

FCC Test Report

Equipment : Tablet
Brand Name : Getac
Model No. : RX10
FCC ID : QYL6022AKU
Standard : 47 CFR FCC Part 15.209
Operating Band : 125 kHz (channel frequency 125kHz)
FCC Classification : DXX
Applicant : **Getac Technology Corporation.**
5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang
Dist., Taipei City 11568, Taiwan, R.O.C.
Manufacturer : **Getac Technology(Kunshan)Co., LTD.**
No. 269, No. 2 Avenue, Kunshan Comprehensive Free Trade
Zone, Jiangsu Province, P.R.C

The product sample received on May 23, 2016 and completely tested on Jun. 30, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:


Kevin Liang / Assistant Manager

Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information.....	5
1.2	Accessories and Support Equipment	6
1.3	Testing Applied Standards	6
1.4	Testing Location Information	6
1.5	Measurement Uncertainty	7
2	TEST CONFIGURATION OF EUT.....	8
2.1	The Worst Case Modulation Configuration	8
2.2	Test Channel Frequencies Configuration.....	8
2.3	The Worst Case Measurement Configuration.....	8
2.4	Test Setup Diagram	9
3	TRANSMITTER TEST RESULT	10
3.1	AC Power-line Conducted Emissions	10
3.2	Transmitter Radiated Emissions	14
3.3	Emission Bandwidth	24
4	TEST EQUIPMENT AND CALIBRATION DATA	27
APPENDIX A. TEST PHOTOS		
APPENDIX B. PHOTOGRAPHS OF EUT		

Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]:0.1856300MHz 50.70 (Margin 13.53dB) - QP 32.15 (Margin 22.08dB) - AV	FCC 15.207	Complied
3.2	15.209	Transmitter Radiated Emissions	[dBuV/m at 3m]: 33.88MHz 30.37 (Margin 9.63dB) - PK	FCC 15.209	Complied
3.3	15.215(c)	Emission Bandwidth	20dB Bandwidth 24.89 [kHz]	N/A	Complied



SPORTON INTERNATIONAL INC.
TEL : 886-3-327-3456
FAX : 886-3-327-0973

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Frequency Range	Modulation	Ch. Frequency (kHz)	Channel Number	Field Strength (dBuV/m)
125 kHz	OOK	125	1	66
Note 1: Field strength performed peak level at 3m.				

1.1.2 Antenna Information

Antenna Category	
<input type="checkbox"/>	Equipment placed on the market without antennas
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	External antenna (dedicated antennas)

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input checked="" type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input type="checkbox"/> Prototype
Type of EUT	
<input type="checkbox"/>	Stand-alone
<input checked="" type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: Getac / RX10
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
<input type="checkbox"/>	Operated normally mode for worst duty cycle
<input checked="" type="checkbox"/>	Operated test mode for worst duty cycle
Test Signal Duty Cycle (x)	Power Duty Factor[dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 100%	0.00

1.1.5 EUT Operational Condition

Supply Voltage	<input checked="" type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
Type of DC Source	<input checked="" type="checkbox"/> External AC adapter	<input type="checkbox"/> From Host System	<input checked="" type="checkbox"/> Battery

1.2 Accessories and Support Equipment

Specification of Accessory				
AC Adapter 1	Brand Name	FSP GROUP INC.	Model Name	FSP065-REB
	Power Rating	I/P: 100-240Vac, 1.5A ; O/P: 19Vdc, 3.42A		
	Power Cord	1.7 meter, non-shielded cable, w/o ferrite core		
	Power Cable	1.5 meter, non-shielded cable, with a ferrite core		
Battery 1	Brand Name	Getac	Model Name	BP4S1P2100-S
	Power Rating	I/P: 15.2Vdc, 2160mAh		
Battery 2	Brand Name	Getac	Model Name	BP4S2P2900-P
	Power Rating	I/P: 14.4Vdc, 5800mAh		
RFID	Brand Name	RF IDEas	Model Name	RDR-6022AKU
Digitizer Module	Brand Name	PENTECH	Model Name	TP-101S01-H1S1-GT

Note: Regarding to more detail and other information, please refer to user manual.

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013

1.4 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.		
		TEL : 886-3-327-3456 FAX : 886-3-327-0973		
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Jeremy	23°C / 63%	Jun. 28, 2016
AC Conduction	CO04-HY	Ryan	23°C / 55%	Jun. 30, 2016
Radiated Emission	03CH02-HY	Daniel	21.6°C / 56%	Jun. 21, 2016

Test site registered number [553509] with FCC.

Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Measurement Uncertainty		
Test Item		Uncertainty
AC power-line conducted emissions		±2.3 dB
Emission bandwidth, 6dB bandwidth		±0.6 %
RF output power, conducted		±0.1 dB
Power density, conducted		±0.6 dB
Unwanted emissions, conducted	9 – 150 kHz	±0.4 dB
	0.15 – 30 MHz	±0.4 dB
	30 – 1000 MHz	±0.6 dB
	1 – 18 GHz	±0.5 dB
	18 – 40 GHz	±0.5 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	±2.5 dB
	0.15 – 30 MHz	±2.3 dB
	30 – 1000 MHz	±2.6 dB
	1 – 18 GHz	±3.6 dB
	18 – 40 GHz	±3.8 dB
	40 – 200 GHz	N/A
Temperature		±0.8 °C
Humidity		±5 %
DC and low frequency voltages		±0.9 %
Time		±1.4 %
Duty Cycle		±0.6 %

