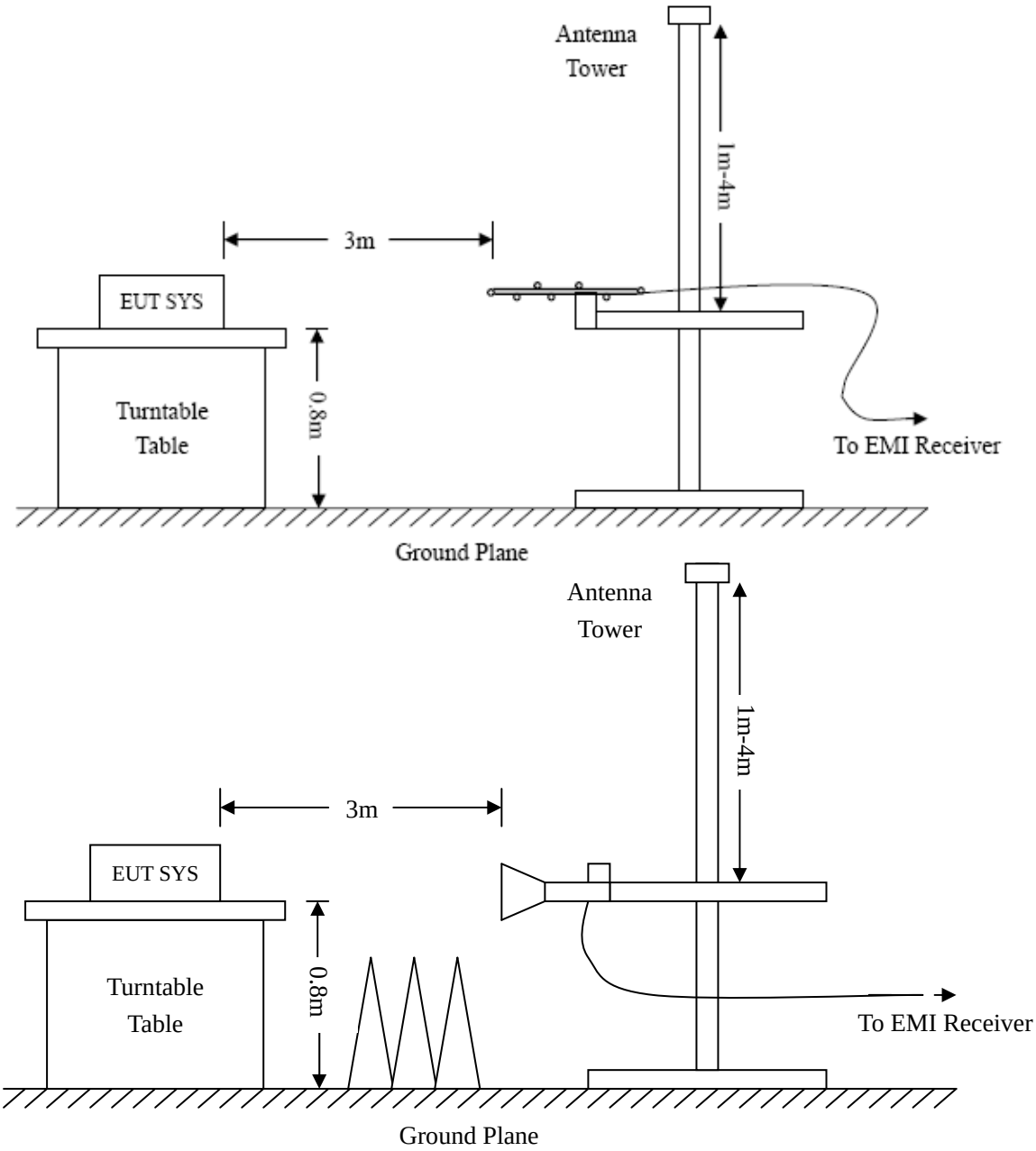


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1660	42.71	9.50	52.21	65.16	-12.95	peak
2	0.1660	21.95	9.50	31.45	55.16	-23.71	AVG
3	0.2020	39.20	9.50	48.70	63.53	-14.83	peak
4	0.2060	21.07	9.50	30.57	53.37	-22.80	AVG
5	0.2500	35.18	9.50	44.68	61.76	-17.08	peak
6	0.2500	17.95	9.50	27.45	51.76	-24.31	AVG

4. Radiated Emissions

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.



