EMC Test Report

Product Name: Smart Phone

Model Number: HUAWEI CRR-L09

Report No: SYBH(Z-EMC)061052015-2

FCC ID: QISCRR-L09

Reliability Laboratory of Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

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Notice

1. **The laboratory has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L0310.**
2. **The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.**
3. **The laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 97456.**
4. **The laboratory has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 6369A-2.**
5. **The test report is invalid if not marked with "exclusive stamp for the test report".**
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7. **The test report is invalid if there is any evidence of erasure and/or falsification.**
8. **If there is any dissidence for the test report, please file objection to the test centre within 15 days from the date of receiving the test report.**
9. **Normally, the test report is only responsible for the samples that have undergone the test.**
10. **Context of the test report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of the laboratory.**

Applicant:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Date of Receipt Test Item:	May.27.2015
Start Date of Test:	June.01.2015
End Date of Test:	June.09.2015
Test Result:	Pass

Approved By (Lab Manager)	**2015-06-25**	**Liu Chunlin**	Liu Chunlin
	Date	**Name**	**Signature**
Prepared by (Test Engineer)	**2015-06-25**	**Wang Zhiheng**	Wang Zhiheng
	Date	**Name**	**Signature**

TABLE OF CONTENT

1 General Information

1.1 EUT Description

EUT Description	
Product Name	Smart Phone
Model Number	HUAWEI CRR-L09
Input voltage	DC 3.8V
TX Frequency	GSM 850: 824MHz to 849MHz GSM 1900: 1850MHz to 1910MHz WCDMA Band II: 1850MHz to 1910MHz WCDMA Band IV: 1710MHz to 1755MHz WCDMA Band V: 824MHz to 849MHz LTE BAND 2: 1850MHz to 1910MHz LTE BAND 4: 1710MHz to 1755MHz LTE BAND 5: 824MHz to 849MHz LTE BAND 7: 2500MHz to 2570MHz LTE BAND 12: 699MHz to 716MHz LTE BAND 17: 704MHz to 716MHz LTE BAND 25: 1850MHz to 1915MHz LTE BAND 26: 814MHz to 849MHz WIFI/Bluetooth: 2400MHz to 2483.5MHz NFC: 13.56MHz
RX Frequency	GSM 850: 869MHz to 894MHz GSM 1900: 1930MHz to 1990MHz WCDMA Band II: 1930MHz to 1990MHz WCDMA Band IV: 2110MHz to 2155MHz WCDMA Band V: 869MHz to 894MHz LTE BAND 2: 1930MHz to 1990MHz LTE BAND 4: 2110MHz to 2155MHz LTE BAND 5: 869MHz to 894MHz LTE BAND 7: 2620MHz to 2690MHz LTE BAND 12: 729MHz to 746MHz LTE BAND 17: 734MHz to 746MHz LTE BAND 25: 1930MHz to 1995MHz LTE BAND 26: 859MHz to 894MHz WIFI/Bluetooth: 2400MHz to 2483.5MHz NFC:13.56MHz GPS: 1575.42MHz
S/N	UBE0115429000544
HW Version	HL1CRRL09M
SW Version	CRR-L09V100R001C900B017
EUT Accessory	
Data cable	Data Cable USB A Male to Micro Usb, Shielded
Adapter	Brand: HUAWEI

	Model: HW-050200B01 Input voltage: 100-240V 50/60Hz ,0.5A Output voltage: 5V ⎓ 2A Rated Power: 10W S/N: Y67601F4800041 S/N: H668LHF4300261 S/N: P66805F4802703 S/N: B67632F4200081
Adapter	Brand: HUAWEI Model: HW-050200E01 Input voltage: 100-240V 50/60Hz ,0.5A Output voltage: 5V ⎓ 2A Rated Power: 10W S/N: Y67501F5E00009 S/N: H6751RF4M01642 S/N: P67505F4X00385 S/N: B67560F4G00040
Adapter	Brand: HUAWEI Model: HW-050200U01 Input voltage: 100-240V 50/60Hz ,0.5A Output voltage: 5V ⎓ 2A Rated Power: 10W S/N: Y67401F5F00111 S/N: H6741RF4E00006 S/N: P67401F5W00330 S/N: B67499F4J00253
Adapter	Brand: HUAWEI Model: HW-050200A01 Input voltage: 100-240V 50/60Hz ,0.5A Output voltage: 5V ⎓ 2A Rated Power: 10W S/N: Y67701F4K00011 S/N: H6771RF3700016 S/N: P67700F2R00008 S/N: B67732F4900014
Rechargeable Li-ion	Brand: HUAWEI Battery Model: HB436178EBW Rated capacity: 2620mAh Nominal Voltage: ⎓ +3.8V Charging Voltage: ⎓ +4.35V

Remark: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed information.

