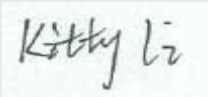
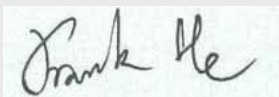
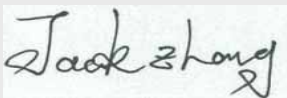




Test report No:
1962139R-RF-US-P06V05

TEST REPORT

FCC Rules&Regulations 47 CFR Chapter I - Part 15C

Product Name	Barcode Scanner
Trademark	Honeywell
Model and /or type reference	8680i
FCC ID	HD5-8680B
Applicant's name / address	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions 9680 OLD BAILES RD FORT MILL SC 29707-7539
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart C Section 15.225
Verdict Summary	IN COMPLIANCE
Documented By	Kitty Li/Project Assistant 
Tested by (name / position & signature)	Frank He/ Technical Supervisor 
Approved by (name / position & signature)	Jack Zhang/ Supervisor 
Date of issue	2019-07-05
Report template No	1962139R-RF-US-P06V05

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COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
QP	: Quasi-Peak
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
AM	: Amplitude Modulation
PM	: Pulse Modulation
HCP	: Horizontal Coupling Plane
VCP	: Vertical Coupling Plane
U_N	: Nominal voltage
T_x	: Transmitter
R_x	: Receiver
N/A	: Not Applicable
N/M	: Not Measured

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
1962139R-RF-US-P06V05		Initial issue of report.	2019-07-05

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.225.
3. The test results presented in this report relate only to the object tested..
4. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing laboratory.
5. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result, unless the specification, standard or customer have special requirements.
6. This report is not used for social proof in China (or Mainland China) market.

USED EQUIPMENT

AC Power Line Conducted Emission / TR1(Chamber details)

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100906	2019.03.04	2020.03.04
Two-Line V-Network	R&S	ENV216	101190	2019.06.09	2020.06.09
Two-Line V-Network	R&S	ENV216	101044	2019.06.15	2020.06.15
Current Probe	R&S	EZ-17	100678	2019.03.07	2020.03.07
50ohm Termination	SHX	TF2	07081402	2018.09.08	2019.09.08
50ohm Termination	SHX	TF2	07081403	2018.09.08	2019.09.08
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
Temperature/Humidity Meter	RTS	RTS-8S	TR1-TH	2019.01.09	2020.01.09
Coaxial Cable	Suhner	RG 223	TR1-C1	2018.09.11	2019.09.11
Coaxial Cable	Suhner	RG 223	TR1-C2	2018.09.11	2019.09.11
Dekra test software					

RF conducted test / TR8(Chamber details)

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2019.04.09	2020.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2019.04.09	2020.04.08
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2018.10.14	2019.10.13
Power Sensor	Anritsu	MA2411B	0846014	2018.10.14	2019.10.13
Dekra test software					

Radiated Emission(30MHz-1GHz) / AC2(Chamber details)

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100573	2019.03.04	2020.03.04
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2019.06.09	2020.06.09
Temperature/Humidity Meter	RTS	RTS-8S	AC2-TH	2019.01.09	2020.01.09
Coaxial Cable	Huber+Suhner	RG 214	AC2-C	2019.02.28	2020.02.28
Dekra test software					

Radiated Emission / AC5(1GHz-40GHz)(Chamber details)

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2019.01.04	2020.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2019.05.06	2020.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2019.05.06	2020.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2019.01.22	2020.01.21
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2019.01.04	2020.01.03
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2019.03.02	2020.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2019.03.02	2020.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2019.03.02	2020.03.01
Dekra test software					

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%

Test item	Uncertainty
AC Power Line Conducted Emission	$\pm 2.02\text{dB}$
Peak Power Output	$\pm 1.27\text{ dB}$
Radiated Emission(30MHz~1GHz)	$\pm 3.80\text{ dB}$
Radiated Emission(1GHz~40GHz)	$\pm 3.90\text{ dB}$
RF antenna conducted test	$\pm 1.27\text{dB}$
Radiated Emission Band Edge	$\pm 3.9\text{ dB}$
DTS Bandwidth	$\pm 1\text{kHz}$
Occupied Bandwidth	$\pm 1\text{kHz}$
Power Density	$\pm 1.27\text{dB}$
Frequency Stability	$\pm 100\text{ Hz}$

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Model / Type number.....:	8680i
Trademark.....:	Honeywell
Manufacturer.....:	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions 2、Metro(Suzhou)Technologies Co.,Ltd
Manufacturer Address.....:	1、9680 OLD BAILES RD FORT MILL SC 29707-7539 2、No.221 Xinghai street China-Singapore Suzhou Industrial Park

Wireless specification.....:	NFC
Operating frequency range(s).....:	13.56 MHz
Type of modulation.....:	ASK
Number of channel.....:	1
Data rate.....:	106kbps

Rated power supply.....:	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☐	AC: 100 – 240 V, 50/60 Hz
	☐	DC: 12 V, 24 V, 12 / 24 V
	☒	Battery: DC 3.8V
Mounting position.....:	☐	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☒	Hand-held equipment
	☐	Other:

1.2 Antenna Information

Antenna model / type number.....:	N/A		
Antenna serial number.....:	N/A		
Antenna Delivery	☒	1TX + 1RX	
	☐	2TX + 2RX	
	☐	Others:.....	
Antenna technology.....:	☒	SISO	
	☐	MIMO	☐ Basic
			☐ CDD
			☐ Sectorized
			☐ Beam-forming
Antenna Type.....:	☐	External	☐ Dipole
			☐ Sectorized



	☒	Internal	☐	PIFA
			☐	PCB
			☒	Loop Antenna

1.3 Test date

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Jun. 20, 2019
Date (start test)	Jun. 20, 2019
Date (finish test)	Jul. 05, 2019

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Test Mode	Mode 1: Transmit by NFC
-----------	-------------------------

