



# FCC TEST REPORT

The product was received on Sep. 11, 2019, and testing was started from Sep. 17, 2019 and completed on Dec. 20, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.**

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

Allen Lin

**Approved by:** Allen Lin

## ***SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory***

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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### APPENDIX A. TEST PHOTOS

#### PHOTOGRAPHS OF EUT v01



## History of this test report



## Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.209	Transmitter Radiated Emissions	PASS	-
3.3	15.215(c)	Emission Bandwidth	PASS	-

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

None.

Reviewed by: Sam Tsai

Report Producer: Jenny Yang



# 1 General Description

## 1.1 Information

### 1.1.1 General Information

Wireless Power Transfer General Information			
Frequency Range	Modulation Mode	Charging Freq. (kHz)	Field Strength (dBuV/m)
130-148 kHz	ASK	137.7	84.64
Power Transfer Method	Output power from each primary coil	That may have multiple primary coils	Charging Method
Magnetic induction and only single primary coil	<15W	No	Client directly contact

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"/>	<input type="checkbox"/> Temporary RF connector provided
<input type="checkbox"/>	<input checked="" type="checkbox"/> No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
<input type="checkbox"/>	External antenna (dedicated antennas)

Antenna General Information		
No.	Ant. Cat.	Ant. Type
1	Integral	Loop

**1.1.3 EUT Information**

<b>Operational Condition</b>	
<b>EUT Power Type</b>	From AC Adapter / Battery
<b>Type of EUT</b>	
<input checked="" type="checkbox"/> Stand-alone	
<input type="checkbox"/> Combined (EUT where the radio part is fully integrated within another device)	Combined Equipment - Brand Name / Model No.:
<input type="checkbox"/> Plug-in radio (EUT intended for a variety of host systems)	Host System - Brand Name / Model No.:
<input type="checkbox"/> Other: The EUT place with the platform.	

**1.1.4 Test Signal Duty Cycle**

<b>Operated Mode for Worst Duty Cycle</b>
<input checked="" type="checkbox"/> Operated normally mode for worst duty cycle
<input type="checkbox"/> Operated test mode for worst duty cycle
<b>Test Signal Duty Cycle (x)</b>
<input checked="" type="checkbox"/> 100%



## 1.2 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
- KDB 680106 D01 RF Exposure Wireless Charging Apps v03

## 1.3 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/> HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)			
	TEL : 886-3-327-3456	FAX : 886-3-327-0973		
Test site Designation No. TW1190 with FCC.				

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward	22.3~24.1°C / 63.5~67.9%	17/Sep/2019
RF Conducted	TH01-HY	Barry	26.1~26.8°C / 51~54%	17/Sep/2019
Radiated Emission For Mode 1	03CH03-HY	Jeff	21.4~24.3°C / 51.3~52.6%	18/Sep/2019
Radiated Emission For Mode 2	03CH02-HY	Streak	21.6~23.1°C / 52.4~54.2%	20/Dec/2019

## 1.4 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	Limit
Radio Frequency		$\pm 6.7 \times 10^{-8}$	$\pm 1 \times 10^{-7}$
All emissions, radiated	9 – 150 kHz	$\pm 1.6$ dB	$\pm 6$ dB
	0.15 – 30 MHz	$\pm 1.6$ dB	$\pm 6$ dB
	30 – 1000 MHz	$\pm 2.6$ dB	$\pm 6$ dB
Temperature		$\pm 0.8$ °C	$\pm 1$ °C
Humidity		$\pm 5$ %	$\pm 5$ %
DC and low frequency voltages		$\pm 0.9$ %	$\pm 3$ %



## 2 Test Configuration of EUT

### 2.1 Test Condition

Condition Item	Abbreviation/Remark	Remark
T <sub>nom</sub> V <sub>nom</sub>	T <sub>nom</sub>	20°C
-	V <sub>nom</sub>	120V/12V

### 2.2 The Worst Case Configuration

Modulation Mode	Field Strength (dBuV/m at 3m)
ASK	84.64

Wireless charger were performed all charging conditions including variable loading and non-charging operation, the worst mode is full charging loading.

### 2.3 The Worst Charger Frequencies Configuration

Modulation Mode	Charger Frequencies (kHz)
ASK	137.7

Wireless charger frequencies are variable frequency range (130-148 kHz) and depend on charging loading.



## 2.4 The Worst Case Measurement Configuration

### The Worst Case Mode for Following Conformance Tests

<b>Tests Item</b>	AC power-line conducted emissions
<b>Condition</b>	AC power-line conducted measurement for line and neutral
<b>Operating Mode</b>	<input checked="" type="checkbox"/> 1. Adapter Mode

### The Worst Case Mode for Following Conformance Tests

<b>Tests Item</b>	Transmitter Radiated Emissions, Emission Bandwidth
<b>Test Condition</b>	Radiated measurement
<b>User Position</b>	<input type="checkbox"/> EUT will be placed in fixed position. <input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.
<b>Operating Mode</b>	<input checked="" type="checkbox"/> 1. Adapter Mode <input checked="" type="checkbox"/> 2. Cigarette lighter Adapter Mode (O/P: 12 Vdc, 1.5 A)
<b>Orthogonal Planes of EUT</b>	<b>Y Plane</b> 
<b>Worst Planes of EUT</b>	V



## 2.5 Accessories

Accessories				
Type-C cable	Brand Name	N/A	Model Name	N/A
	Signal Line	1.2meter, shielded cable, w/o ferrite core		
Cigarette lighter adapter	Brand Name	Mass Power	Model Name	E018-1A120150C8
	Manufacturer	Mass Power	SN	-
	Power Rating	I/P: 12~24 Vdc, 1.6/0.9A, O/P: 5/9/12 Vdc, 3/2/1.5 A		

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

## 2.6 Support Equipment

Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Power Cable	Power sync	PW-GPC180-3	-
2	Smart Phone	DATALOGIC	Memor20	-
3	AC adapter	DATALOGIC	2ACP0183C	-

Note: Support equipment No.2 & 3 were provided by customer.