4.2 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.109(a) Limit

4.4 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

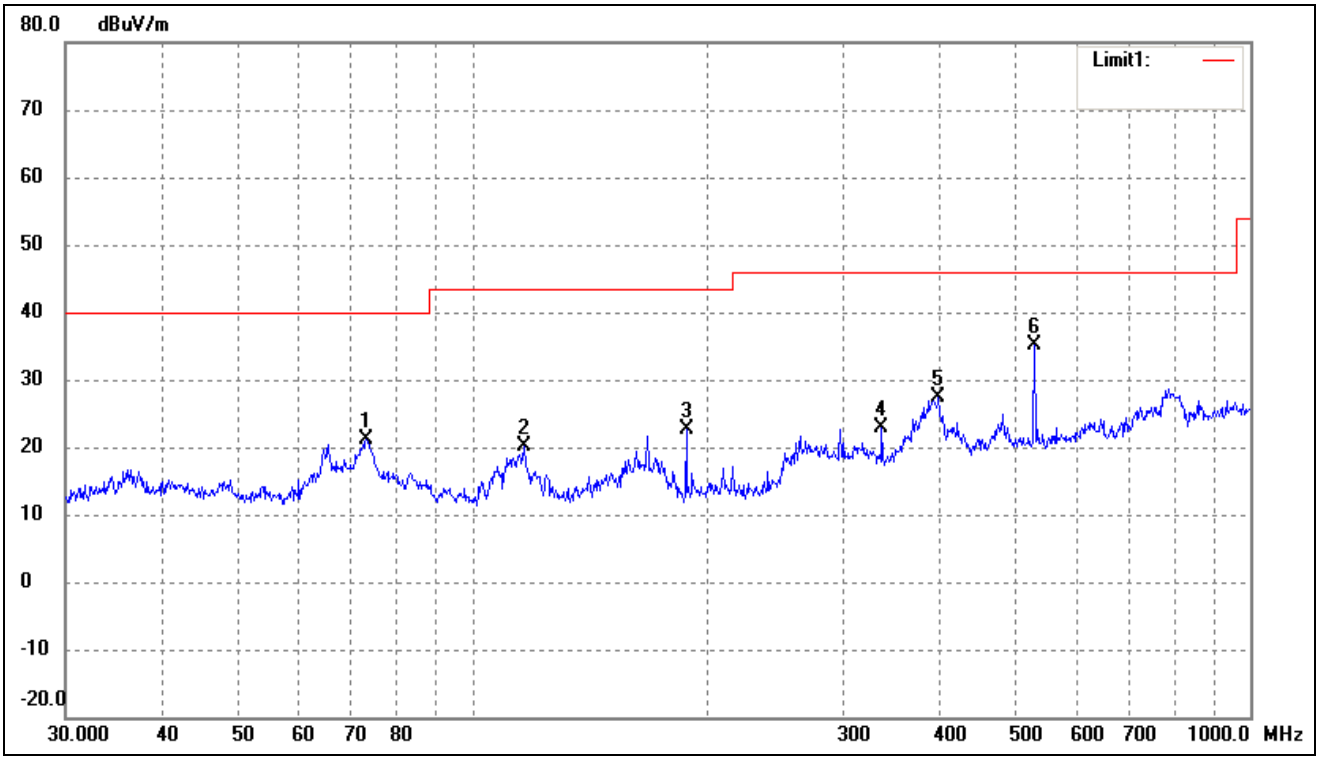
4.5 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-1.08 dB at 323.3204 MHz in the **Horizontal** polarization, **TM2 Mode 30MHz** to **6.5 GHz**, **3Meters**