1.2 Test Site Information

Test Site:	Reliability Laboratory of BTL Inc.
Test Site Location:	No.3,Jinshagang 1st Road,ShiXia,Dalang Town,DongGuan,China.

1.3 Applied Standards

APPLIED STANDARD

47 CFR FCC Part 15:2014

2 Summary of Results

Summary of Results				
Test Items	**Test Mode**	**Performance Class & Required Performance Criteria**	**Result**	**Site**
Radiated Emissions Enclosure Port	Mode1-Mode2 Mode 4	CLASS B	Pass	Site1
Conducted Emissions ☒DC Power Port ☒AC Power Port ☐Telecommunication Ports	Mode 1-Mode 4	CLASS B	Pass	Site1
Note: 1, Measurement taken is within the measurement uncertainty of measurement system. 2, ☒ The item has been tested; ☐ The item has not been tested.				

During the measurement, the environmental conditions complied with the range listed as below.

Item	Required
Ambient temperature	15°C～35°C
Relative humidity	25%～75%
Atmospheric pressure	86kPa～106kPa

3 System Configuration during EMC Test

3.1Test Mode

Huawei has verified the construction and function in typical operation. All the test modes were carried out with the EUT under normal operation, which were shown in this test report and defined as below:

Test Mode	
Mode 1:	Adapter + earphone + Camera On + Idle
Mode 2:	Adapter + earphone + Playing + Idle
Mode 3:	Adapter + earphone +Traffic
Mode 4:	USB Copy(EUT with PC) + earphone + Idle

Remark:

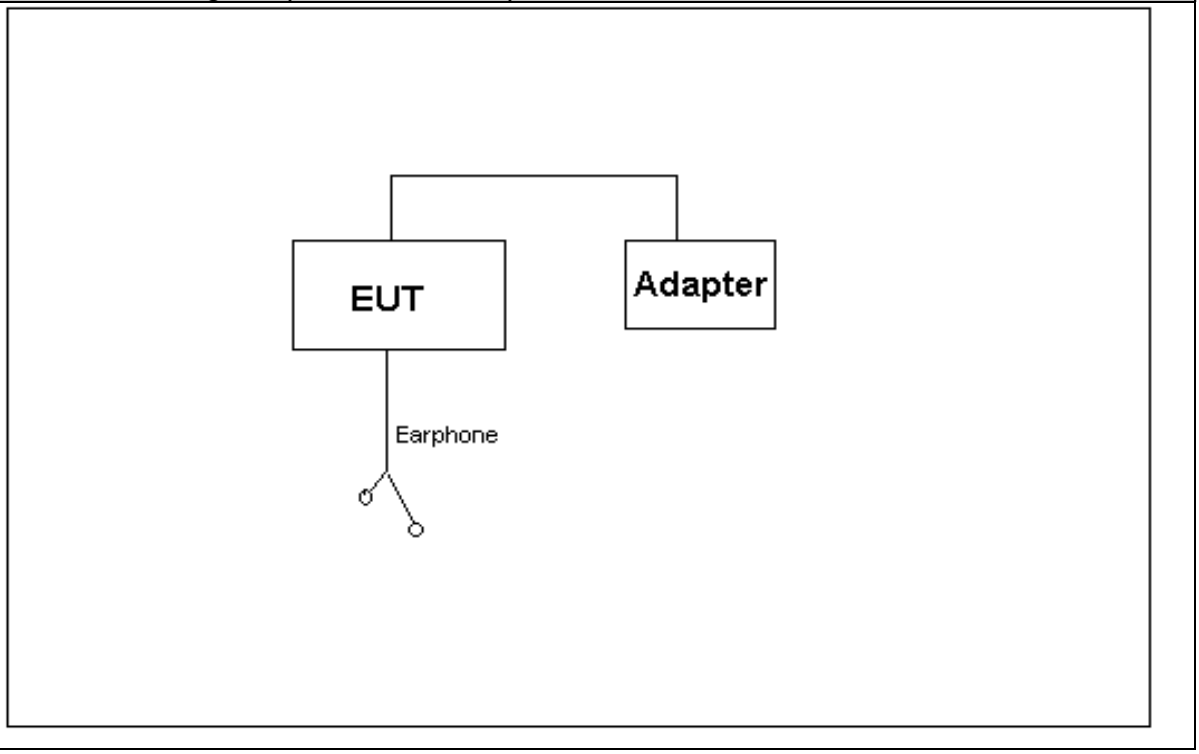
1) If there is one kind of accessories with different models, each one should be applied throughout the compliance test respectively, however, only the worst case will be recorded in this report.
2) If EUT has more than one typical operation, only the worst test mode will be recorded in this report.

