



**FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210
INDUSTRY CANADA RSS-GEN**

TEST REPORT

FOR

Keypad Access Panel

MODEL NUMBER: MPIKTSPRX

REPORT NUMBER: 13073027C

FCC ID: PV3MPIKTSPRX

IC: 12252A-MPIKTSPRX

ISSUE DATE: 2020-07-06

Prepared for
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Commercial Fire & Security Div 12 Clintonville Rd.
Northford, CT 06472, U.S.A.**

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	2020-07-06	Initial Issue	--

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Honeywell International Inc.
Commercial Fire & Security Div 12 Clintonville Rd.
Northford, CT 06472, U.S.A.

EUT DESCRIPTION: Keypad Access Panel

MODEL: MPIKTSPRX

SERIAL NUMBER: non-serialized

DATE TESTED: 2020-03-12 thru 2020-06-17

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C 2020	Complies
INDUSTRY CANADA RSS-210 Issue 10	Complies
INDUSTRY CANADA RSS-GEN Issue 5 + A1	Complies

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

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UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15 SUBPART C, RSS-GEN Issue 5, and RSS-210 Issue 10.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfungsten Road, Northbrook, IL 60062 U.S.A.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable} \\ &\text{Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Final Voltage (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor} \\ &\text{(dB)} + \text{LISN Insertion Loss.} \\ 36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} &= 46.6 \text{ dBuV} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test	Range	Equipment	Uncertainty k=2
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.27dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.28dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.33dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.39dB
AC Conducted Disturbance	0.15 to 30MHz	LISN	3.65dB
Radiated Emissions	0.009 to 30MHz	H-Filed Loop	2.52dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT, Model MPIKTSPRX is an Access Keypad with 125kHz RF ID reader.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak field strength:

Frequency Range (MHz)	Mode	Peak Field Strength dBuV/m @ 300m	Notes
0.120550	TX	-9.55	No Card
0.120039	TX	-11.45	With Card

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral multiturn loop antenna.

5.4. SOFTWARE AND FIRMWARE

AE Equipment – Control Panel

FW version: 7.91

BSP version: 7.1r3

EUT – Keypad

AMS: 0.9.54

5.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was measured while the EUT is placed in normal installation orientation.

5.6. MODIFICATIONS

No modifications were made during testing.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Control Panel	Honeywell	Eagle Control Panel	non-serilaized	-

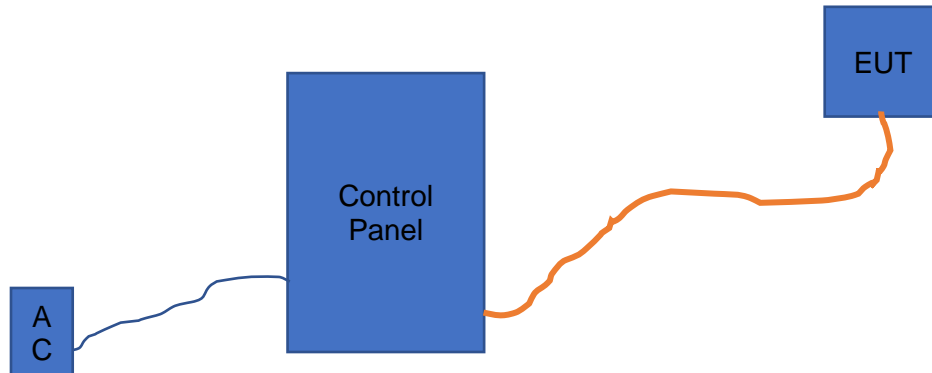
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	IEC C13	3 wire	1m	connected to EUT input
2	Power and Data	1	wired in	4 wire, 24 AWG	1m	shielded cable with unterminated shield

TEST SETUP

The EUT is a standalone keypad connected via 4 wire power and data back to control panel. EUT was tested as standalone.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were utilized for the tests documented in this report:

UL SOFTWARE			
AC Line Conducted Software and Radiated Emissions Software	UL	UL EMC	Ver 9.5, April 3, 2015