2.2 Support / Auxiliary equipment / unit / Test software for the EUT

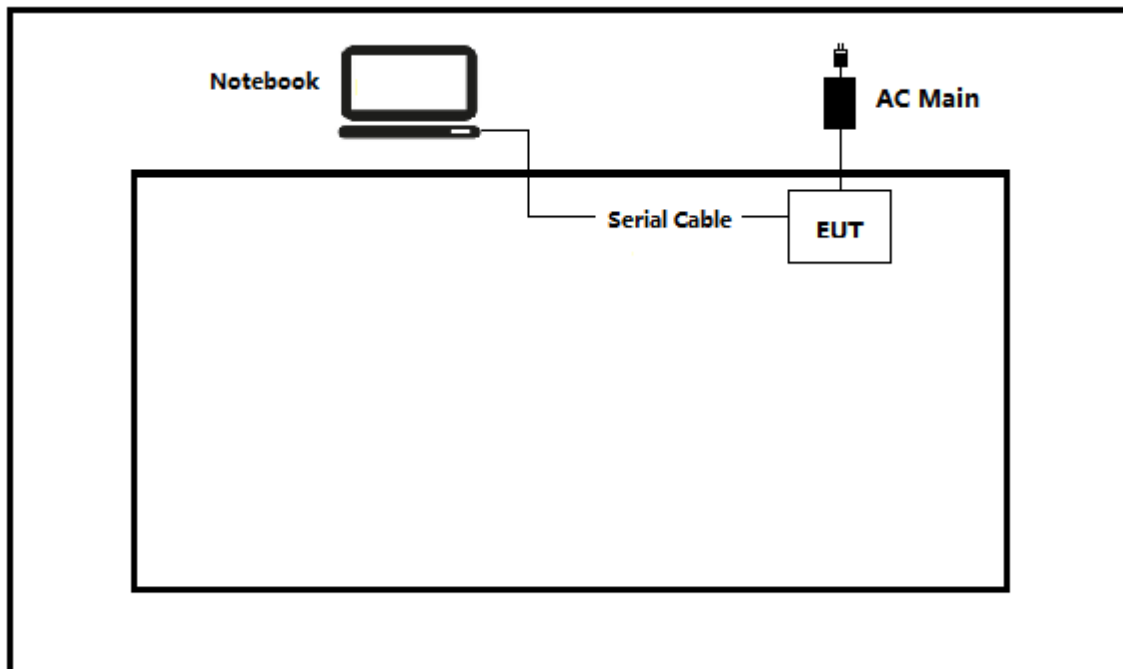
The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	Think pad x220	Lenovo	Adapter
unit / software	Type / Version	Manufacturer	Supplied by
software	Type / Version	Manufacturer	Supplied by
<u>Supplemental information:</u>			

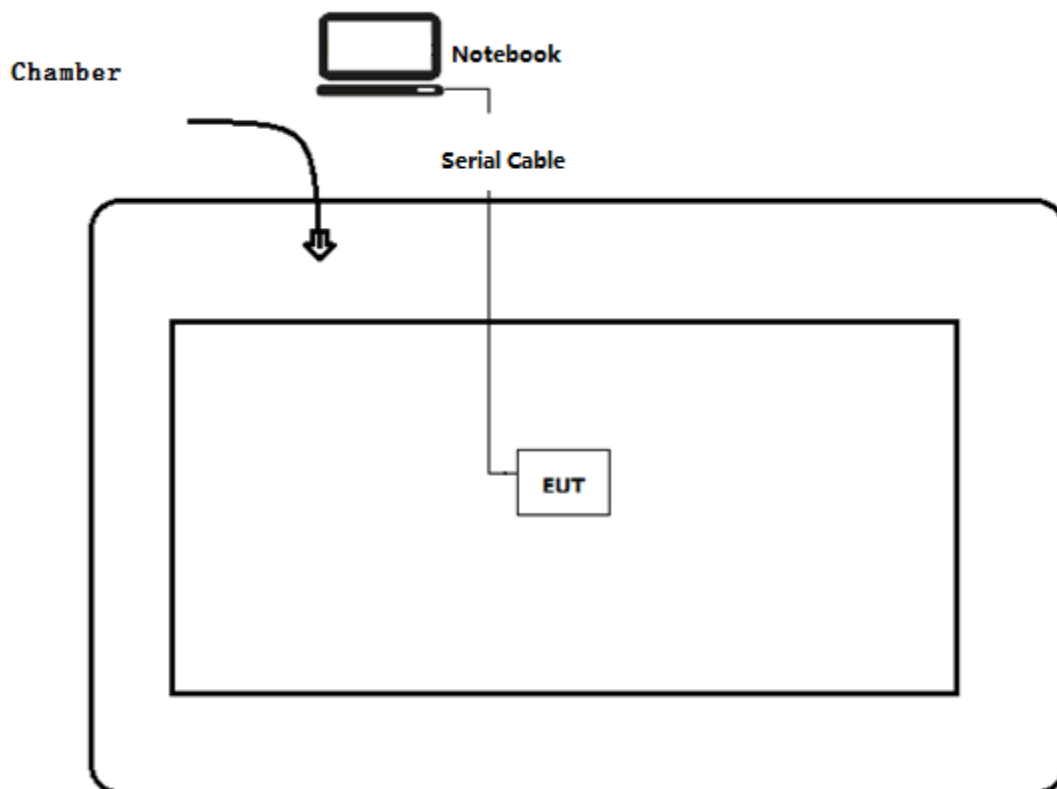
2.3 Test Configuration / Block diagram used for tests

The following test setup / configuration / block diagram has been used during the tests:

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- AC Line Conducted Emission Test



2.4 Testing process

1	Setup the EUT as shown in Section 2.3.
2	Input the commands.
3	Configure the test mode, the test channel, and the data rate.
4	Start the continuous Transmitter.
5	Verify that the EUT works properly.

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.225	2019	Operation within the band 13.110-14.010 MHz

3.2 Overview of results

Requirement – Test case	Basic standard(s)	Verdict	Remark
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C Section 15.207	PASS	---
Field Strength of Fundamental	FCC CFR Title 47 Part 15 Subpart C Section 15.225(a)(b)(c)	PASS	---
Field Strength of Spurious	FCC CFR Title 47 Part 15 Subpart C Section 15.209 & 15.225(d)	PASS	---
Frequency Tolerance	FCC CFR Title 47 Part 15 Subpart C Section 15.225(e)	PASS	---
Channel Bandwidth	FCC CFR Title 47 Part 15 Subpart C Section 15.215(c)	PASS	---
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C Section 15.203	PASS	---
<u>Supplementary information:</u>			

3.3 Test Facility

USA	:	FCC Designation Number: CN1199
Canada	:	CAB identifier Number: CN0040

4 TEST RESULTS

4.1 AC Power Line Conducted Emission	VERDICT: PASS
---	----------------------

4.1.1 Limit

Standard	FCC Part 15 Subpart E Paragraph 15.207	
Frequency range [MHz]	Limit: QP [dB(μV) ¹⁾	Limit: AV [dB(μV) ¹⁾
0,15 - 0,50	66 - 56 ²⁾	56 - 46 ²⁾
0,50 - 5,0	56	46
5,0 - 30	60	50