Traffic Mode:
When the EUT state is switched on and with Radio Resource Control (RRC) connection established.

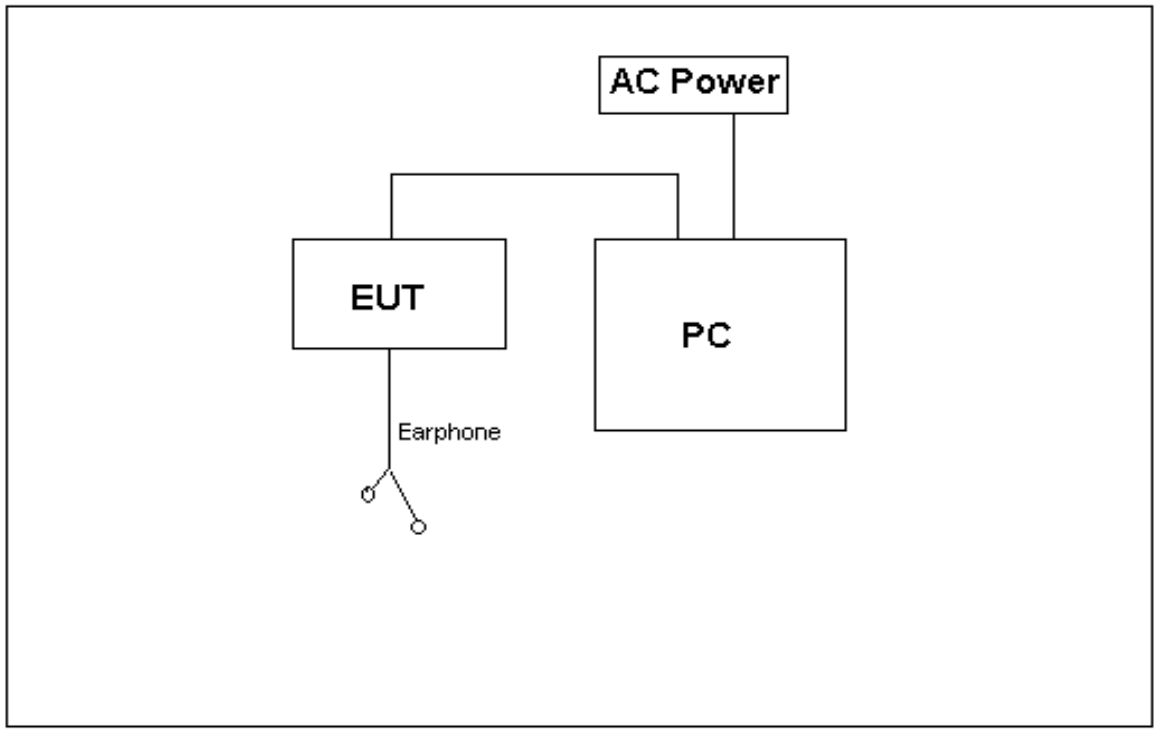
Idle Mode:
When the EUT state is switched on but without Radio Resource Control (RRC) connection.

3.2Test System Configuration

Connection Diagram (Mode 1~Mode 3)



Connection Diagram (Mode 4)



3.3Cables Used during Test

Cable	Quantity	Length	Type of Cable
USB	1	<3m	Shielded
Earphone	1	<3m	Unshielded

3.4Associated Equipment Used during Test

Name	Model	Manufacturer	S/N	Calibrated Deadline	Cal interval (month)
Radio Communication Tester	CMU200	R&S	3607033573	2015-09-12	12
Radio Communication Tester	CMW500	R&S	A111278719	2015-09-23	12
Notebook	X200	ThinkPad	31090403588	/	/

4 Electromagnetic Interference (EMI)

4.1Radiated Disturbance 30MHz to 18GHz

4.1.1 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4-2009. The test distance was 3m.The set-up and test methods were according to ANSI C63.4-2009.