2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration




Mode	Field Strength (dBuV/m at 3m)
OOK	66

2.2 Test Channel Frequencies Configuration

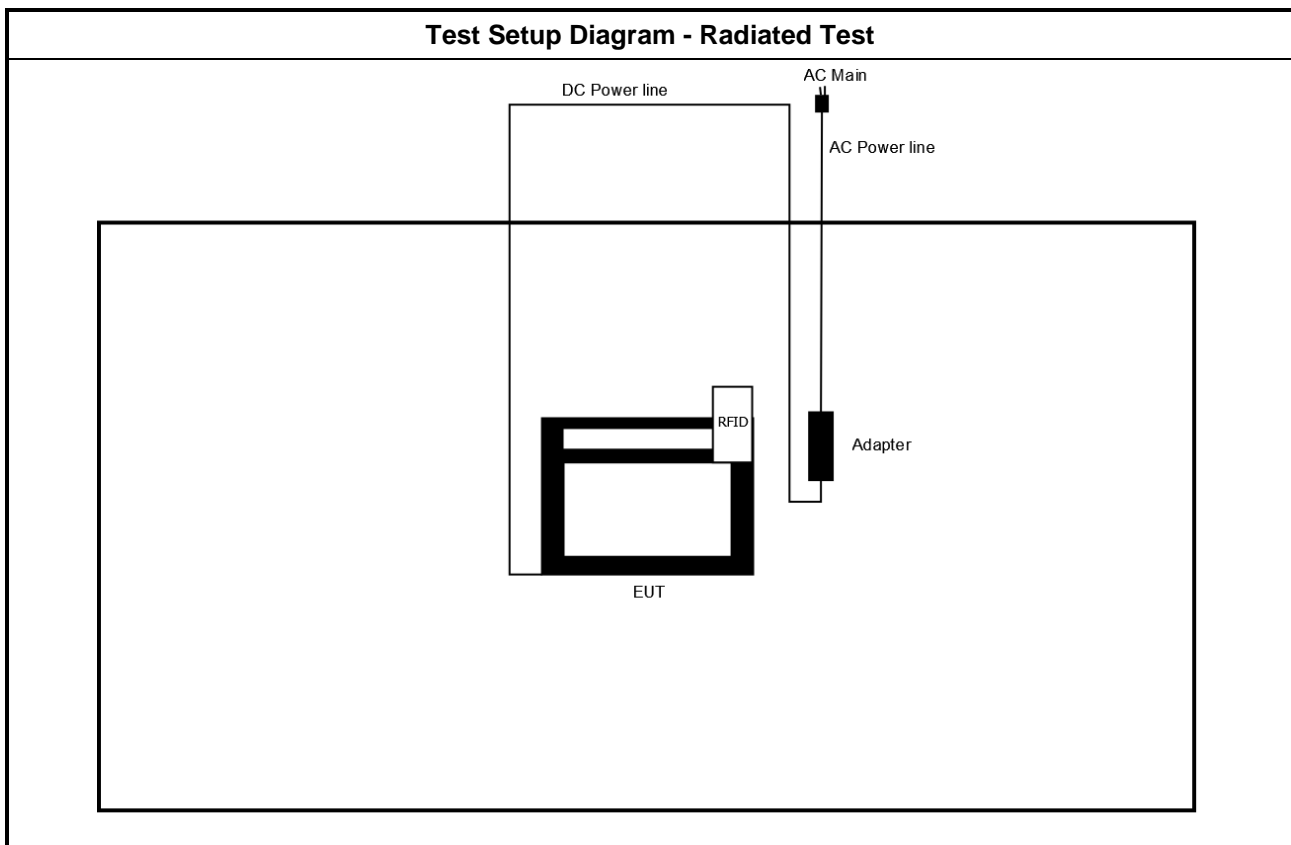
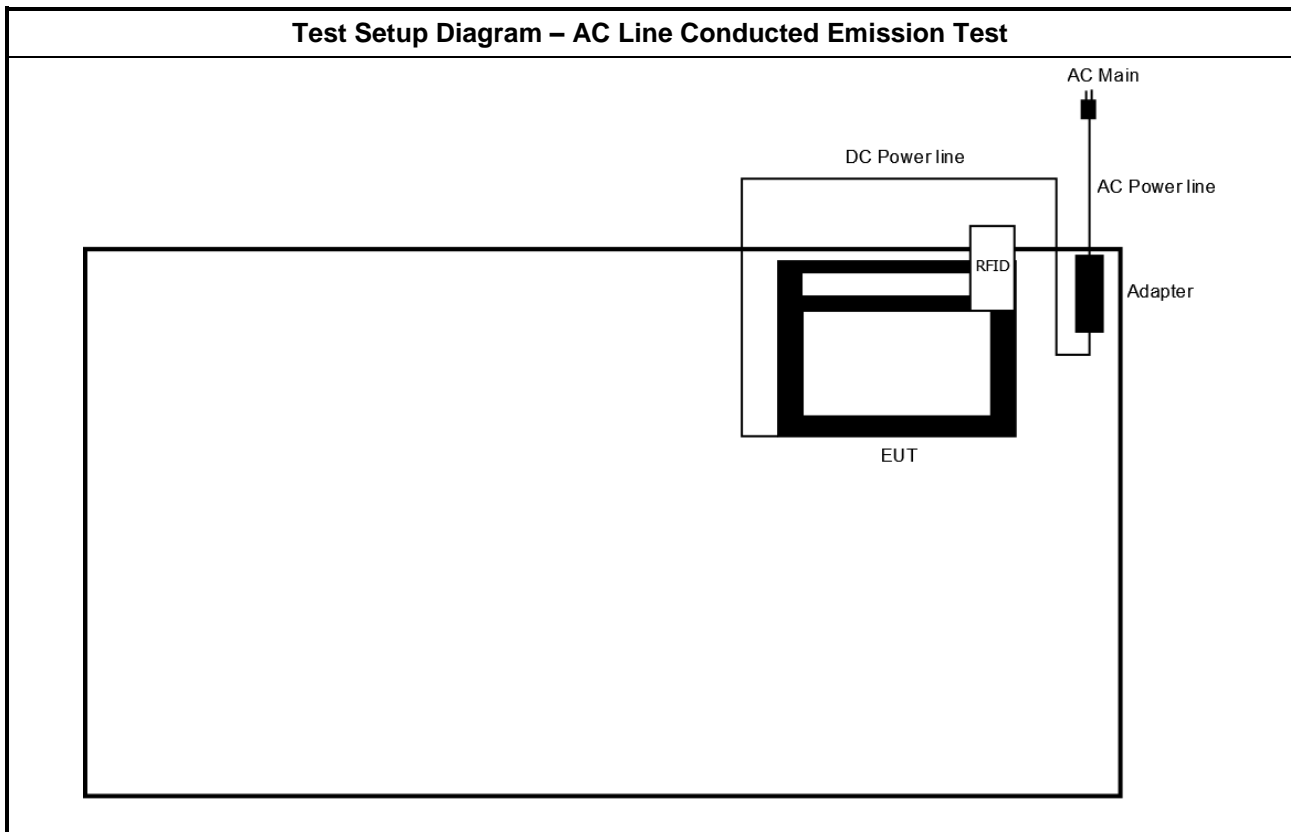
Mode	Test Channel Frequencies (kHz)
OOK	125