Support Equipment – Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Smart Phone	DATALOGIC	Memor20	-
2	AC adapter	DATALOGIC	2ACP0183C	-

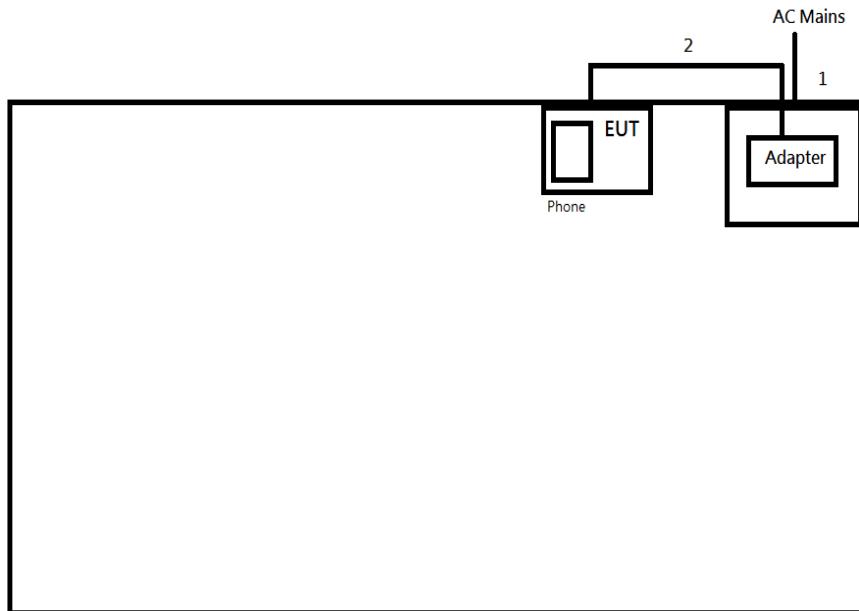
Note: Support equipment No.1 & 2 were provided by customer.

Support Equipment – Radiated				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Power Cable	Power sync	PW-GPC180-3	-
2	Smart Phone	DATALOGIC	Memor20	-
3	Test Fixture	-	-	
4	AC adapter	DATALOGIC	2ACP0183C	-
5	Battery	-	-	-

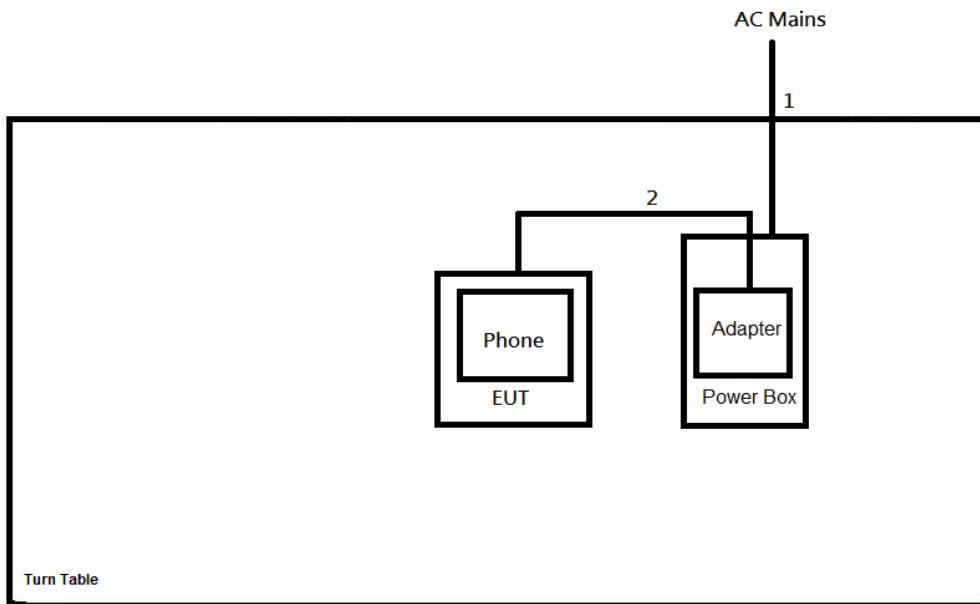
Note: Support equipment No.2 & 3 & 4 were provided by customer.

## 2.7 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test

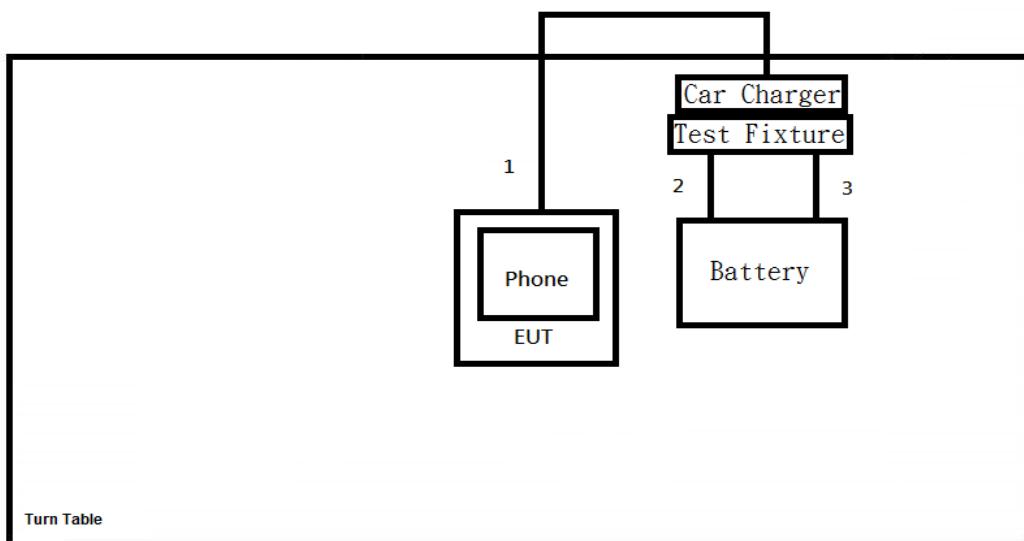


Item	Connection	Shielded	Length(m)	Remark
1	Power Cable	No	1.8	-
2	Type-C Cable	Yes	1.2	-