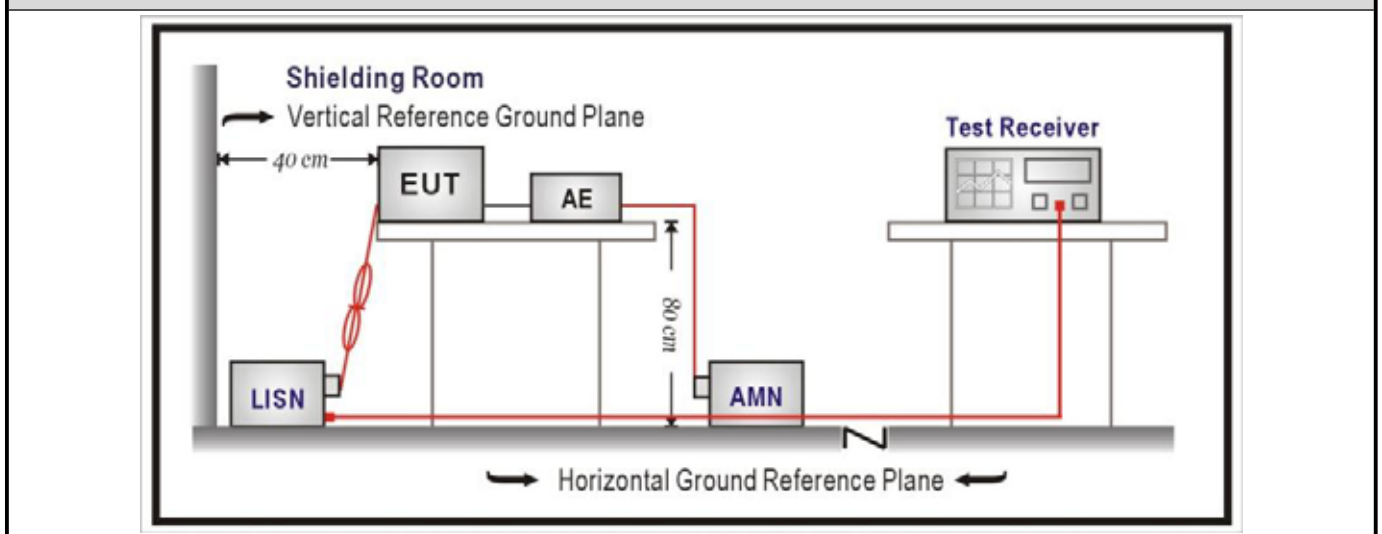
¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

NOTE 1: The exclusion band for transmitters shall be considered for transmitters operating at frequencies below 30 MHz.

NOTE 2: Where the AC output port is directly connected (or via a circuit breaker) to the AC power input port of the EUT the AC power output port need not to be tested.

4.1.2 Test Setup

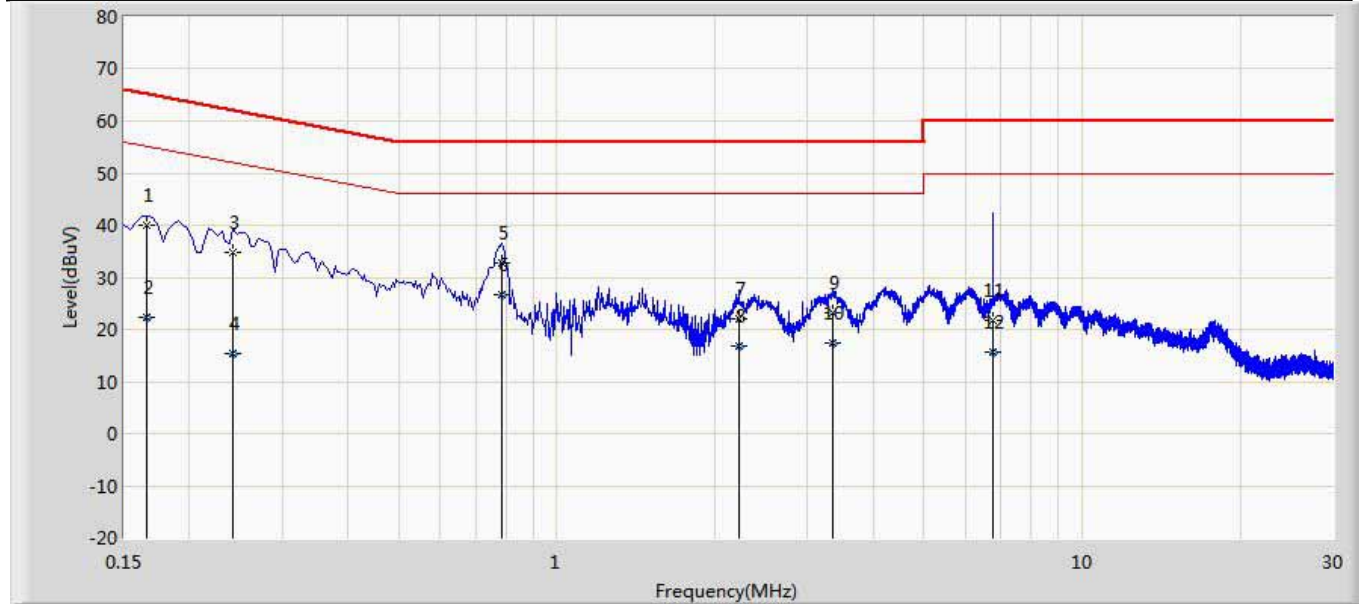


4.1.3 Test Procedure

	References Rule	Chapter	Item
☒	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

4.1.4 Test Data

Site: TR1	Time: 2019/06/25
Limit: FCC_Part15.207_CE	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: Barcode Scanner	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.166	39.891	30.257	-25.268	65.158	9.607	0.027	0.000	QP
2		0.166	22.186	12.553	-32.972	55.158	9.607	0.027	0.000	AV
3		0.242	34.827	25.196	-27.201	62.027	9.600	0.030	0.000	QP
4		0.242	15.337	5.706	-36.691	52.027	9.600	0.030	0.000	AV
5		0.786	32.728	23.072	-23.272	56.000	9.603	0.052	0.000	QP
6	*	0.786	26.739	17.084	-19.261	46.000	9.603	0.052	0.000	AV
7		2.218	22.066	12.360	-33.934	56.000	9.614	0.093	0.000	QP
8		2.218	16.759	7.053	-29.241	46.000	9.614	0.093	0.000	AV
9		3.358	23.271	13.523	-32.729	56.000	9.633	0.115	0.000	QP
10		3.358	17.441	7.693	-28.559	46.000	9.633	0.115	0.000	AV
11		6.770	21.862	12.001	-38.138	60.000	9.695	0.165	0.000	QP
12		6.770	15.721	5.861	-34.279	50.000	9.695	0.165	0.000	AV