A preliminary scan and a final scan of the emissions were made from 30 MHz to18 GHz by using test script of software; The emissions were measured using Quasi-Peak Detector (30MHz~1GHz) and AV/PK detector (above 1GHz). The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m. The azimuth range of turntable was 0°to 360°. The receiving antenna has two polarizations V and H.

Measurement bandwidth (RBW) for 30MHz to 1000 MHz: 120 kHz;

Measurement bandwidth (RBW) for 1000MHz to 18000 MHz: 1MHz;

EUT was configured in idle mode and the test performed at worst emission state.

4.1.2 Test setup

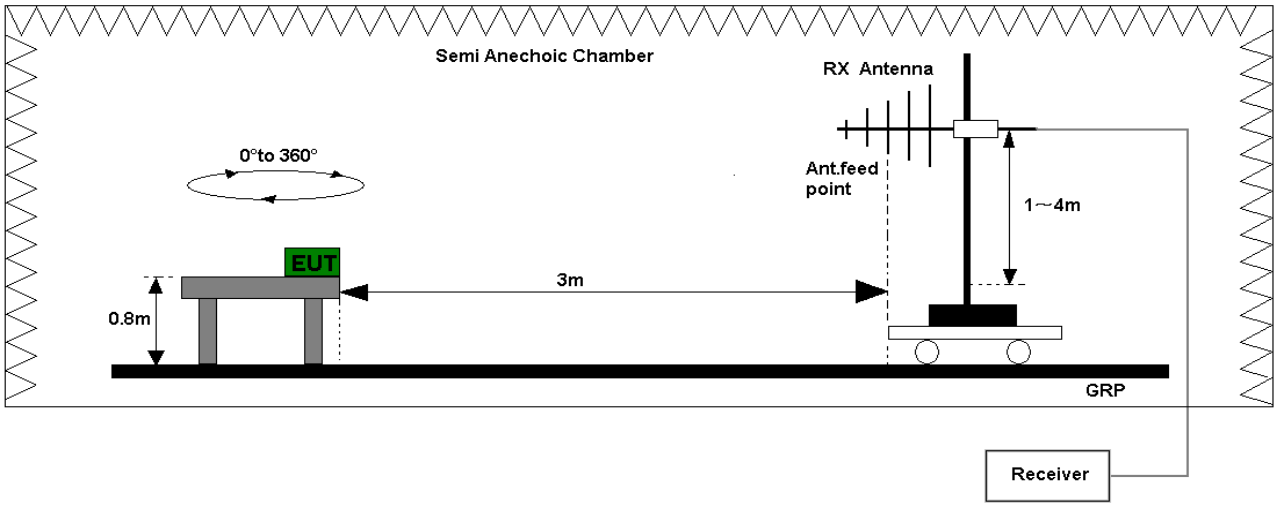


Figure 1. Test set-up of radiated disturbance(30MHz-1GHz)