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	2019-12-28	2020-12-31
Bicon Antenna	Electro-Metrics	EM6912A	EMC4070	2019-12-31	2020-12-31
Log-P Antenna	Chase	UPA6109	EMC4258	2019-12-31	2020-12-31
Loop Antenna	EMCO	6502/1	EMC4026	2020-01-28	2021-01-31
EMI Test Receiver	Rohde & Schwarz	ESR	EMC4377	2019-12-30	2020-12-31
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
High-Pass Filter	Solar Electronics	2803-150	EMC4327	N/A	N/A
Attenuator	HP	8494B	2831A00838	N/A	N/A
LISN - L1	Solar Electronics	8602-50-TS-50-N	EMC4066	2019-12-16	2020-12-31
LISN - L2	Solar Electronics	8602-50-TS-50-N	EMC4064	2019-12-16	2020-12-31
Signal Analyzer	Aglient	N9030A PXA	EMC4360	2019-12-22	2020-12-31

7. OCCUPIED BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1 kHz. The VBW is set to 10 kHz. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

Note: Since the transmitter signal is CW-like it is impractical to use an RBW setting of 1 - 5% of the emission bandwidth since the emission bandwidth will be proportional to the RBW.

TESTED BY:

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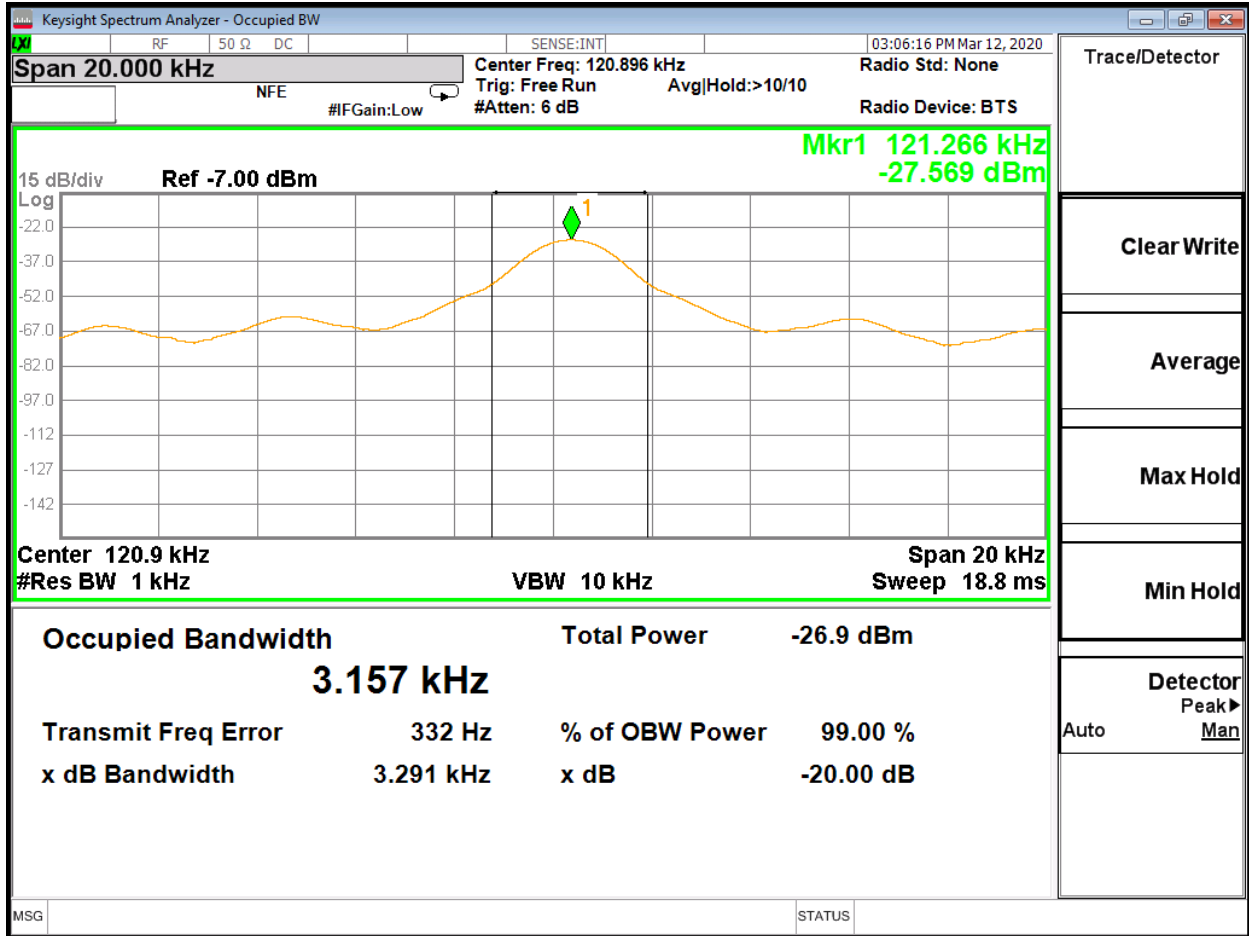
RESULTS