**Test Setup Diagram - Radiated Test for Mode 1**

Item	Connection	Shielded	Length(m)	Remark
1	Power Cable	No	1.8	-
2	Type-C Cable	Yes	1.2	-

## Test Setup Diagram - Radiated Test for Mode 2



Item	Connection	Shielded	Length(m)	Remark
1	Type-C Cable	Yes	1.2	-
2	DC Power Cable	No	0.35	-
3	DC Power Cable	No	0.35	-



### 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

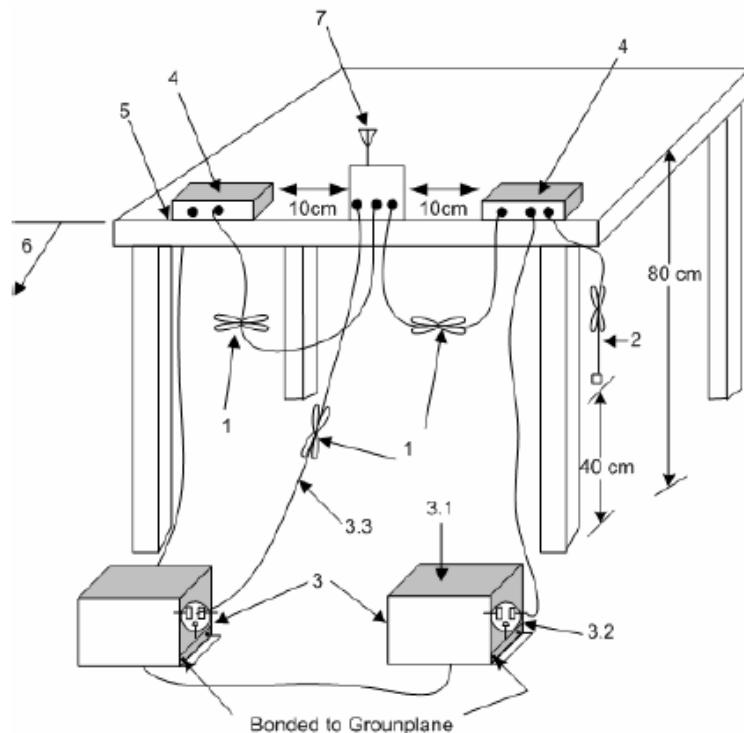
Refer a test equipment and calibration data table in this test report.