Site: TR1					Time: 2019/06/25					
Limit: FCC_Part15.207_CE					Margin: 0					
Probe: ENV216_101190(0.009-30MHz)					Polarity: Neutral					
EUT: Barcode Scanner					Power: AC 120V/60Hz					
Note: Mode 1										
No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.162	38.860	29.241	-26.501	65.361	9.593	0.026	0.000	QP
2		0.162	19.223	9.604	-36.137	55.361	9.593	0.026	0.000	AV
3		0.194	38.004	28.377	-25.860	63.864	9.598	0.028	0.000	QP
4		0.194	18.951	9.325	-34.912	53.864	9.598	0.028	0.000	AV
5		0.246	36.078	26.449	-25.813	61.891	9.598	0.031	0.000	QP
6		0.246	17.681	8.053	-34.210	51.891	9.598	0.031	0.000	AV
7		0.270	34.127	24.496	-26.991	61.118	9.597	0.033	0.000	QP
8		0.270	15.908	6.277	-35.210	51.118	9.597	0.033	0.000	AV
9		0.782	33.040	23.397	-22.960	56.000	9.590	0.052	0.000	QP
10	*	0.782	23.674	14.032	-22.326	46.000	9.590	0.052	0.000	AV
11		7.246	17.825	7.947	-42.175	60.000	9.707	0.171	0.000	QP
12		7.246	11.605	1.727	-38.395	50.000	9.707	0.171	0.000	AV
Remark										
1. " * ", means this data is the worst emission level.										
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).										

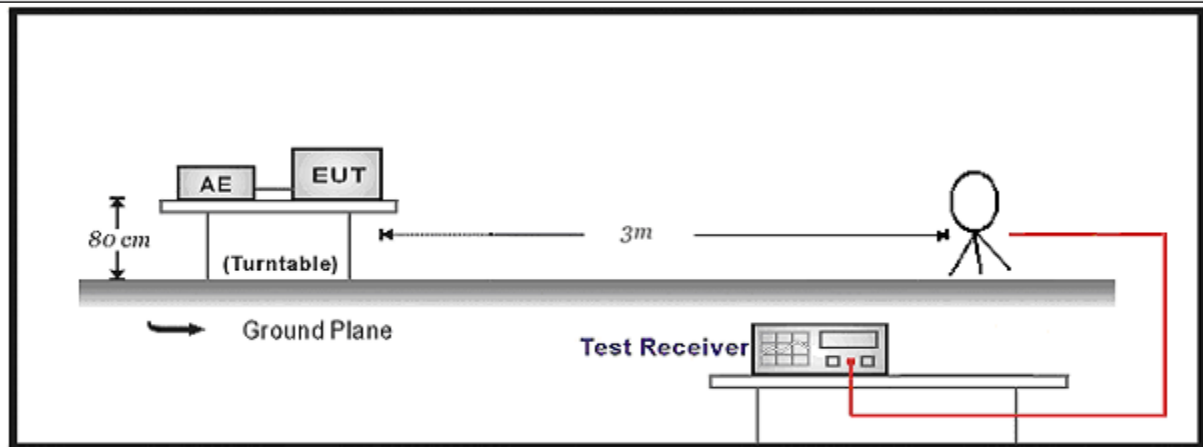
4.2 E-field Emission	VERDICT: PASS
-----------------------------	----------------------

4.2.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.225
(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters. (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.	

4.2.2 Test Setup

Below 30MHz Test Setup:



4.2.3 Test Procedure

References Rule	Chapter	Description
☒ ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☐ ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☐ ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

4.2.4 Test Data

Frequency (MHz)	Measure Level (dBμV/m) (10m)	Loop Ant. Pol. (H/V)	Correction factor (dB)	Reading Level (dBμV/m) (10m)	Distance factor (dB)	Corrected Measure level (dBμV/m) (30m)	Limit (dBμV/m) (30m)	Over Limit (dB)
13.56	24.055	H	-29.406	53.461	-20	4.055	84.00	-79.945
13.56	20.057	V	-29.406	49.463	-20	0.057	84.00	-83.943
13.553	1.376	H	-29.406	30.782	-20	-18.624	50.50	-69.124
13.567	0.927	H	-29.406	30.333	-20	-19.073	50.50	-69.573
13.41	0.576	H	-29.414	29.990	-20	-19.424	40.50	-59.924
13.71	0.767	H	-29.392	30.159	-20	-19.233	40.50	-59.733

Note1: Antenna Test Distance at 10 meters.

Note2: Measurements were performed at 10m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in §15.31(f)(2). Extrapolation Factor = $20 \log_{10}(30/10)^2 = 20\text{dB}$.

4.3 Radiated Emissions	VERDICT: PASS
-------------------------------	----------------------

4.3.1 Limit	
Standard	FCC Part 15 Subpart C Paragraph 15. 209

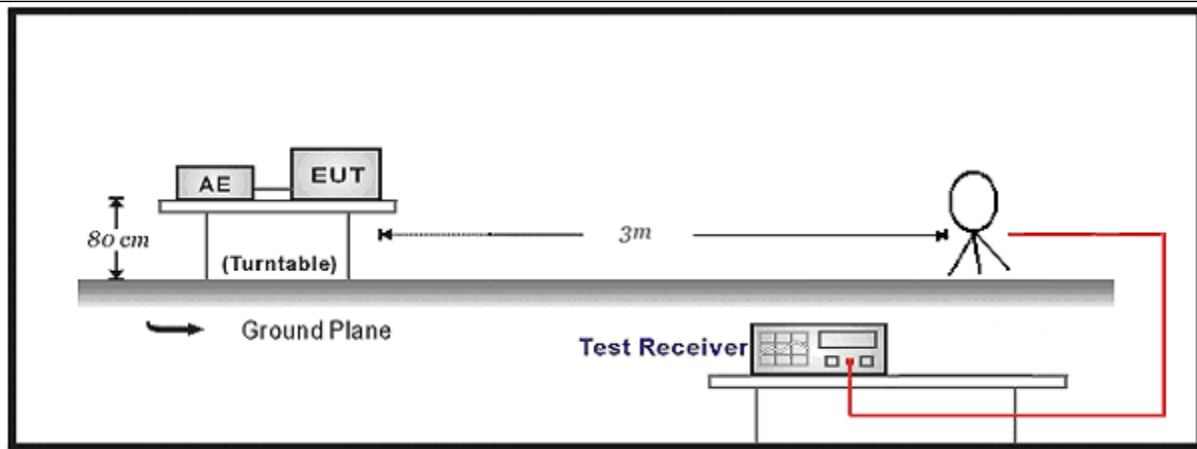
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; 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 extrapolated to the specified distance by either making measurements at a minimum of two 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).