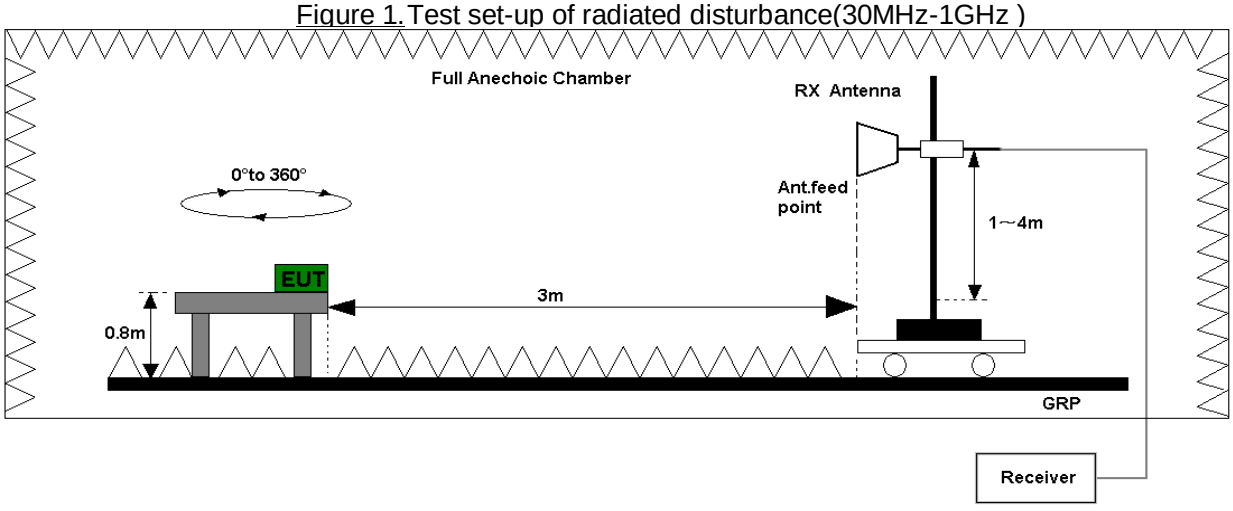


Figure 2. Test set-up of radiated disturbance(above 1GHz)

4.1.3 Test Results

The EUT has met the requirements for Radiated Emission of enclosure port.
Refer to the section 7.1 of this report for test data..

Test Limits（Class B）				
Frequency of Emission (MHz)	Radiated Limit			
	Unit(μV/m)		Unit(dBμV/m)	
30-88	100		40	
88-216	150		43.5	
216-960	200		46	
Above 960	500		54	
Above 1000	AV	PK	AV	PK
	500	5000	54	74

4.2Conducted Disturbance 0.15 MHz to 30MHz

4.2.1 Test Procedure

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm away from LISN. The set-up and test methods were according to ANSI C63.4-2009. Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.
EUT was communicated with the simulator through Air interface, the simulator controls the EUT to transmitter the maximum power which defined in specification of product. The EUT operated on the typical channel.
Measurement bandwidth (RBW) for 150 kHz to 30 MHz: 9 kHz;
The EUT was set in the shielded chamber and operated under nominal conditions.

4.2.2 Test Setup

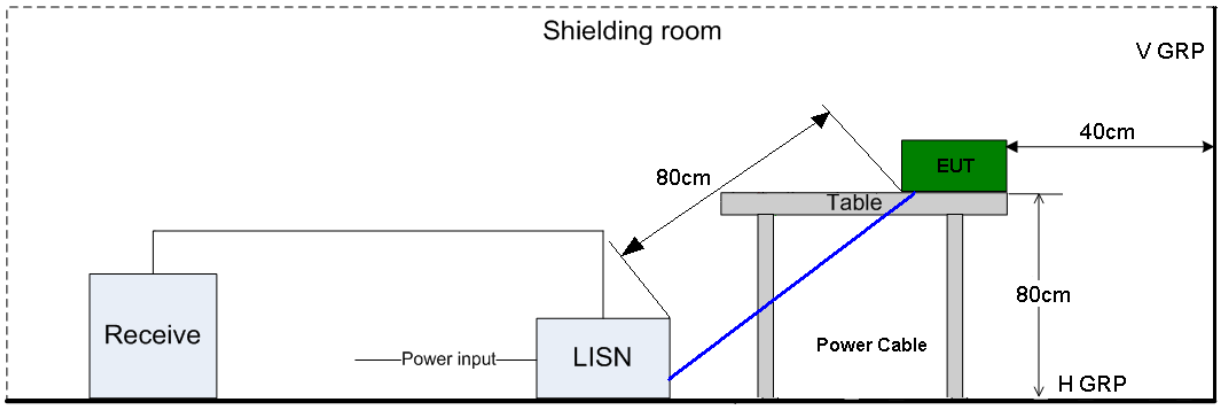


Figure 3.Test Set-up of conducted disturbance

4.2.3 Test Results

The EUT has met requirements for Conducted disturbance.
Refer to the section 7.2 of this report for test data.

Test Limit of AC Power Port		
Frequency range	150kHz ~ 30MHz	
Frequency	Voltage limits	
	QP	AV
0.15MHz~0.5MHz	66-56dBμV	56-46 dBμV
0.5MHz-5MHz	56dBμV	46 dBμV
5MHz~30MHz	60dBμV	50 dBμV