##### 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.

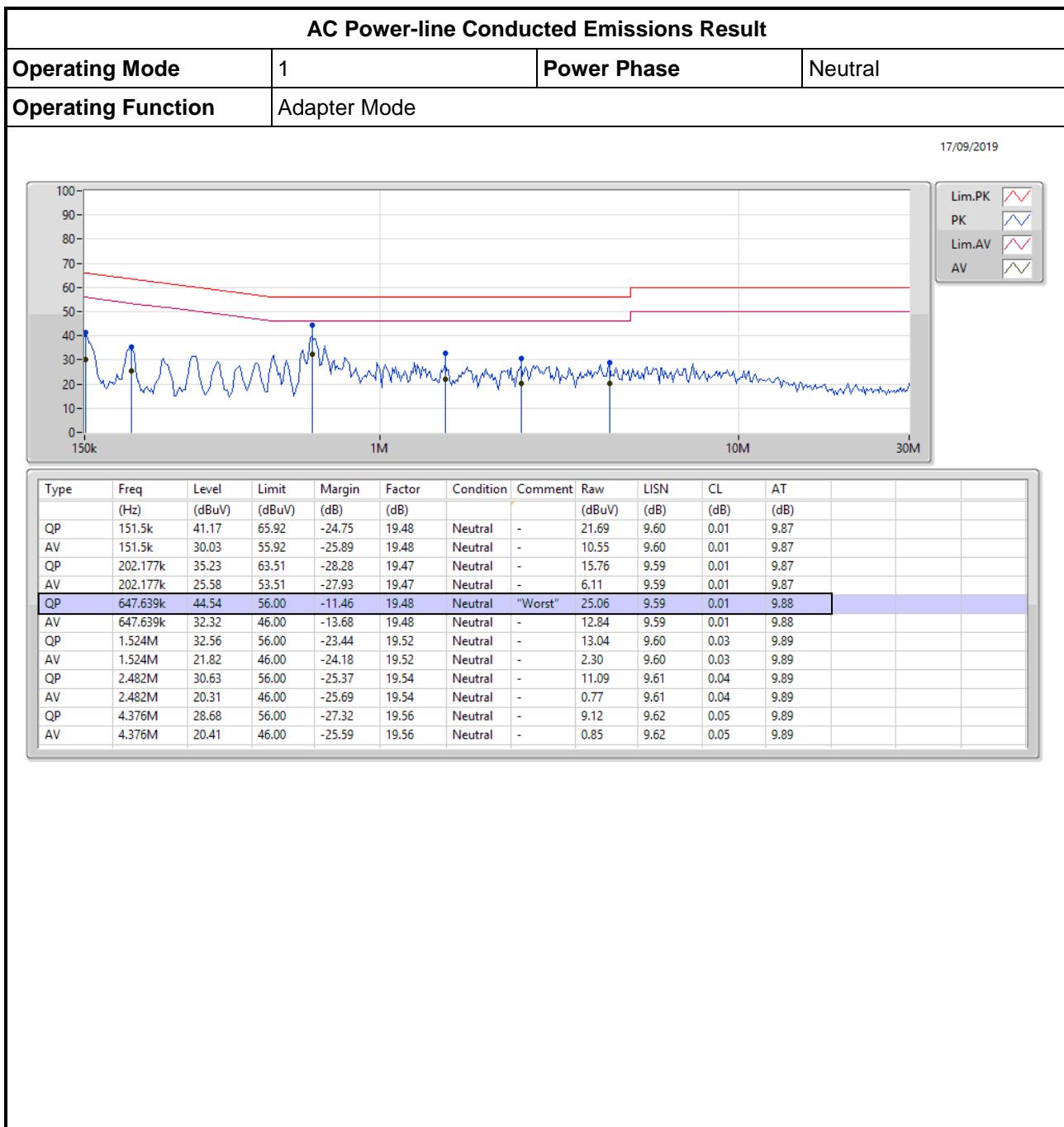
### 3.1.4 Test Setup

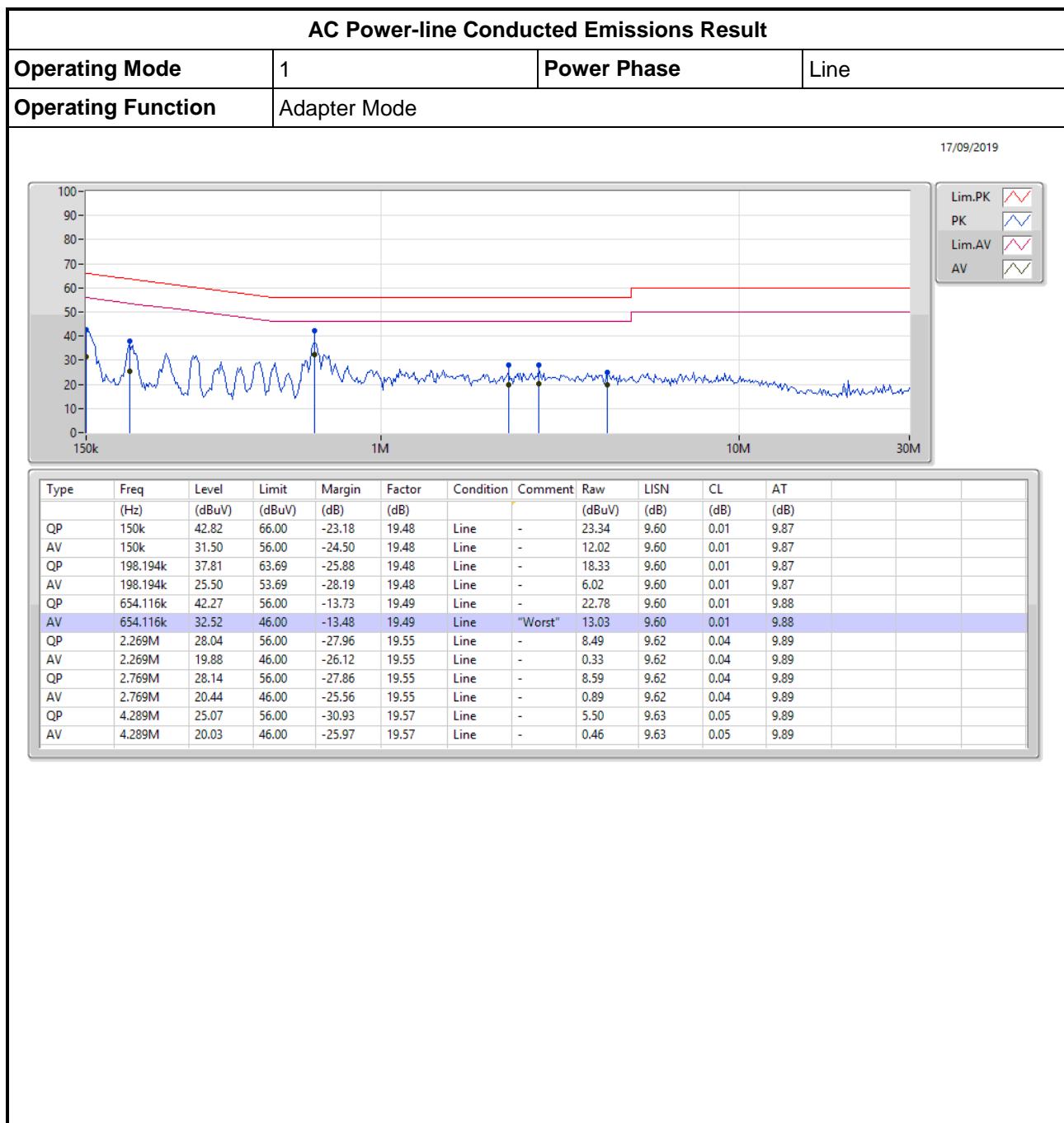
#### AC Power-line Conducted Emissions





## 3.1.5 Test Result of AC Power-line Conducted Emissions







## 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.

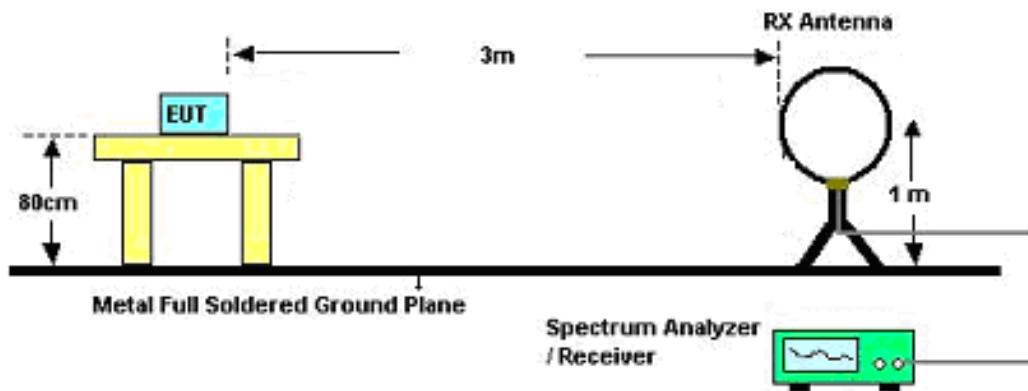


### 3.2.3 Test Procedures

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.