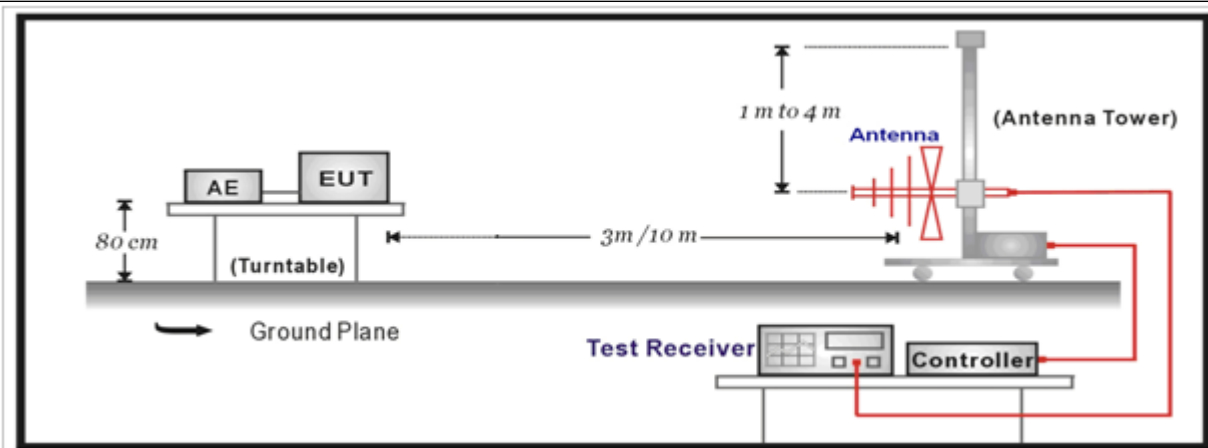
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. 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 linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.3.2 Test Setup

Below 30MHz Test Setup:



30MHz-1GHz Test Setup:

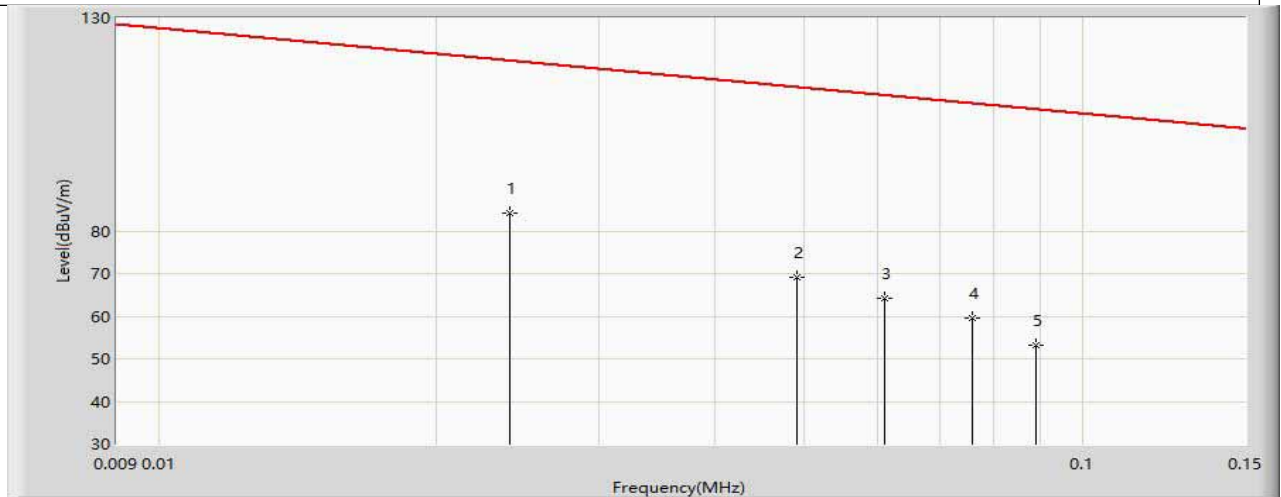


4.3.3 Test Procedure

	References Rule	Chapter	Description
☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☒	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☐	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

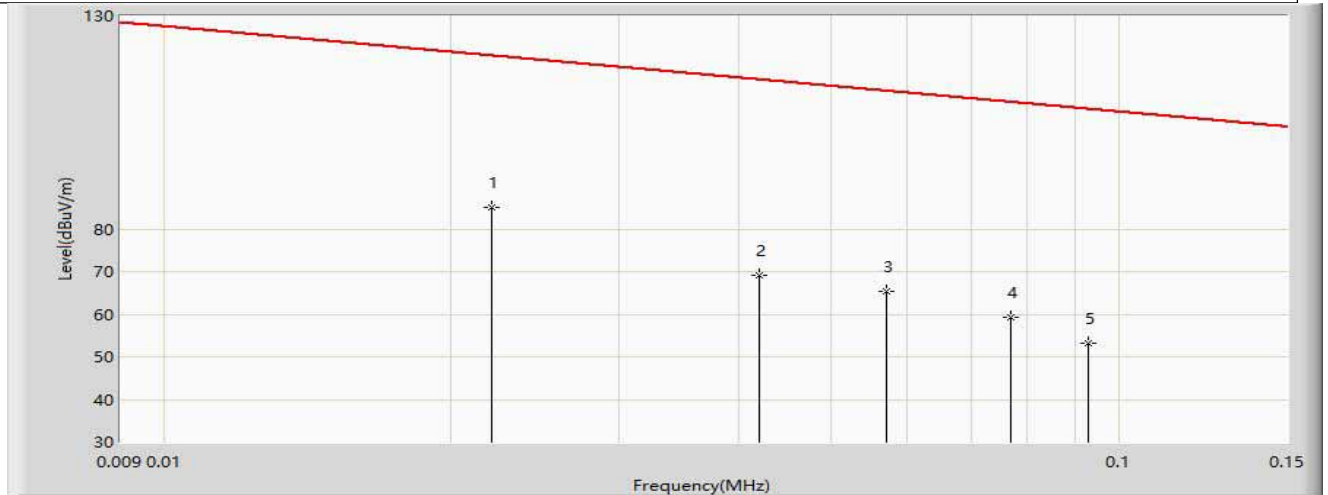
4.3.4 Test Data

Engineer: Pawn	
Site: AC3	Time: 2019/07/08 - 09:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: HFH2-Z2_833799(0.009-30MHz)	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: AV 120V/60Hz
Note: Transmit	