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Transmit Mode

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emission Bandwidth, Field Strength of Fundamental Emissions Transmitter Radiated Unwanted Emissions		
Test Condition	Radiated measurement		
User Position	<input type="checkbox"/> EUT will be placed in fixed position.		
	<input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes.		
	<input checked="" type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed three orthogonal planes.		
Operating Mode	Operating Mode Description		
1	<input checked="" type="checkbox"/> Transmit Mode		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT		V	

2.4 Test Setup Diagram



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

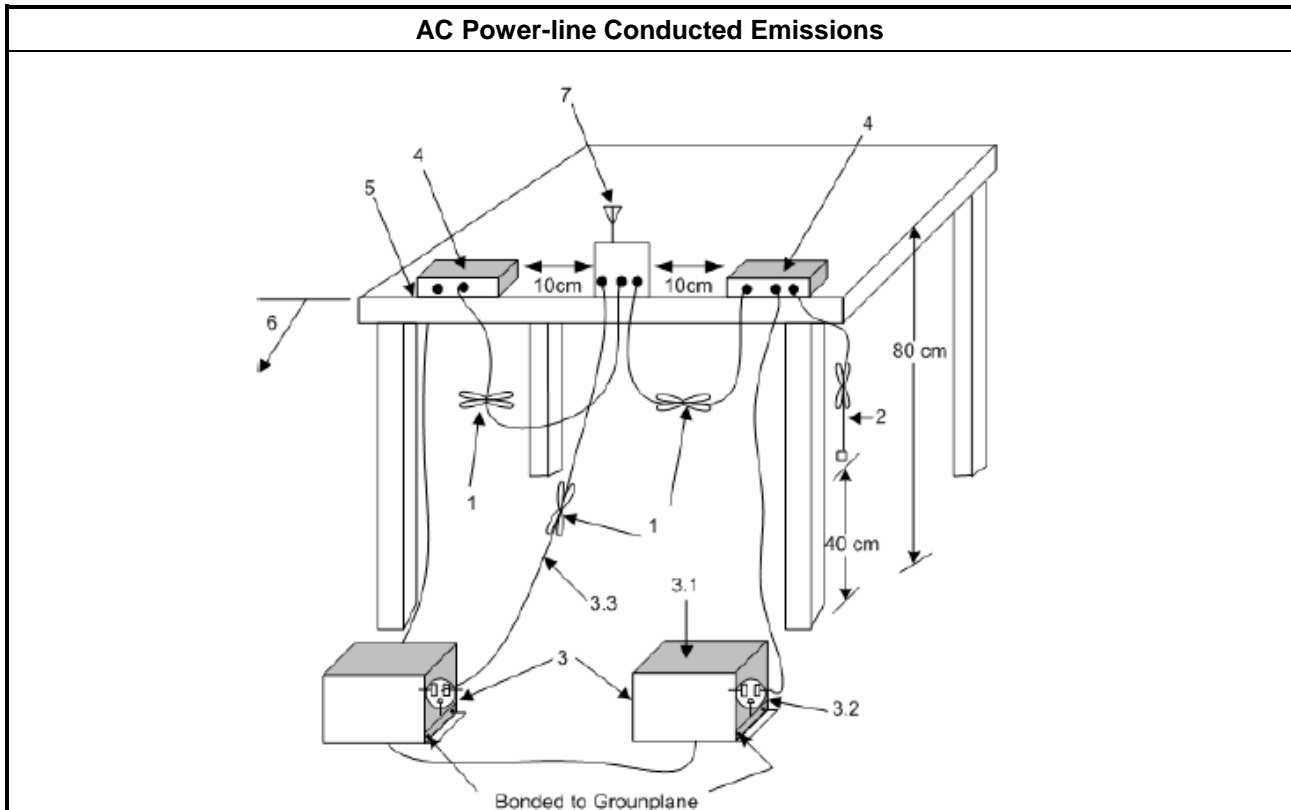
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

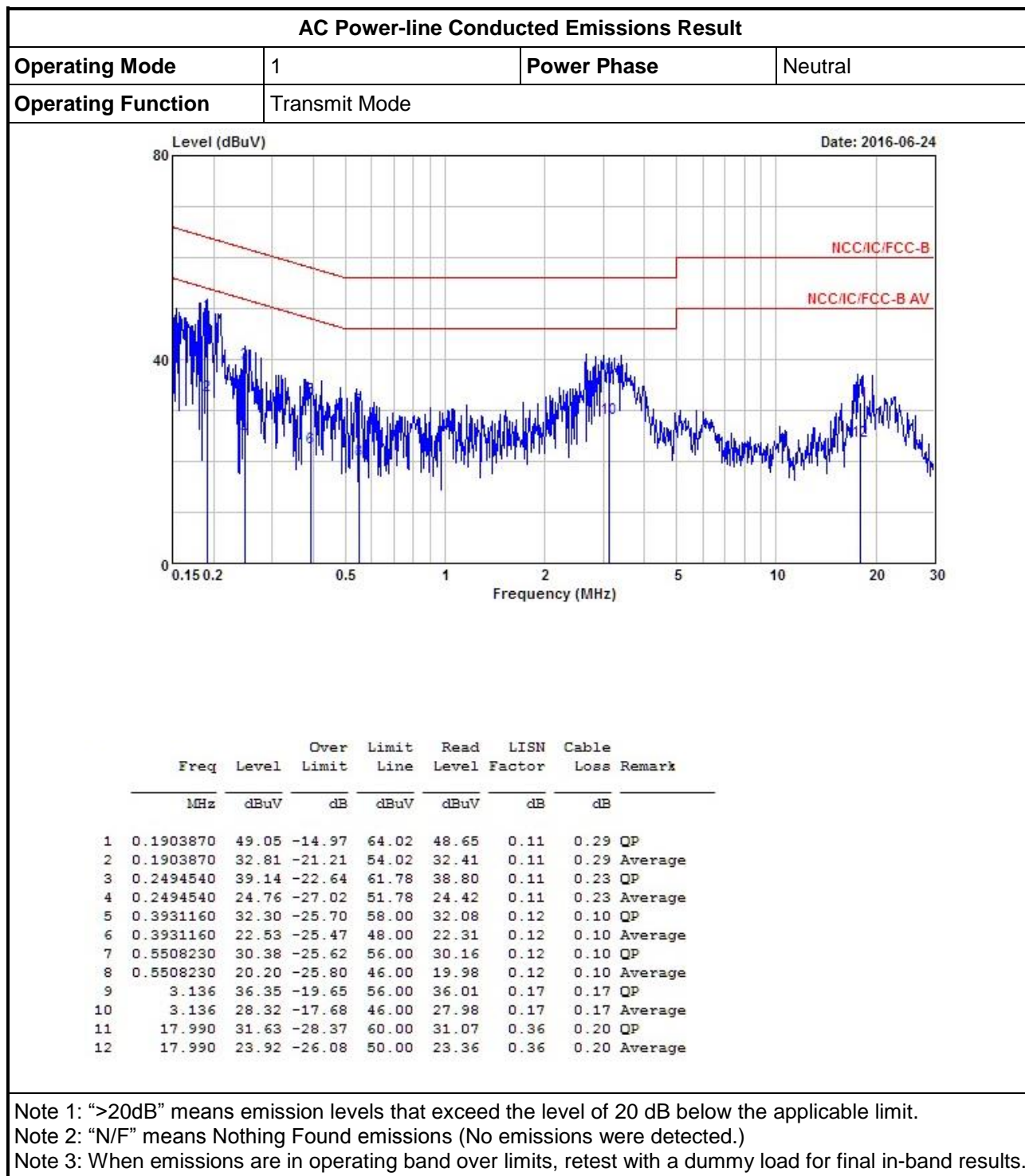
3.1.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.
<input checked="" type="checkbox"/>	If AC conducted emissions fall in operating band, then following below test method confirm final result.
<input type="checkbox"/>	Accept measurements done with a suitable dummy load replacing the antenna under the following conditions: (1) Perform the AC line conducted tests with the antenna connected to determine compliance with FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load to determine compliance with FCC 15.207 limits within the transmitter's fundamental emission band.
<input checked="" type="checkbox"/>	For a device with a permanent antenna operating at or below 30 MHz, accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) Perform the AC line conducted tests with the permanent antenna to determine compliance with the FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load in lieu of the permanent antenna to determine compliance with the FCC 15.207 limits within the transmitter's fundamental emission band.