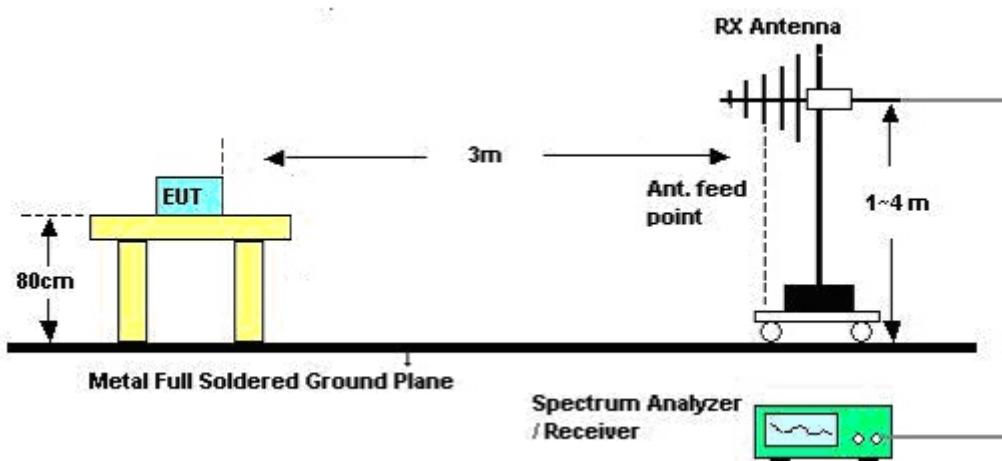
### 3.2.4 Test Setup

#### Transmitter Radiated Emissions (Below 30MHz)



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna.

#### Transmitter Radiated Unwanted Emissions (Below 1GHz)



Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna.



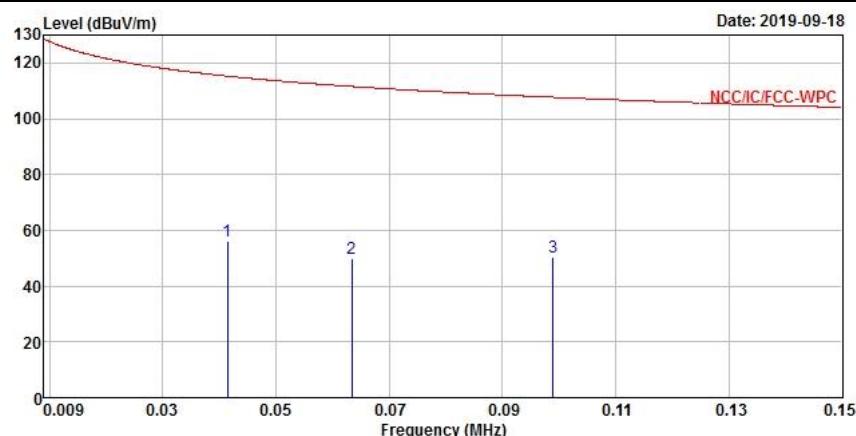
## 3.2.5 Transmitter Radiated Emissions (Below 30MHz)

Transmitter Radiated Emissions(Fundamental emission)											
Modulation Mode		ASK			Test Freq. (kHz)			137.7			
Operating Mode		1			Polarization			H			
Date: 2019-09-18											
1	0.12774	0.13	0.132	0.134	0.136	0.138	0.14	0.142	0.144	0.14774	Level (dBuV/m)
1	84.64	-20.19	104.83	64.75	19.79	0.10	0.00	Peak	100	180	Frequency (MHz)
Freq	Level	Over Limit	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos		
MHz	dBuV/m	dB	dBuV/m	Line	Level	Factor	Loss	dB	dB	cm	deg
1	0.13770	84.64	-20.19	104.83	64.75	19.79	0.10	0.00	Peak	100	180
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.											
Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.											
Note 6: The test result in peak detector is less than average limit , so that we tested in peak detector only.											



## Transmitter Radiated Emissions (9 kHz – 150 kHz)

Modulation Mode	ASK	Test Freq. (kHz)	137.7
Operating Mode	1	Polarization	H



Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos
		Limit	Line						
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	0.04143	56.08	-59.18	115.26	35.60	20.41	0.07	0.00	Peak
2	0.06343	49.79	-61.77	111.56	29.42	20.29	0.08	0.00	Peak
3	0.09896	50.20	-57.50	107.70	30.38	19.72	0.10	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).

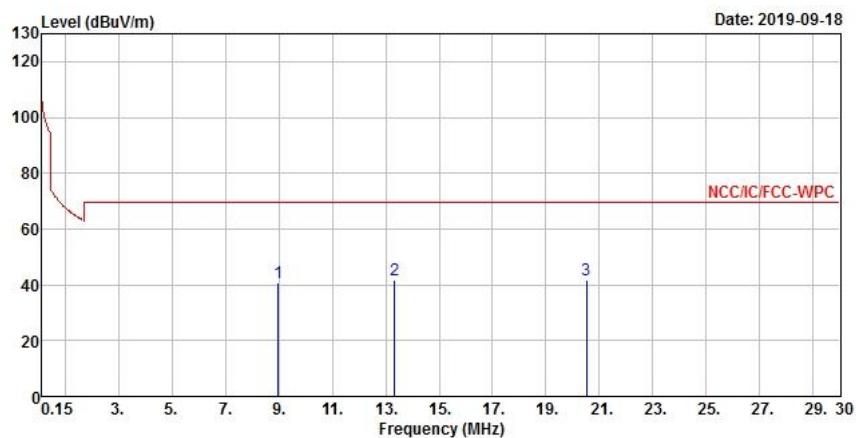
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.



## Transmitter Radiated Emissions (150 kHz – 30 MHz)

Modulation Mode	ASK	Test Freq. (kHz)	137.7
Operating Mode	1	Polarization	H



Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos
		Limit	Line	Antenna	Level	Factor	Loss		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	8.98560	40.90	-28.64	69.54	18.80	21.68	0.42	0.00	Peak
2	13.34370	41.80	-27.74	69.54	19.10	22.17	0.53	0.00	Peak
3	20.50770	41.82	-27.72	69.54	18.62	22.54	0.66	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.)