99% and 20dB BW

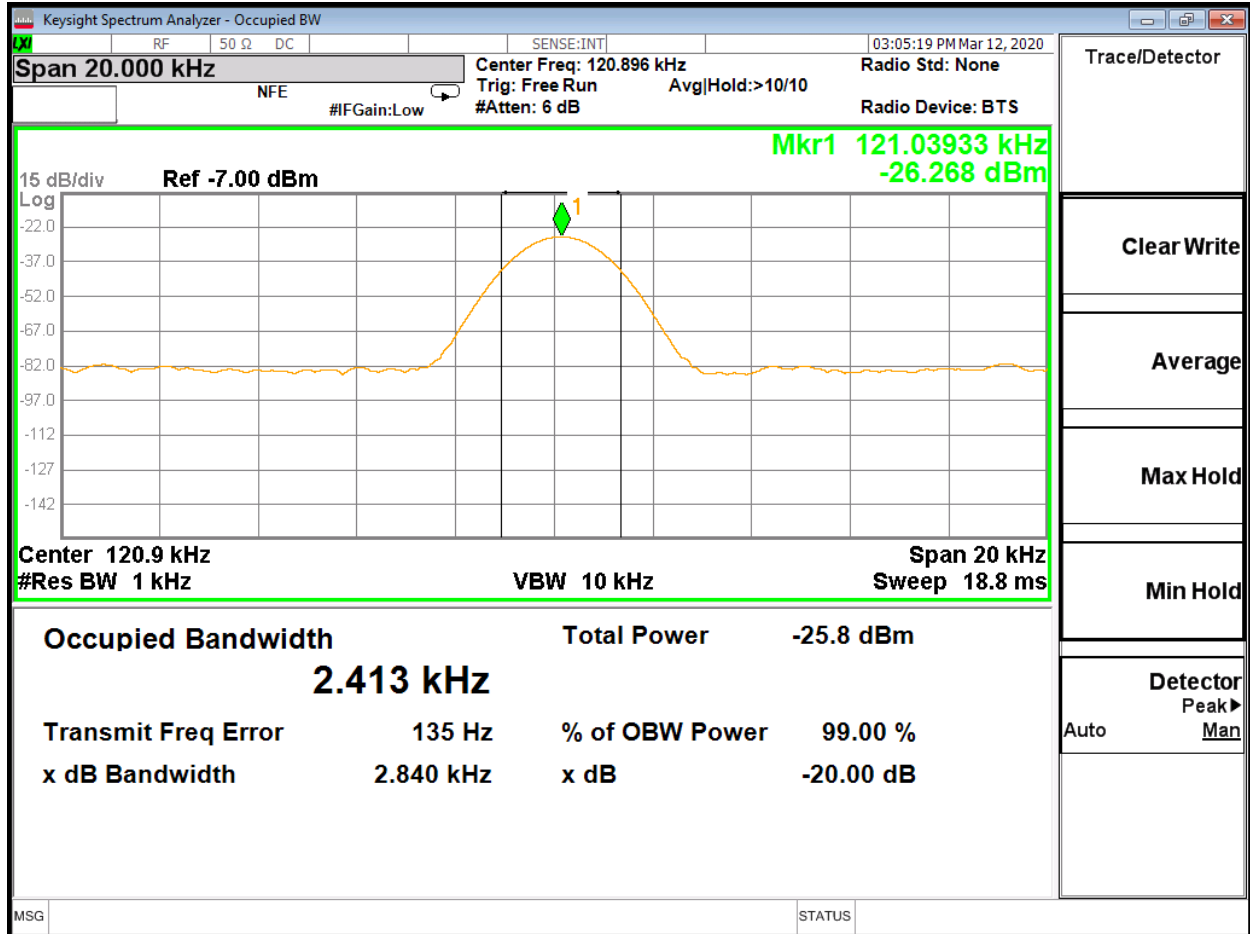
Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
120kHz with card	3.157	3.291
120khz no card	2.413	2.840