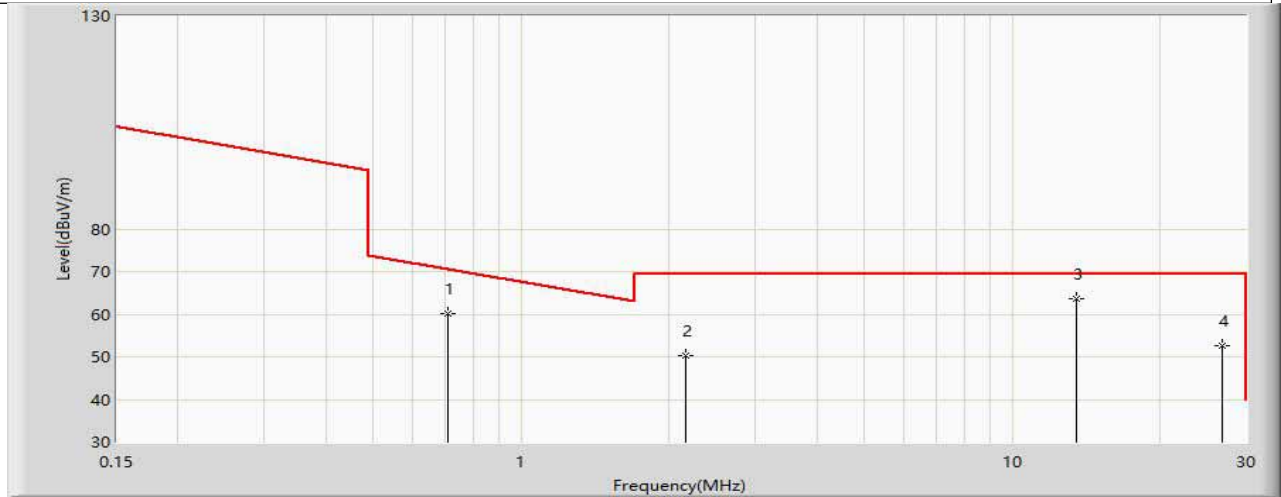
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	0.024	84.290	62.820	-35.695	119.985	21.470	QP
2		0.049	69.043	47.113	-44.746	113.789	21.930	QP
3		0.061	64.335	42.417	-47.552	111.887	21.918	QP
4		0.076	59.453	37.552	-50.526	109.979	21.901	QP
5		0.089	53.060	31.177	-55.548	108.608	21.883	QP

Engineer: Pawn	
Site: AC3	Time: 2019/07/08 - 10:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: HFH2-Z2_833799(0.009-30MHz)	Polarity: Vertical
EUT: BARCODE SCANNER	Power: AV 120V/60Hz
Note: Transmit	



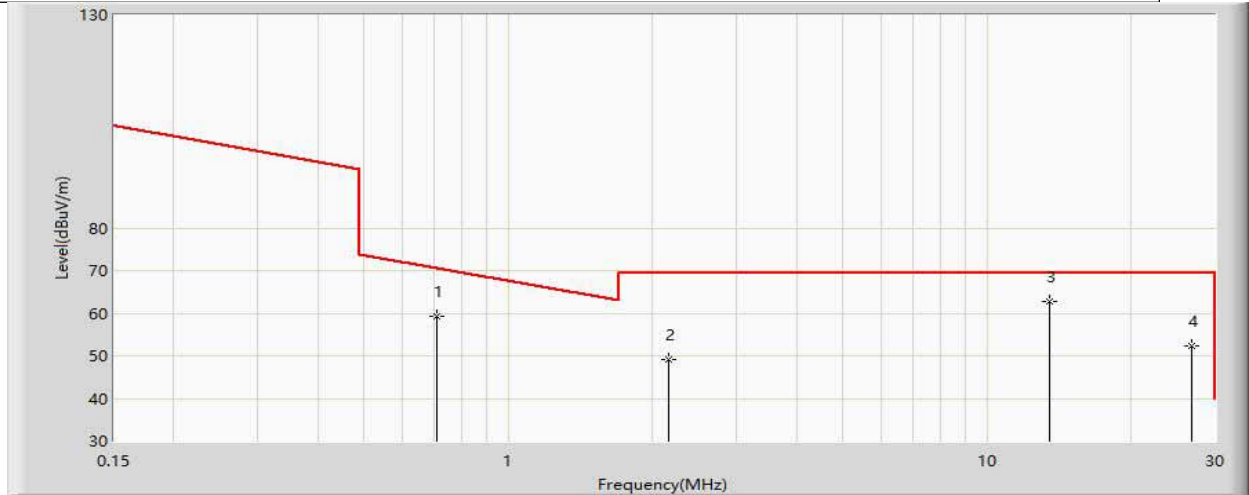
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	0.022	85.075	63.668	-35.665	120.741	21.407	QP
2		0.042	69.130	47.193	-45.997	115.127	21.937	QP
3		0.057	65.232	43.310	-47.244	112.476	21.922	QP
4		0.077	59.341	37.442	-50.524	109.865	21.899	QP
5		0.093	53.215	31.337	-55.011	108.226	21.878	QP

Engineer: Pawn	
Site: AC3	Time: 2019/07/08- 10:08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: HFH2-Z2_833799(0.009-30MHz)	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: AV 120V/60Hz
Note: Transmit	



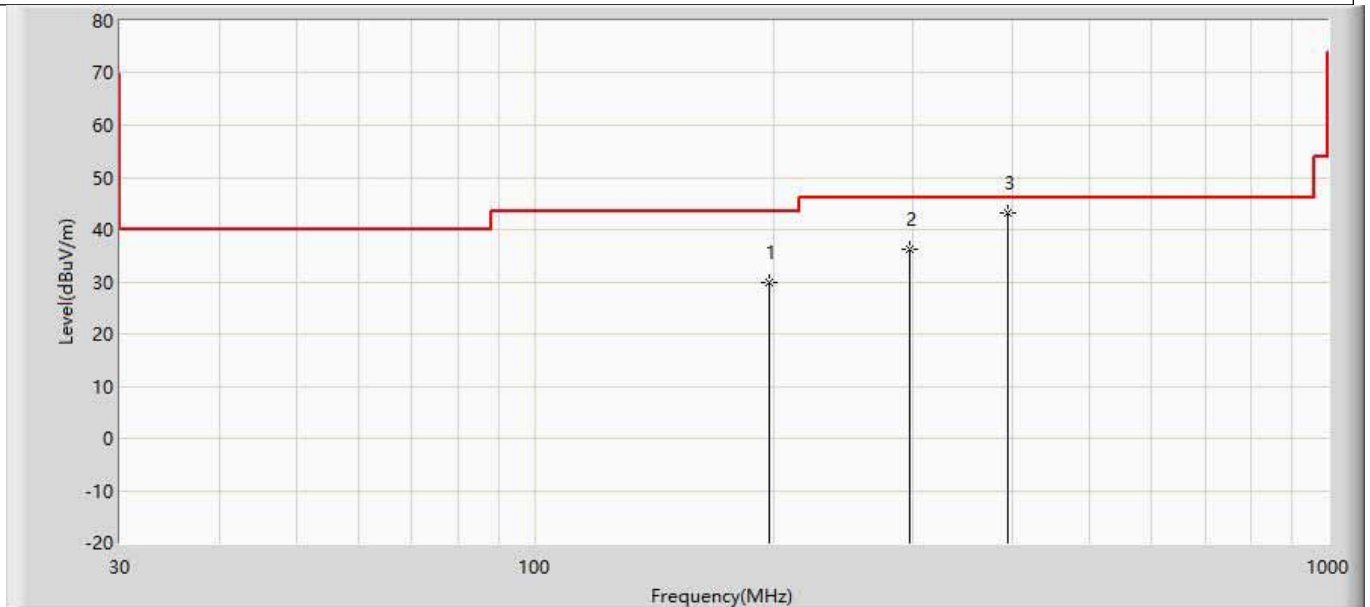
No	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		0.711	60.039	39.266	-10.536	70.576	20.773	QP
2		2.168	50.287	29.467	-19.213	69.500	20.820	QP
3	*	13.560	63.500	42.750	-6.000	69.500	20.750	QP
4		26.880	52.676	32.156	-16.824	69.500	20.520	QP