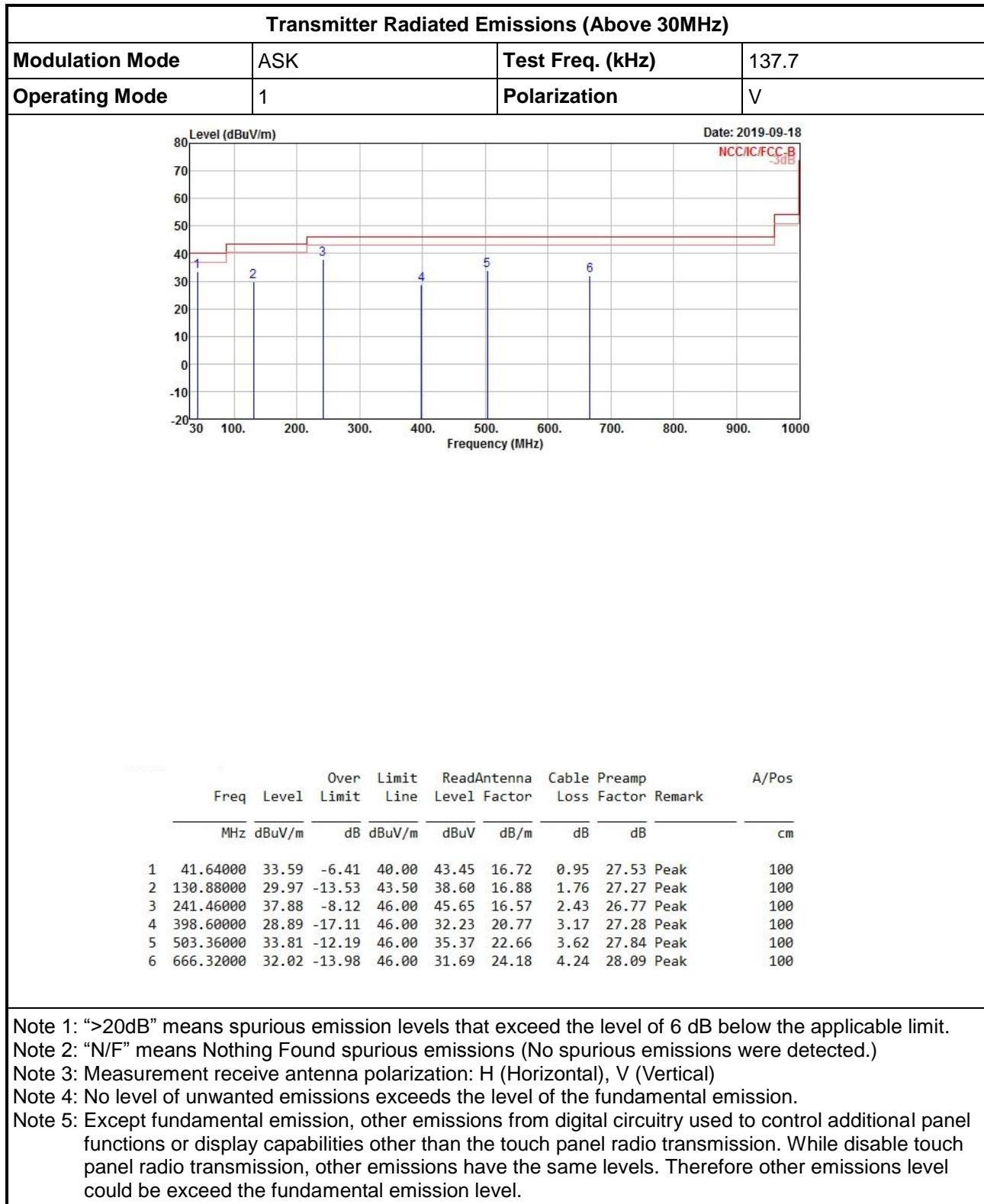
Note 3: Measurement worst emissions of receive antenna polarization: H(Horizontal).

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

Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.



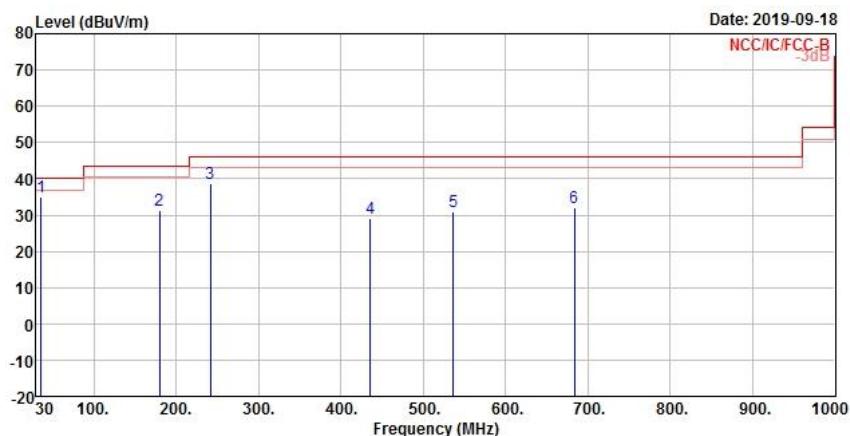
## 3.2.6 Transmitter Radiated Emissions (Above 30MHz)





## Transmitter Radiated Emissions (Above 30MHz)

Modulation Mode	ASK	Test Freq. (kHz)	137.7
Operating Mode	1	Polarization	H



Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos
		Limit	Line						
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 35.82000	35.00	-5.00	40.00	41.96	19.71	0.89	27.56 Peak	100	0
2 179.38000	31.44	-12.06	43.50	42.01	14.37	2.10	27.04 Peak	100	0
3 241.46000	38.71	-7.29	46.00	46.48	16.57	2.43	26.77 Peak	100	0
4 435.46000	29.01	-16.99	46.00	31.46	21.80	3.33	27.58 Peak	100	0
5 536.34000	30.74	-15.26	46.00	31.78	23.22	3.73	27.99 Peak	100	0
6 683.78000	32.01	-13.99	46.00	31.70	24.08	4.30	28.07 Peak	100	0