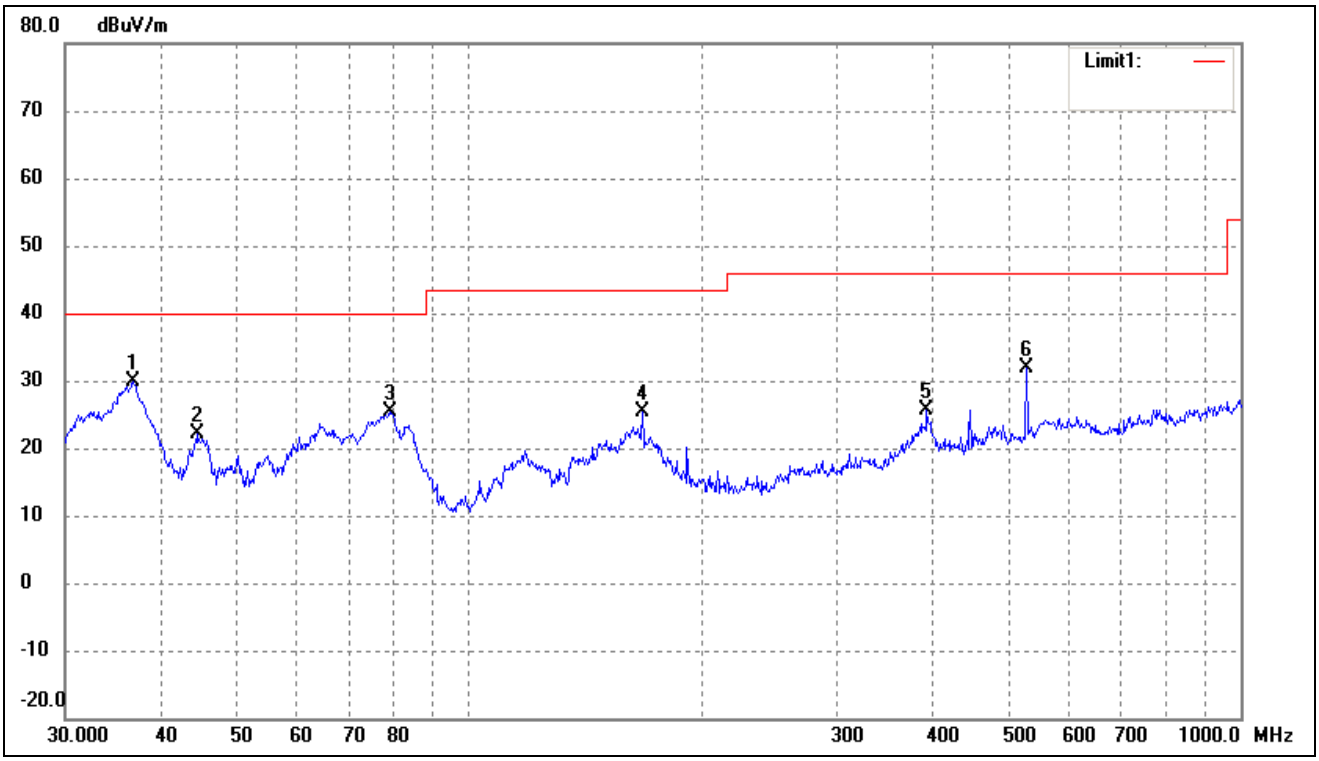
Plot of Radiated Emissions Test Data

EUT: *GPS tracker*
Tested Model: *LK209*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz; Adapter DC 5V*
Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	73.1025	33.63	-12.57	21.06	40.00	-18.94	145	100	peak
2	116.5401	31.48	-11.34	20.14	43.50	-23.36	166	100	peak
3	188.4125	32.96	-10.22	22.74	43.50	-20.76	172	100	peak
4	336.0352	27.73	-4.91	22.82	46.00	-23.18	184	100	peak
5	397.6334	30.36	-3.01	27.35	46.00	-18.65	180	100	peak
6	528.2458	37.08	-1.85	35.23	46.00	-10.77	180	100	peak