5 Main Test Instruments

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
RE	Antenna	EMCO	3142C	66462	Mar. 28, 2016
	Antenna	EMCO	3142C	66464	Mar. 28, 2016
	Amplifier	Agilent	8447D	2944A11203	Nov.02, 2015
	Amplifier	Agilent	8447D	2944A11204	Nov. 02, 2015
	Spectrum Analyzer	Agilent	E4443A	MY48250370	Nov. 02, 2015
	RF Pre-selector	Agilent	N9039A	MY46520201	Nov. 02, 2015
	Test Cable	N/A	Cable_5m_8m_15m	N/A	Jan. 04, 2016
	Test Cable	N/A	Cable_5m_11m_15m	N/A	Jan. 04, 2016
	EMI Test Receiver	R&S	ESR3	101862	Jan.02, 2016
	Spectrum Analyzer	R&S	FSP40	100185	Nov. 02, 2015
	RF Pre-selector	Agilent	N9039A	MY46520214	Nov. 02, 2015
	Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
CE	Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Dec. 05, 2015
	LISN	R&S	ENV216	100526	Mar. 28, 2016
	Test Cable	N/A	RG400 12m	N/A	Mar. 13, 2016
	EMI Test Receiver	R&S	ESCS30	826547/022	Mar. 28, 2016
	50Ω Terminator	SHX	TF2-3G-A	8122901	Mar. 28, 2016

Item	Kind of Equipment	Version
RE	EZ-EMC	BTL-2ANT-1
CE	EZ-EMC	NB-03A1-01

6 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

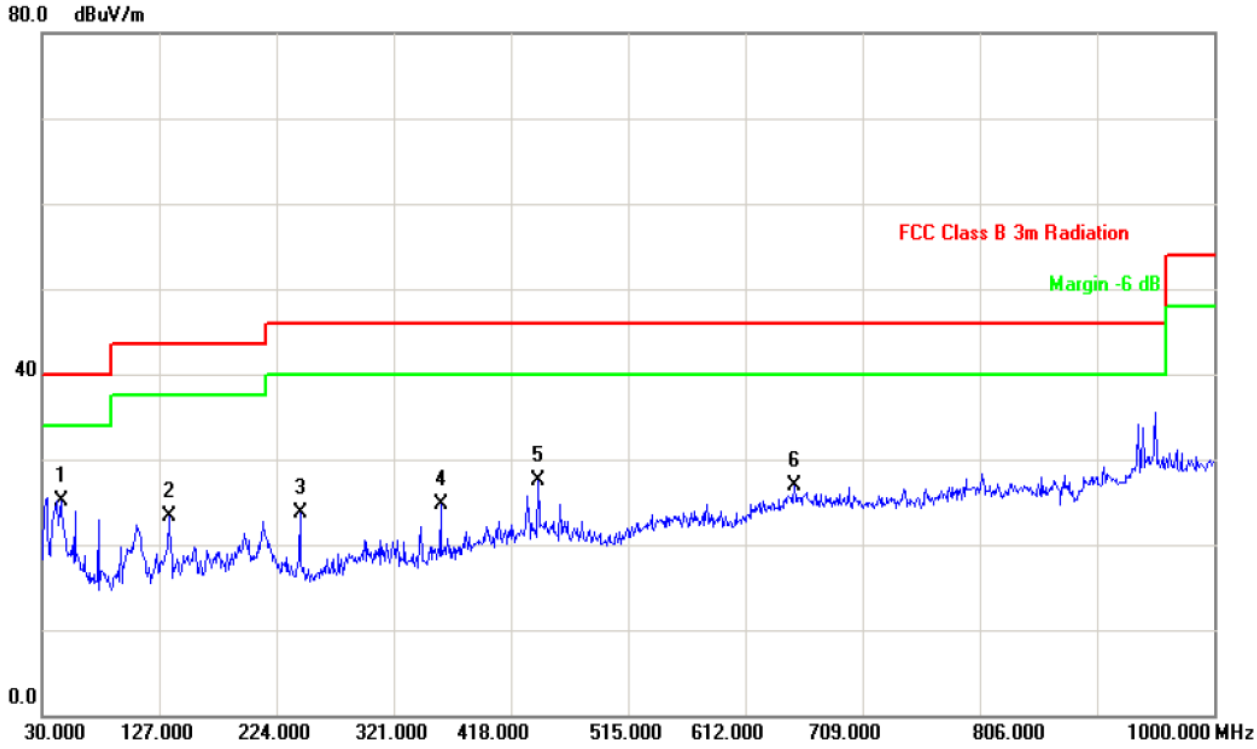
System Measurement Uncertainty		
Items		**Extended Uncertainty**
RE(30MHz-1GHz)	30MHz ~ 200MHz	U=3.80dB; k=2
	200MHz ~ 1,000MHz	U=4.05dB; k=2
RE(1GHz-6GHz)	Field strength (dBμV/m)	U=4.51dB; k=2
CE	Disturbance Voltage (dBμV)	U=3.4dB; k=2

7 Test Data and Graph

Only the worst test result was shown in this report.