Engineer: Pawn	
Site: AC3	Time: 2019/07/08- 10:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: HFH2-Z2_833799(0.009-30MHz)	Polarity: Vertical
EUT: BARCODE SCANNER	Power: AV 120V/60Hz
Note: Transmit	



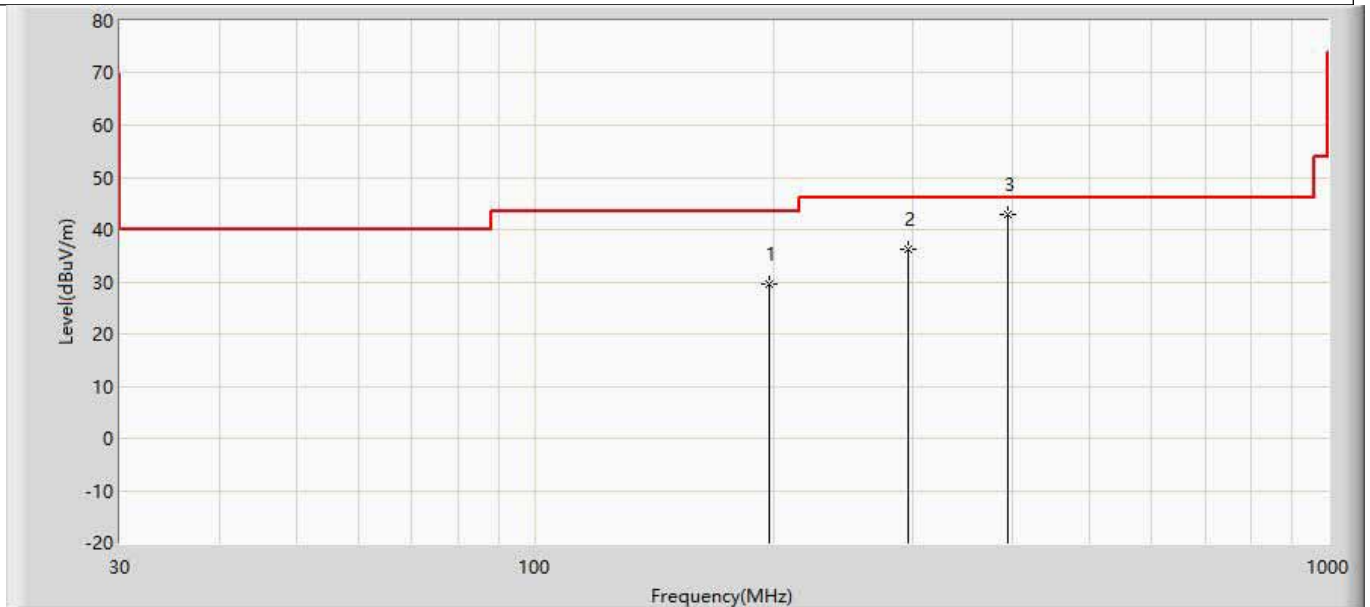
No	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		0.711	59.293	38.520	-11.282	70.576	20.773	QP
2		2.168	49.250	28.430	-20.250	69.500	20.820	QP
3	*	13.560	62.632	41.862	-6.868	69.500	20.750	QP
4		26.880	52.283	21.763	-17.217	69.500	20.520	QP

Engineer: pawn	
Site: AC3	Time: 2019/07/08 - 09:52
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	197.430	29.765	23.550	-13.735	43.500	6.215	PK
2		296.342	36.270	29.655	-9.730	46.000	6.615	PK
3		395.110	43.306	31.860	-2.694	46.000	11.446	PK

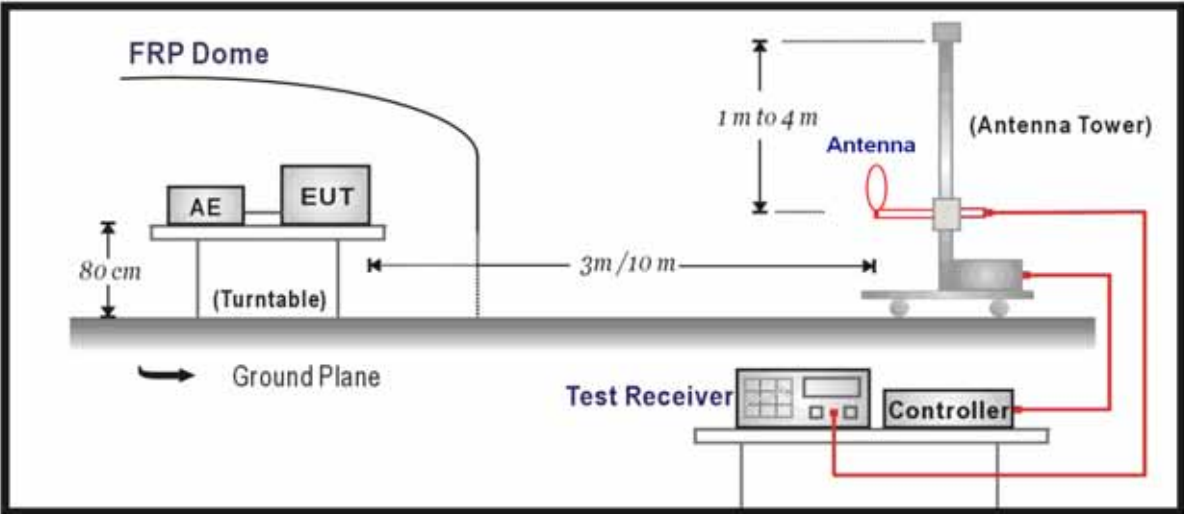
Engineer: pawn	
Site: AC3	Time: 2019/07/08 - 09:52
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Vertical
EUT: BARCODE SCANNER	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		197.430	29.545	23.330	-13.955	43.500	6.215	PK
2		296.342	36.266	29.663	-9.734	46.000	6.615	PK
3	*	395.110	42.879	31.433	-3.121	46.000	11.446	PK