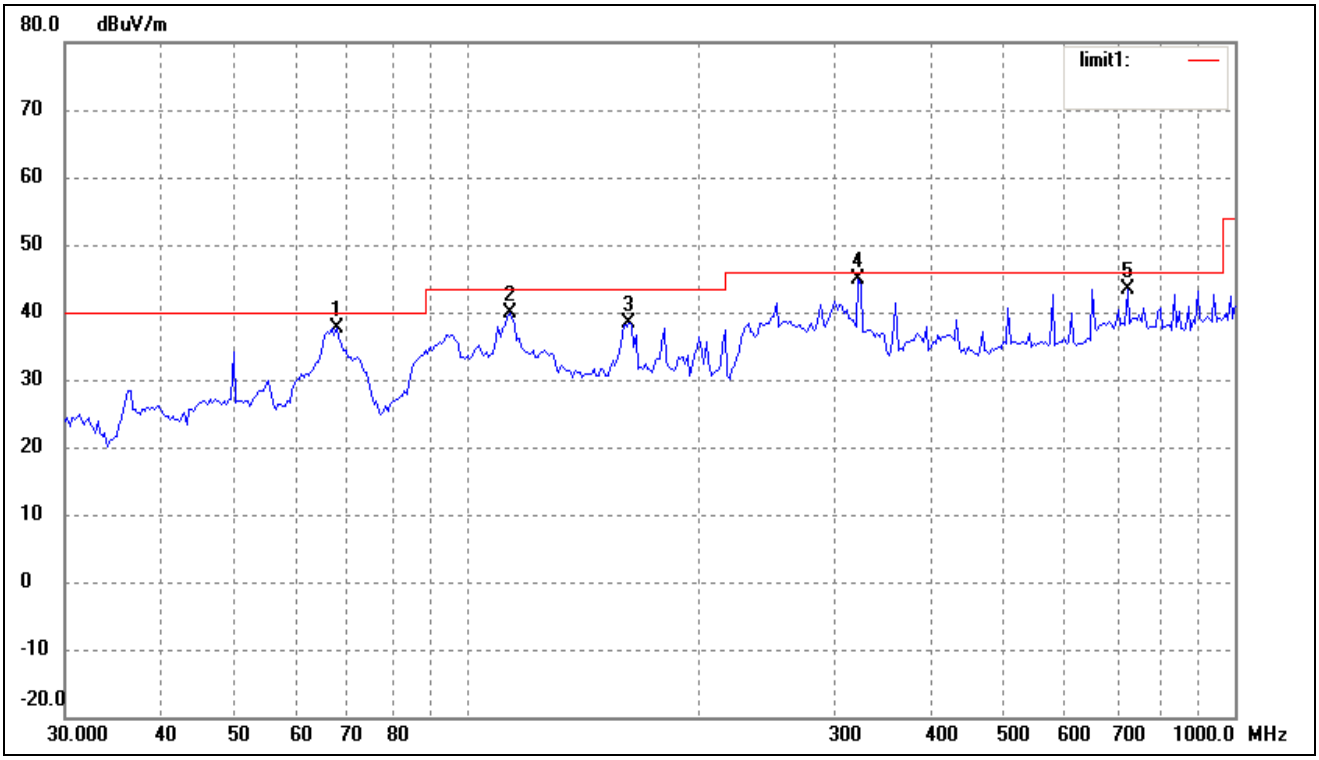
Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	36.7662	38.49	-8.55	29.94	40.00	-10.06	180	100	peak
2	44.5868	30.11	-7.97	22.14	40.00	-17.86	185	100	peak
3	78.9652	37.49	-12.07	25.42	40.00	-14.58	352	100	peak
4	167.8243	37.22	-11.91	25.31	43.50	-18.19	357	100	peak
5	392.0951	28.30	-2.73	25.57	46.00	-20.43	28	100	peak
6	528.2458	33.64	-1.85	31.79	46.00	-14.21	257	100	peak