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)

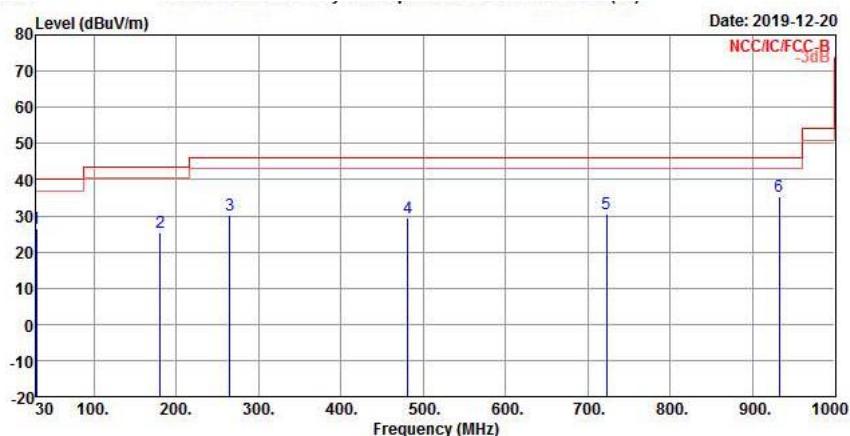
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.



## Transmitter Radiated Emissions (Above 30MHz)

Modulation Mode	ASK	Test Freq. (kHz)	137.7
Operating Mode	2	Polarization	V



Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos		
		Line	Limit			Level	Factor			
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	
1	30.000000	26.68	-13.32	40.00	32.77	21.32	0.29	27.70	Peak	100
2	180.35000	25.45	-18.05	43.50	36.46	14.36	2.11	27.48	Peak	100
3	264.74000	30.18	-15.82	46.00	35.97	18.61	2.78	27.18	Peak	100
4	481.05000	29.50	-16.50	46.00	31.91	22.68	3.28	28.37	Peak	100
5	722.58000	30.51	-15.49	46.00	30.46	24.33	4.08	28.36	Peak	100
6	932.10000	35.36	-10.64	46.00	32.70	25.62	4.68	27.64	Peak	100

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)

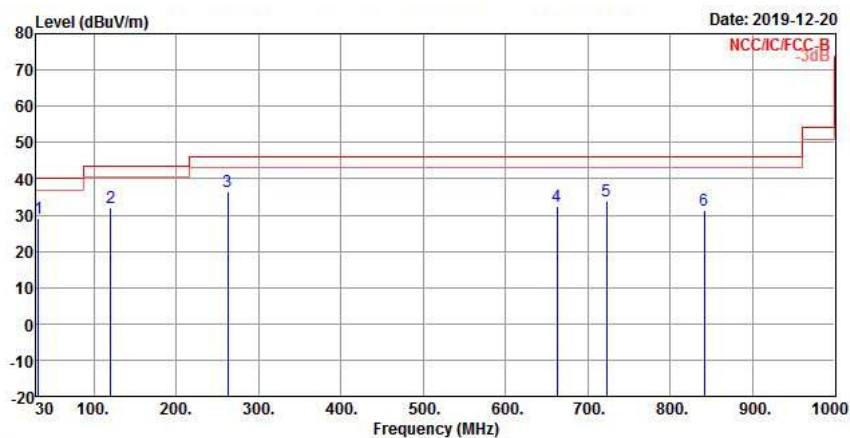
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.



## Transmitter Radiated Emissions (Above 30MHz)

Modulation Mode	ASK	Test Freq. (kHz)	137.7
Operating Mode	2	Polarization	H



Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos		
		Limit	Line								
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	32.910000	29.00	-11.00	40.00	35.93	20.37	0.39	27.69	Peak	100	0
2	120.21000	31.94	-11.56	43.50	40.74	17.27	1.66	27.73	Peak	100	0
3	262.80000	36.38	-9.62	46.00	42.14	18.65	2.77	27.18	Peak	100	0
4	662.44000	32.56	-13.44	46.00	33.22	23.98	3.86	28.50	Peak	100	0
5	722.58000	34.05	-11.95	46.00	34.00	24.33	4.08	28.36	Peak	100	0
6	840.92000	31.45	-14.55	46.00	30.03	25.26	4.24	28.08	Peak	100	0

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.

Note 5: Except fundamental emission, other emissions from digital circuitry used to control additional panel functions or display capabilities other than the touch panel radio transmission. While disable touch panel radio transmission, other emissions have the same levels. Therefore other emissions level could be exceed the fundamental emission level.