4.4 Emission bandwidth	VERDICT: PASS
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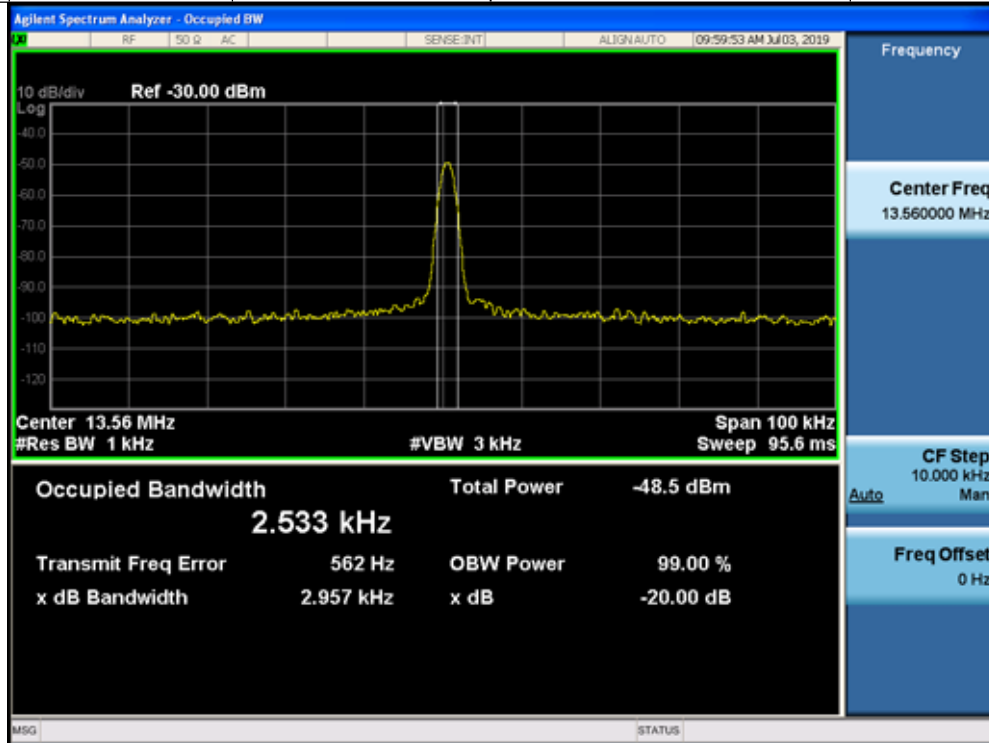
4.4.1 Limit	
Standard	FCC Part 15 Subpart C Paragraph 15.215
Within the band.	

4.4.2 Test Setup	
	

4.4.3 Test Procedure			
	Reference Rule	Chapter	Description
☒	ANSI C63.10	12.4	Emission bandwidth and occupied bandwidth
☒	ANSI C63.10	12.4.1	Emission bandwidth
☐	ANSI C63.10	12.4.2	Occupied bandwidth

4.4.4 Test Data

Frequency (MHz)	20dB Bandwidth (kHz)	20dBc point (Low) (MHz)	20dBc point (High) (MHz)	Frequency Range (MHz)	Result
13.56	2.957	12.0815	15.0385	13.553 ~ 13.567	Pass



4.5 Frequency Stability	VERDICT: PASS
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4.5.1 Limit:	
Standard	FCC Part 15 Subpart C Paragraph 15.225(e)
☒	The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+ 50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

4.5.2 Test Setup
The diagram illustrates the test setup. A Spectrum Analyzer is positioned on a Non-Conducted Table. A Power Supply is connected to the EUT (Equipment Under Test) which is housed within a STANDARD TEMPERATURE & HUMIDITY CHAMBER. A Ground Reference Plane is shown at the base of the setup.

4.5.3 Test Procedure			
	References Rule	Chapter	Description
☒	ANSI C63.10	6.8	Frequency stability tests
	☒ ANSI C63.10	6.8.1	Frequency stability with respect to ambient temperature
	☒ ANSI C63.10	6.8.2	Frequency stability when varying supply voltage

4.5.4 Test Data

Frequency Stability under Temperature at 0min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (ppm)
-30	13.56	150	±100
-20	13.56	51	±100
-10	13.56	-86	±100
0	13.56	-118	±100
10	13.56	81	±100
20	13.56	-65	±100
30	13.56	19	±100
40	13.56	-139	±100
50	13.56	170	±100

Frequency Stability under Temperature at 2min

Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (ppm)
-30	13.56	-121	±100
-20	13.56	-2	±100
-10	13.56	-142	±100
0	13.56	110	±100
10	13.56	-110	±100
20	13.56	187	±100
30	13.56	-62	±100
40	13.56	-144	±100
50	13.56	-63	±100

Frequency Stability under Temperature at 5min			
Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (ppm)
-30	13.56	40	±100
-20	13.56	-130	±100
-10	13.56	196	±100
0	13.56	-56	±100
10	13.56	55	±100
20	13.56	79	±100
30	13.56	90	±100
40	13.56	-43	±100
50	13.56	-85	±100
Frequency Stability under Temperature at 10min			
Temperature Interval (°C)	Test Frequency (MHz)	Deviation (Hz)	Limit (ppm)
-30	13.56	-79	±100
-20	13.56	9	±100
-10	13.56	-23	±100
0	13.56	-85	±100
10	13.56	-40	±100
20	13.56	57	±100
30	13.56	88	±100
40	13.56	54	±100
50	13.56	28	±100
Frequency Stability under Voltage			
AC Voltage (V)	Test Frequency (MHz)	Deviation (Hz)	Limit (ppm)
102	13.56	48	±100
120	13.56	28	±100
138	13.56	151	±100

4.6 Antenna Requirement	VERDICT: PASS
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4.6.1 Limit:

Standard	FCC Part 15 Subpart E Paragraph 15.203
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.	

4.6.2 Antenna Connector Construction:

☒	The use of a permanently attached antenna
☐	The antenna use of a unique coupling to the intentional radiator
☐	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document "Internal Photograph" to show the antenna connector.	



4.7 Test setup photo and EUT Photo	VERDICT: PASS
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Remark: The test setup photo and EUT Photo please see appendix.

_____ The End _____