7.1Radiated Disturbance

30MHz~1GHz

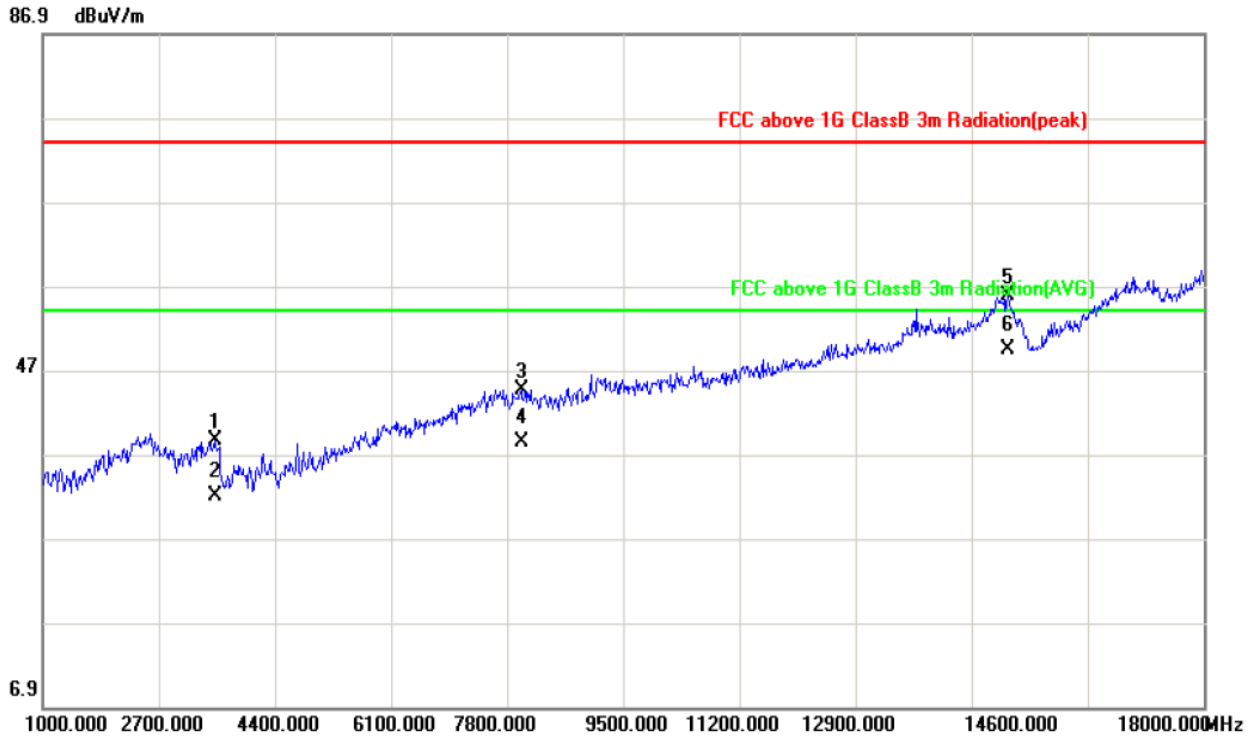


MEASUREMENT RESULT:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	45.5200	37.03	-11.84	25.19	40.00	-14.81	QP	
2		134.7600	34.92	-11.54	23.38	43.50	-20.12	QP	
3		243.4000	36.16	-12.49	23.67	46.00	-22.33	QP	
4		359.8000	34.18	-9.40	24.78	46.00	-21.22	QP	
5		440.3100	33.59	-6.15	27.44	46.00	-18.56	QP	
6		652.7400	28.51	-1.63	26.88	46.00	-19.12	QP	

Note:
Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)
The reading level is calculated by software which is not shown in the sheet.