3.1.4 Test Setup

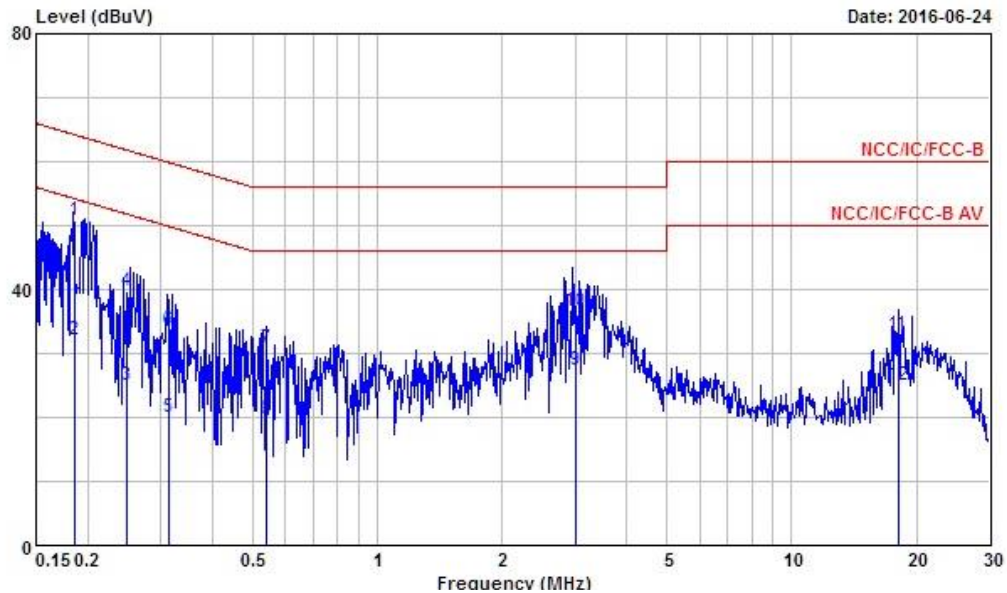


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	Transmit Mode		



	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.1856300	50.70	-13.53	64.23	50.31	0.11	0.28	QP
2	0.1856300	32.15	-22.08	54.23	31.76	0.11	0.28	Average
3	0.2494270	24.95	-26.83	51.78	24.61	0.11	0.23	Average
4	0.2494270	39.71	-22.07	61.78	39.37	0.11	0.23	QP
5	0.3129920	20.09	-29.80	49.89	19.80	0.12	0.17	Average
6	0.3129920	33.57	-26.32	59.89	33.28	0.12	0.17	QP
7	0.5418230	30.84	-25.16	56.00	30.62	0.12	0.10	QP
8	0.5418230	19.63	-26.37	46.00	19.41	0.12	0.10	Average
9	3.000	27.32	-18.68	46.00	26.98	0.16	0.18	Average
10	3.000	36.63	-19.37	56.00	36.29	0.16	0.18	QP
11	18.040	32.77	-27.23	60.00	32.23	0.34	0.20	QP
12	18.040	24.95	-25.05	50.00	24.41	0.34	0.20	Average

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Note 3: When emissions are in operating band over limits, retest with a dummy load for final in-band results.

3.2 Transmitter Radiated Emissions

3.2.1 Transmitter Radiated Emissions Limit

Transmitter Radiated Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 1GHz measurements employing a CISPR quasi-peak detector.