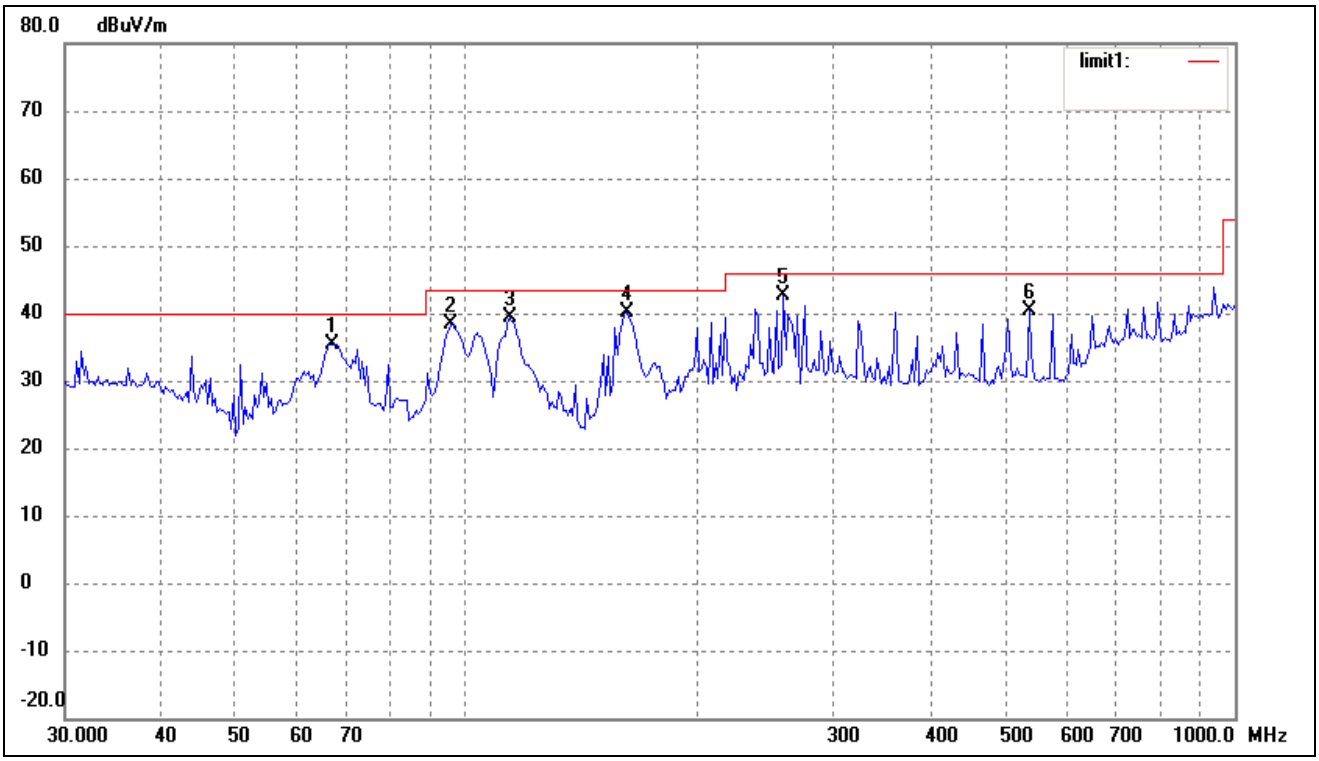
Plot of Radiated Emissions Test Data

EUT: *GPS tracker*
Tested Model: *LK209*
Operating Condition: *TM2*
Comment: *USB5V*
Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	67.6751	33.13	4.53	37.66	40.00	-2.34	58	150	QP
2	113.7142	32.80	6.98	39.78	43.50	-3.72	326	100	peak
3	162.6106	33.86	4.63	38.49	43.50	-5.01	29	120	peak
4	323.3204	34.86	10.06	44.92	46.00	-1.08	209	100	QP
5	724.2611	25.61	17.86	43.47	46.00	-2.53	359	200	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	66.7325	30.53	4.90	35.43	40.00	-4.57	51	100	peak
2	95.4270	30.39	8.09	38.48	43.50	-5.02	308	100	peak
3	113.7142	32.35	6.98	39.33	43.50	-4.17	120	100	peak
4	161.4741	35.45	4.59	40.04	43.50	-3.46	359	100	peak
5	258.3263	33.77	8.91	42.68	46.00	-3.32	359	100	peak

Note: Testing is carried out with frequency rang 30MHz to the 6.5GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

******* END OF REPORT *******