1GHz~18GHz



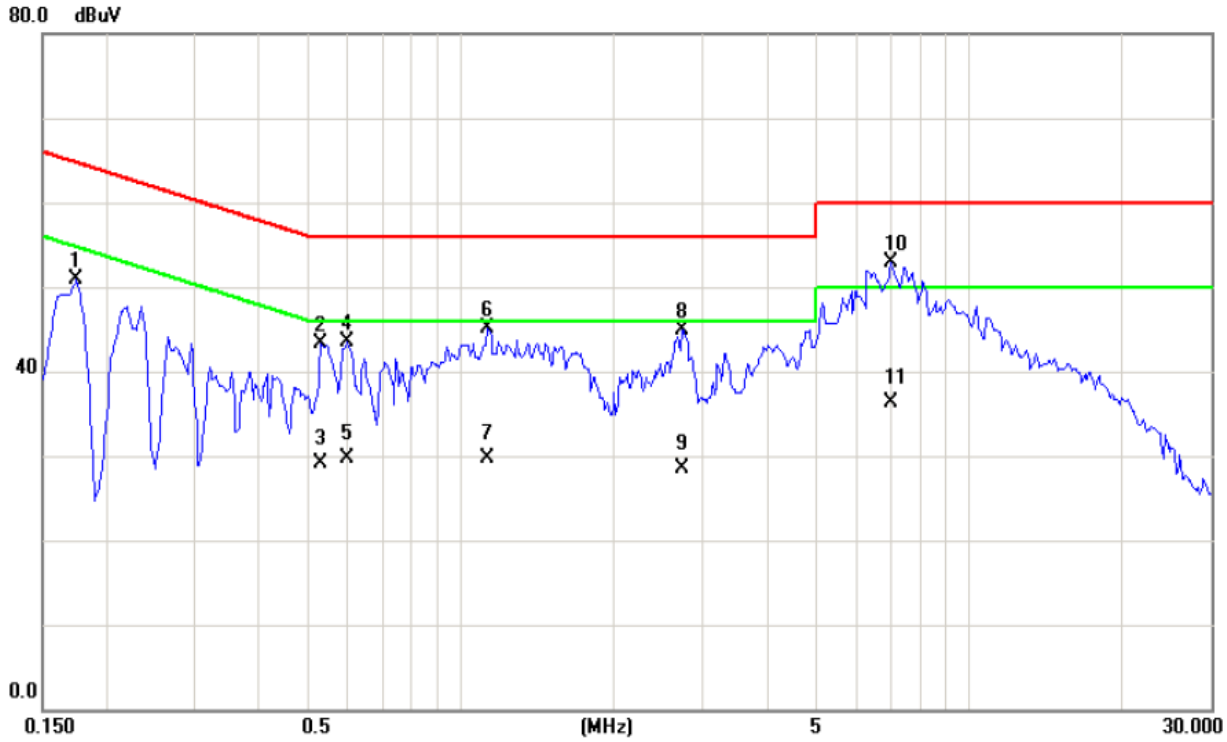
MEASUREMENT RESULT:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		3516.000	35.41	3.27	38.68	74.00	-35.32	peak	
2		3516.000	28.73	3.27	32.00	54.00	-22.00	AVG	
3		8004.000	29.18	15.45	44.63	74.00	-29.37	peak	
4		8004.000	22.89	15.45	38.34	54.00	-15.66	AVG	
5		15127.00	32.25	23.55	55.80	74.00	-18.20	peak	
6	*	15127.00	25.79	23.55	49.34	54.00	-4.66	AVG	

Note:
Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)
The reading level is calculated by software which is not shown in the sheet.

7.2Conducted Disturbance

AC Port Test Data



MEASUREMENT RESULT:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1750	41.33	9.60	50.93	64.72	-13.79	peak	
2		0.5300	33.59	9.66	43.25	56.00	-12.75	peak	
3		0.5300	19.50	9.66	29.16	46.00	-16.84	AVG	
4		0.5950	33.85	9.68	43.53	56.00	-12.47	peak	
5		0.5950	20.10	9.68	29.78	46.00	-16.22	AVG	
6		1.1250	35.26	9.80	45.06	56.00	-10.94	peak	
7		1.1250	19.90	9.80	29.70	46.00	-16.30	AVG	
8		2.7300	35.09	9.83	44.92	56.00	-11.08	peak	
9		2.7300	18.60	9.83	28.43	46.00	-17.57	AVG	
10	*	7.0250	42.85	10.14	52.99	60.00	-7.01	peak	
11		7.0250	26.10	10.14	36.24	50.00	-13.76	AVG	

Note:
Level= Reading level+ Transd (cable loss + correction factor)
The reading level is calculated by software which is not shown in the sheet.

----------END----------