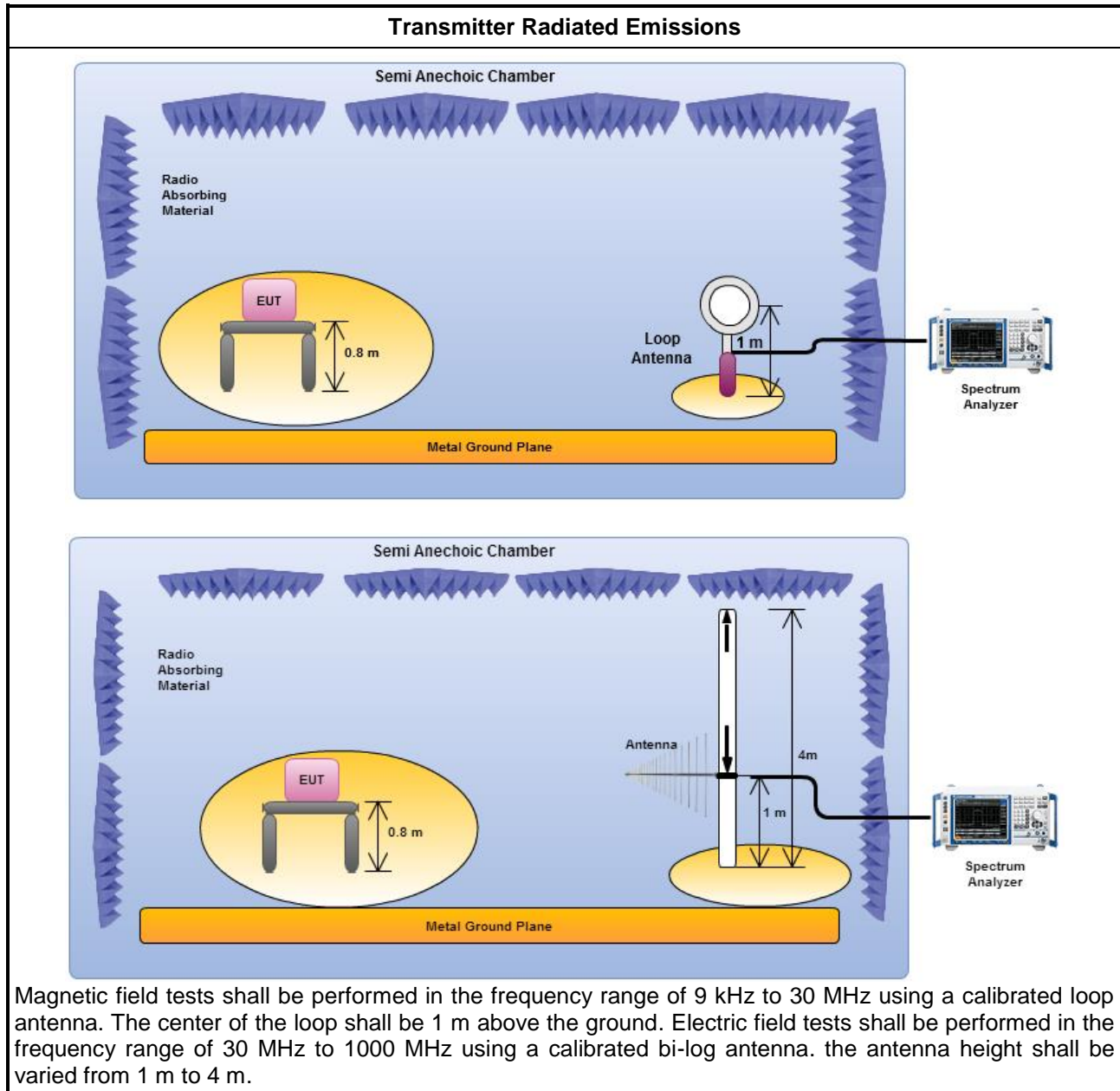
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

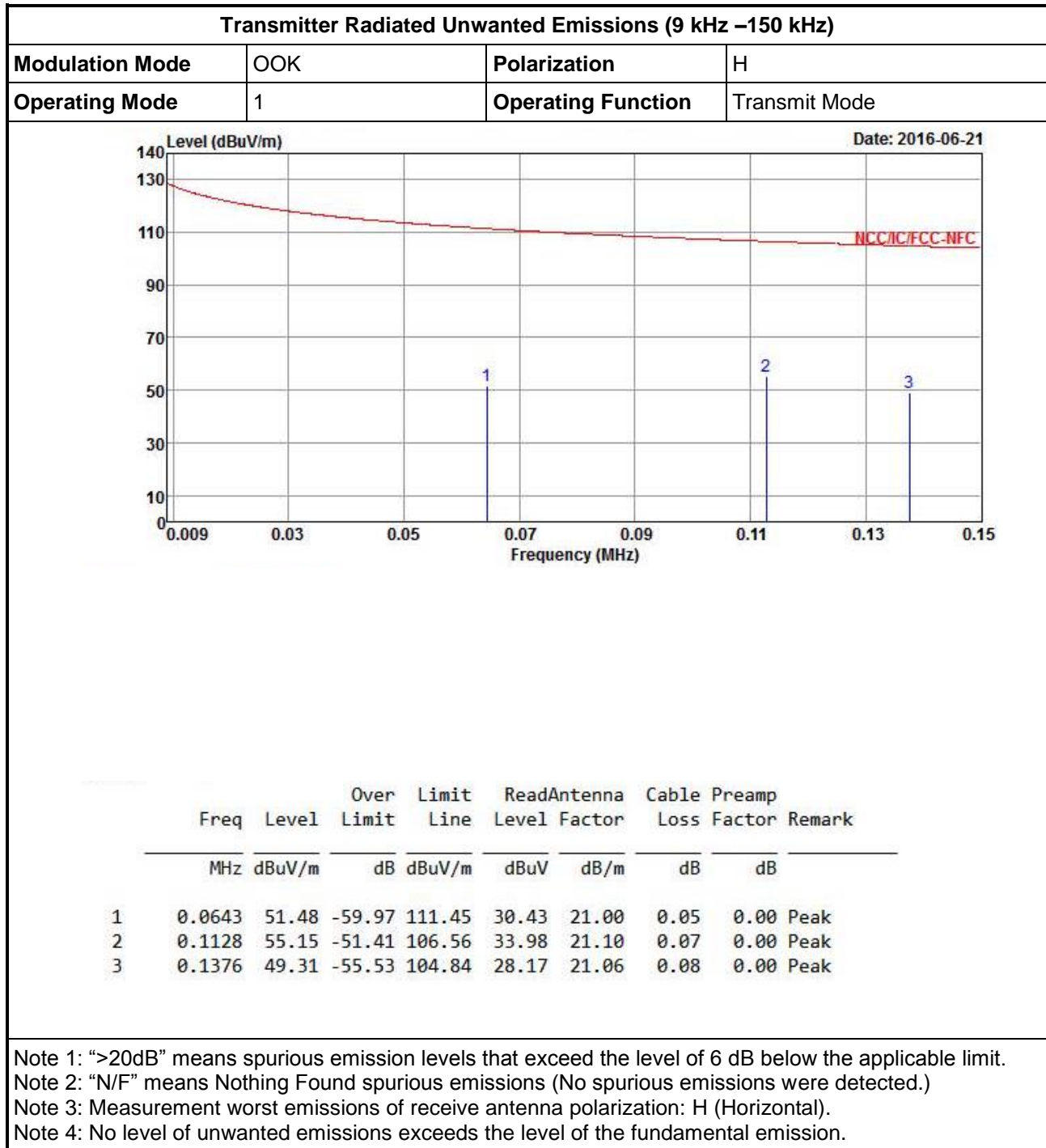
3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. The frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 30MHz measurements employing a CISPR quasi-peak detector. Test distance is 3m.
<input checked="" type="checkbox"/>	At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods.
<input type="checkbox"/>	The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.
<input checked="" type="checkbox"/>	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
<input checked="" type="checkbox"/>	For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.
<input checked="" type="checkbox"/>	The any unwanted emissions level shall not exceed the fundamental emission level.
<input checked="" type="checkbox"/>	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.2.4 Test Setup