### 3.3 Emission Bandwidth

#### 3.3.1 Emission Bandwidth Limit

Emission Bandwidth Limit
N/A

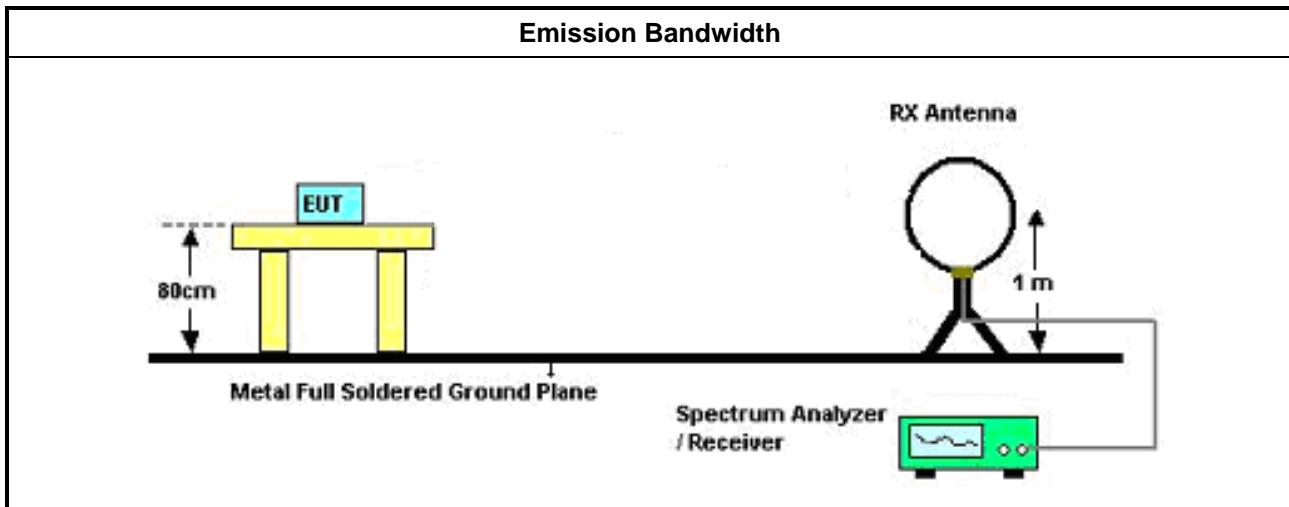
#### 3.3.2 Measuring Instruments

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 6.9.3 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

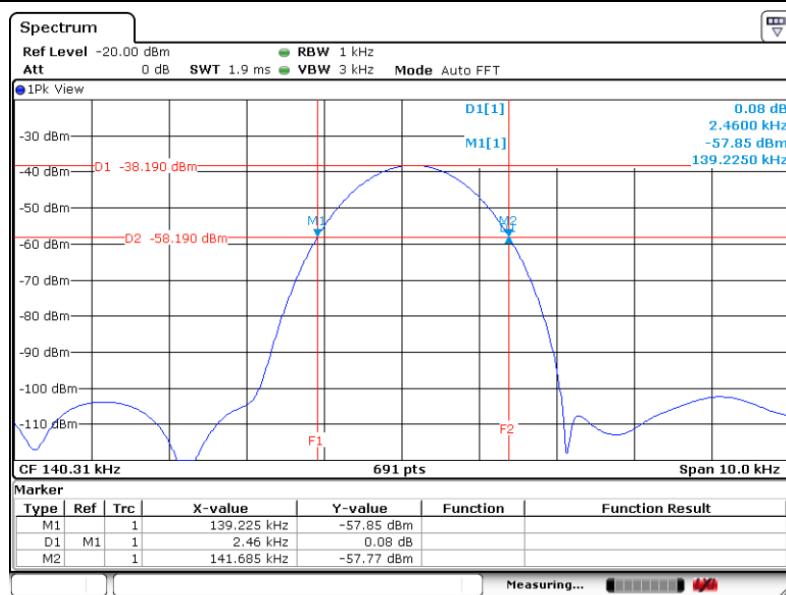


### 3.3.5 Test Result of Emission Bandwidth

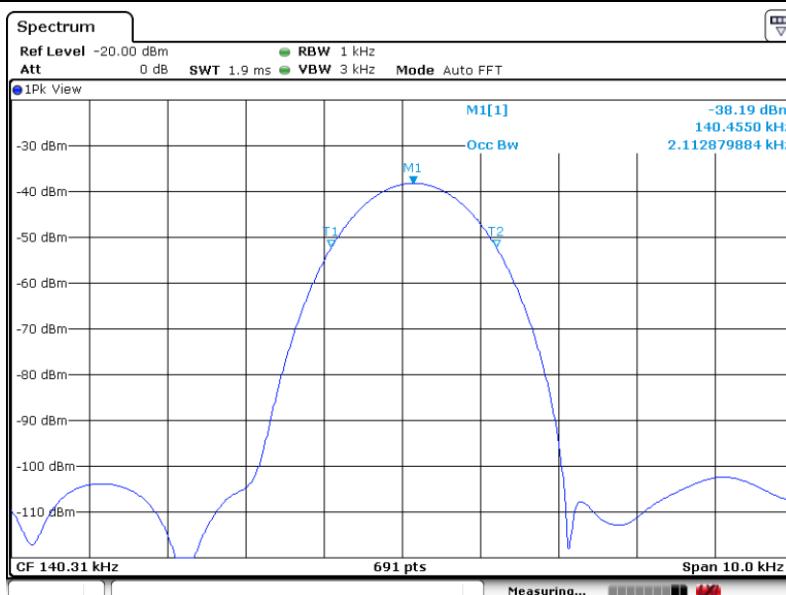
#### Occupied Channel Bandwidth Result

Modulation Mode	Frequency (kHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
ASK	137.7	2.46	2.11
Limit		N/A	N/A
<b>Result</b>		<b>Complied</b>	

#### Emission Bandwidth Plot 20dB Bandwidth



#### Emission Bandwidth Plot 99% Bandwidth





## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	08/Nov/2018	07/Nov/2019
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	16/Sep/2019	15/Sep/2020
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2018	11/Oct/2019

**NCR : Non-Calibration Require**

### Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	9kHz~40GHz	13/Mar/2019	12/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9kHz ~ 30MHz	15/Mar/2019	14/Mar/2020

### Instrument for Radiated Test for Mode 1

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	30/Oct/2018	29/Oct/2019
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	30/Oct/2018	29/Oct/2019
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna with 5dB Pad	ETS	3142B & MTJ6102-05	00022055	26 MHz - 3 GHz	19/Nov/2018	18/Nov/2019
Signal Analyzer	R&S	FSV40	101013	10Hz ~ 40GHz	13/Mar/2019	12/Mar/2020
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	22/Mar/2019	21/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9kHz ~ 30MHz	15/Mar/2019	14/Mar/2020

**Instrument for Radiated Test for Mode 2**

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	29/Aug/2019	28/Aug/2020
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	02/Jul/2019	01/Jul/2020
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9KHz - 40GHz	27/Dec/2018	26/Dec/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	26/Mar/2019	25/Mar/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112D / MTJ6102-05	2678 / 001	30MHz ~ 2GHz	06/Jul/2019	05/Jul/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020