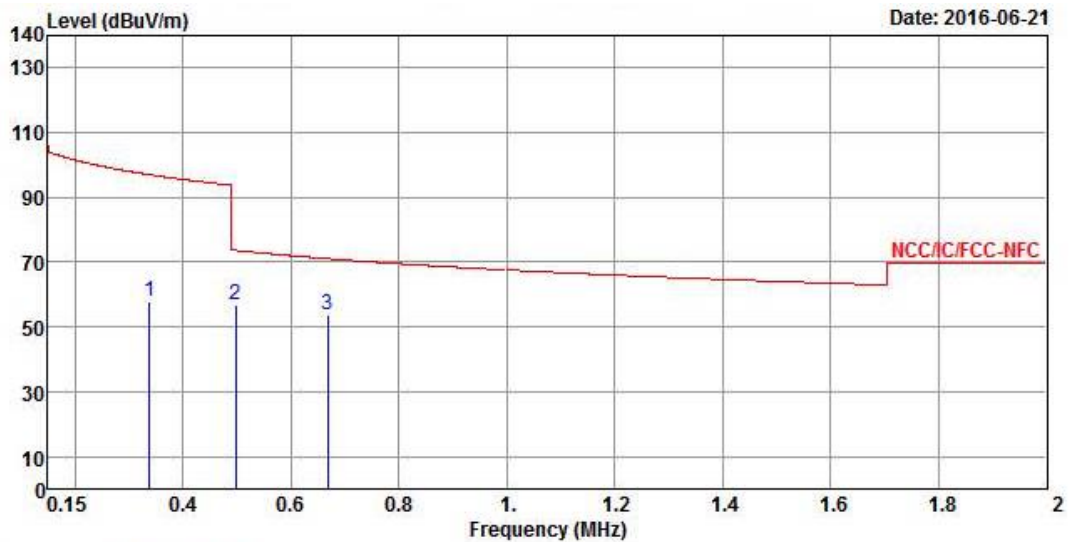


3.2.5 Transmitter Radiated Emissions (Below 30MHz)



Transmitter Radiated Unwanted Emissions (150 kHz – 2 MHz)

Modulation Mode	OOK	Polarization	H
Operating Mode	1	Operating Function	Transmit Mode



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	0.3387	57.70	-39.32	97.02	36.80	20.78	0.12	0.00 Peak
2	0.4978	56.63	-17.04	73.67	35.82	20.70	0.11	0.00 Peak
3	0.6680	53.92	-17.20	71.12	33.05	20.74	0.13	0.00 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

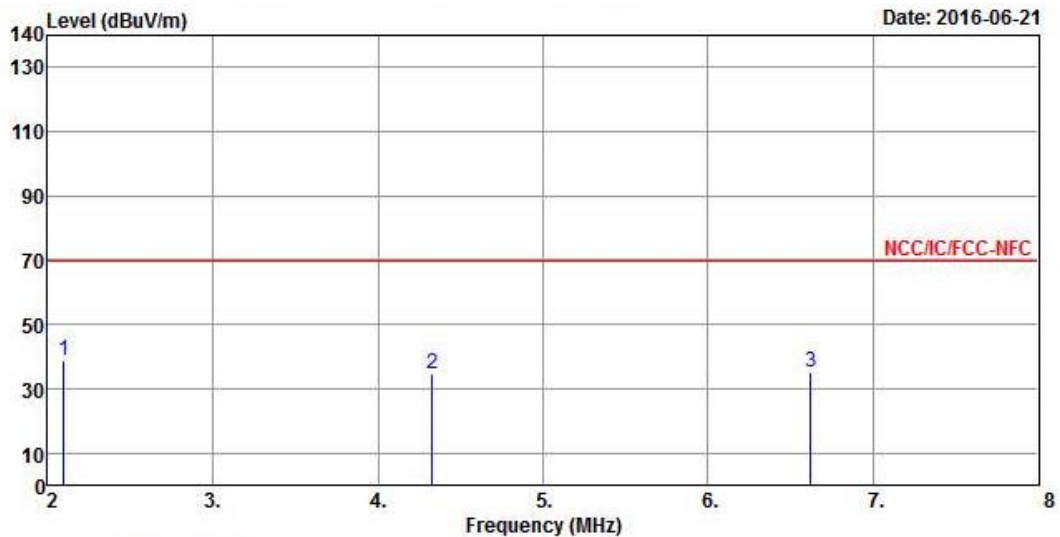
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (2 MHz – 8 MHz)

Modulation Mode	OOK	Polarization	H
Operating Mode	1	Operating Function	Transmit Mode

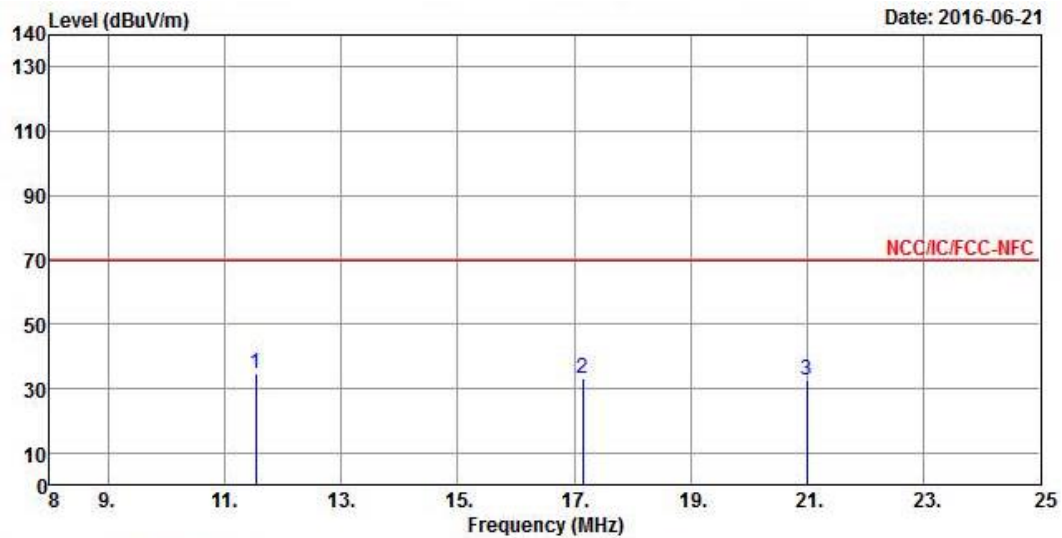


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2.0960	38.50	-31.04	69.54	17.89	20.41	0.20	0.00 Peak
2	4.3280	34.70	-34.84	69.54	13.78	20.63	0.29	0.00 Peak
3	6.6200	35.34	-34.20	69.54	13.93	21.03	0.38	0.00 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).
 Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (8 MHz – 25 MHz)

Modulation Mode	OOK	Polarization	H
Operating Mode	1	Operating Function	Transmit Mode

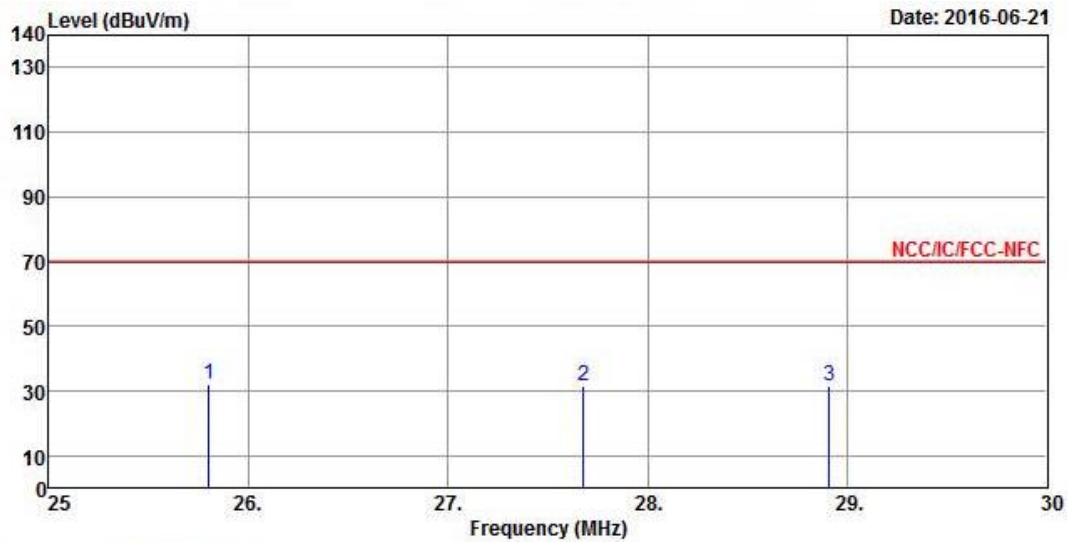


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	11.5360	34.80	-34.74	69.54	12.96	21.33	0.51	0.00 Peak
2	17.1460	33.03	-36.51	69.54	11.00	21.44	0.59	0.00 Peak
3	20.9880	32.54	-37.00	69.54	10.37	21.52	0.65	0.00 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).
 Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (25 MHz – 30 MHz)

Modulation Mode	OOK	Polarization	H
Operating Mode	1	Operating Function	Transmit Mode



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	25.8000	32.19	-37.35	69.54	9.86	21.62	0.71	0.00 Peak
2	27.6800	31.65	-37.89	69.54	9.31	21.65	0.69	0.00 Peak
3	28.9100	31.61	-37.93	69.54	9.24	21.68	0.69	0.00 Peak

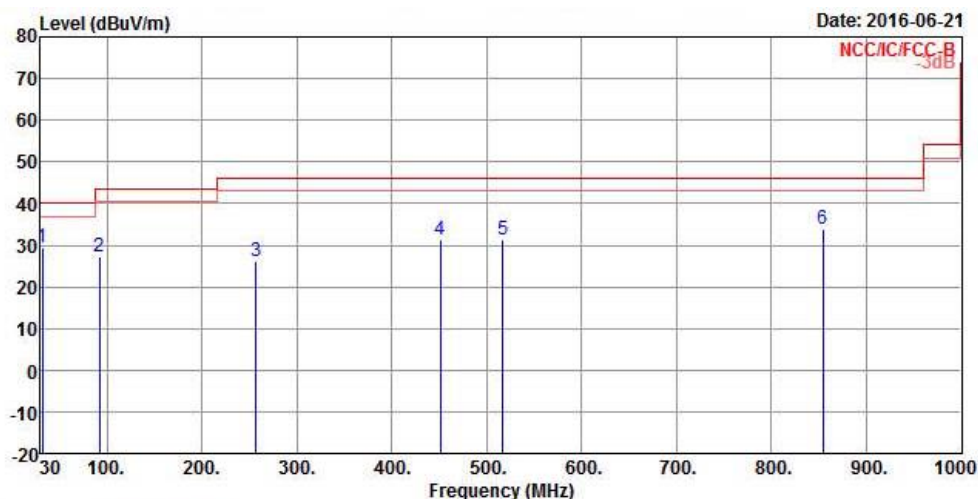
Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).
 Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

3.2.6 Transmitter Radiated Emissions (Above 30MHz)



Transmitter Radiated Emissions (Above 30MHz)

Modulation Mode	OOK	Test Freq. (FX)	125 kHz
Operating Function	Transmit	Polarization	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp	Loss Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	31.9400	29.60	-10.40	40.00	33.08	23.67	0.71	27.86 Peak
2	92.0800	27.36	-16.14	43.50	39.02	14.68	1.40	27.74 Peak
3	256.9800	26.13	-19.87	46.00	32.93	18.16	2.25	27.21 Peak
4	450.9800	31.18	-14.82	46.00	33.81	22.28	3.25	28.16 Peak
5	516.9400	31.36	-14.64	46.00	33.00	23.32	3.46	28.42 Peak
6	854.5000	33.88	-12.12	46.00	30.40	26.49	4.76	27.77 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical).
 Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

3.3 Emission Bandwidth

3.3.1 Emission Bandwidth Limit

Emission Bandwidth Limit
N/A

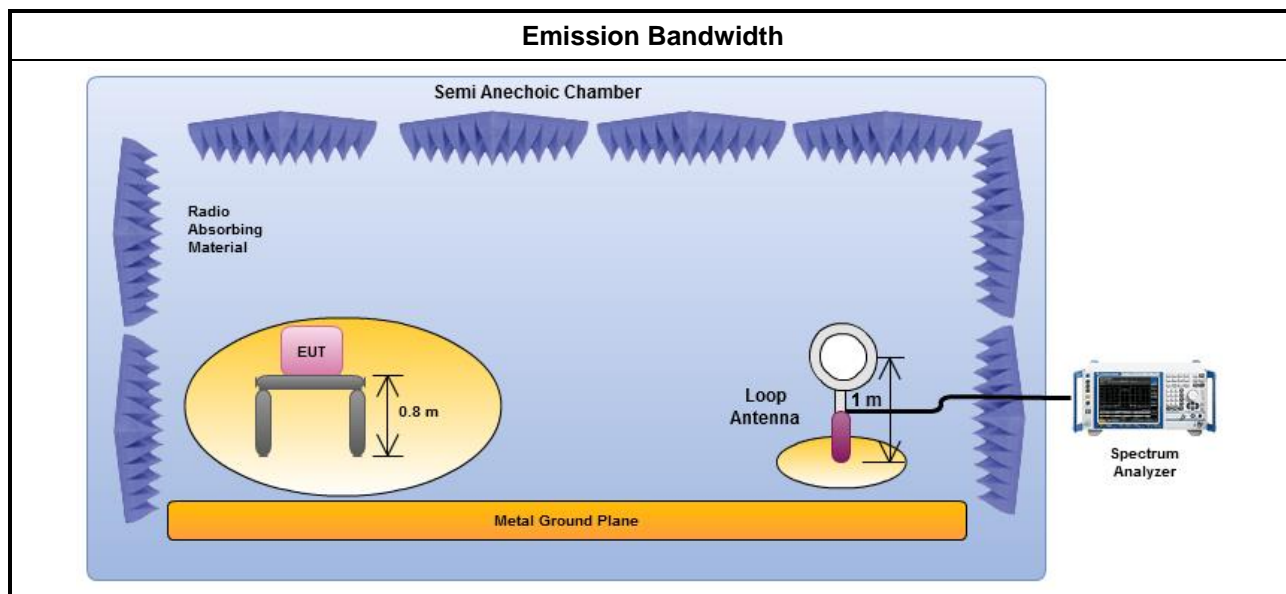
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> For the emission bandwidth refer ANSI C63.10, clause 6.9.2 for occupied bandwidth testing.
<input checked="" type="checkbox"/> For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.

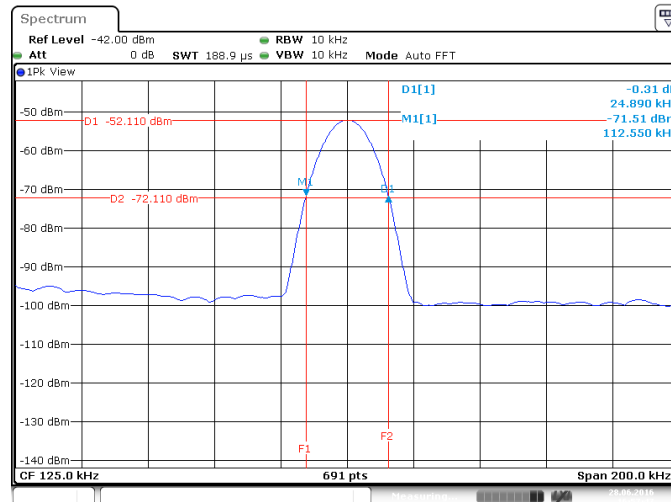
3.3.4 Test Setup



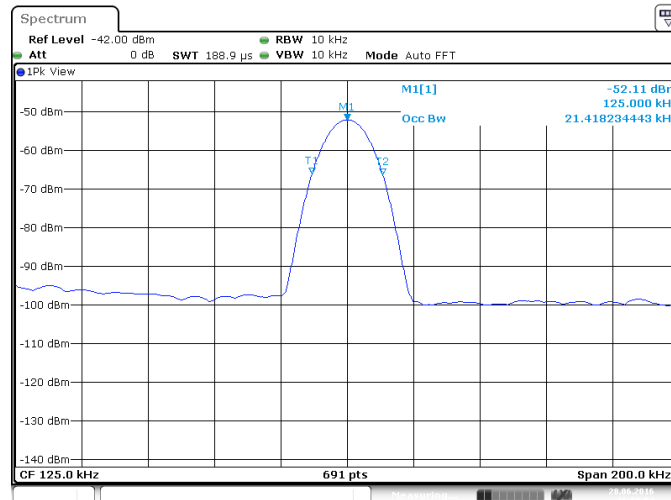
3.3.5 Test Result of Emission Bandwidth

Occupied Channel Bandwidth Result			
Modulation Mode	Frequency (kHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
OOK	0.1250	24.89	21.41
Limit		N/A	N/A
Result		Complied	

20dB Emission Bandwidth Plot



99% Emission Bandwidth Plot



3.3.6 Test Result of Field Strength of Fundamental Emissions

Field Strength of Fundamental Emissions Result					
Modulation Mode	Frequency (kHz)	Fundamental (dBuV/m)@3m	Polarization	Margin (dB)	Limit (dBuV/m)@3m
OOK	125	66	H	39.67	105.67
Result		Complied			
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal).					
Note 2: The Limit is based on measurement employing an average detector.					
Note 3: The fundamental result is measured by peak detector.					

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Next Calibration Date
EMC Receiver	KEYSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	Apr. 14, 2016	Apr. 13, 2017
LISN	SCHWARZBECK MESS-ELEKTR ONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 26, 2016	Jan. 25, 2017
RF Cable-CON	HUBER+SUHN ER	RG213/U	07611832020 001	9kHz ~ 30MHz	Oct. 30, 2015	Oct. 29, 2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	NCR

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Next Calibration Date
Spectrum Analyzer	R&S	FSV 40	101013	9KHz~40GHz	Feb 16, 2016	Feb 15, 2017

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Next Calibration Date
Spectrum Analyzer	R&S	FSP 40	100593	9KHz~40GHz	Oct. 19, 2015	Oct. 18, 2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	Jun. 24, 2016	Jun. 23, 2017
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	Jul. 24, 2015	Jul. 23, 2016
Bilog Antenna	SCHAFFNER	CBL 6112B	2723	30MHz ~ 1GHz	Oct. 05, 2015	Oct. 04, 2016
Loop Antenna	TESTQ	HLA6120	24155	9 kHz~30 MHz	Feb.02, 2015	Feb.01, 2017