7.1. Bandwidth Data

20dB Data / 99% Data with Card



20dB Data / 99% Data no Card



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.209 (a)
 IC RSS-GEN, Section 8.9 (Transmitter)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (m)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960 MHz	500	3

Note1: The lower limit shall apply at the transition frequency.
 Note2: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as report in the table) using free space impedance of 377 Ohms. For example, the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to $Y-51.5 = Z$ dBuA/m, which has the same margin, W dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

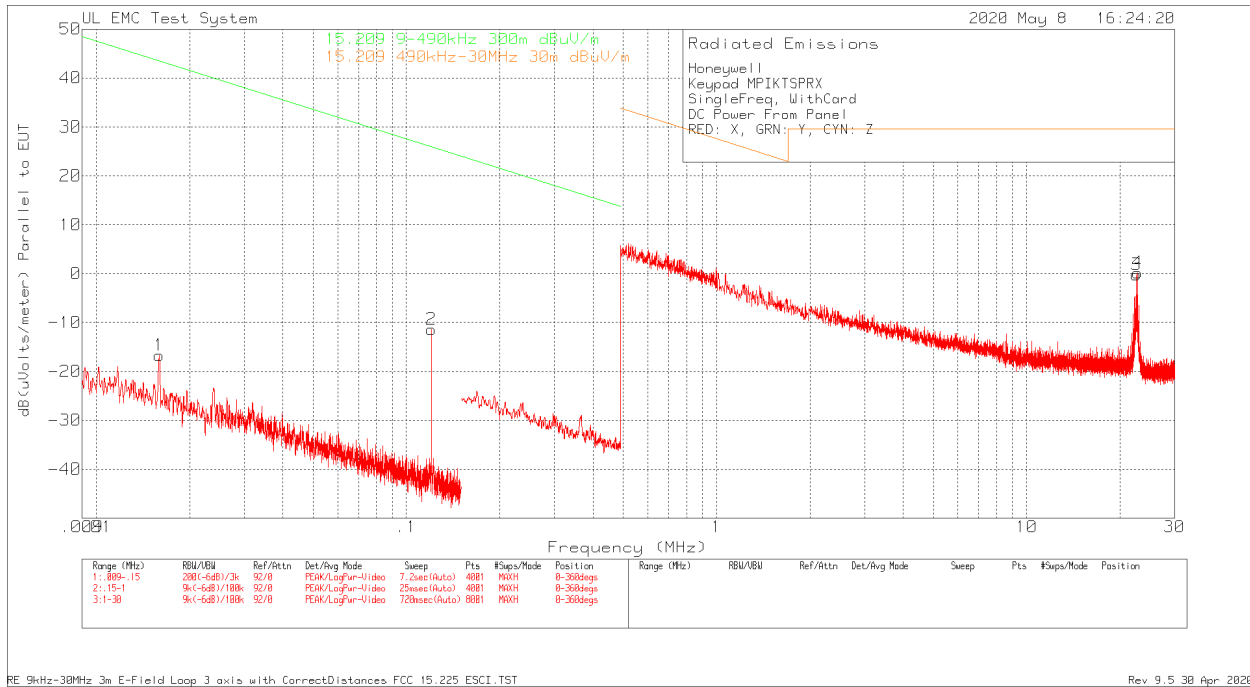
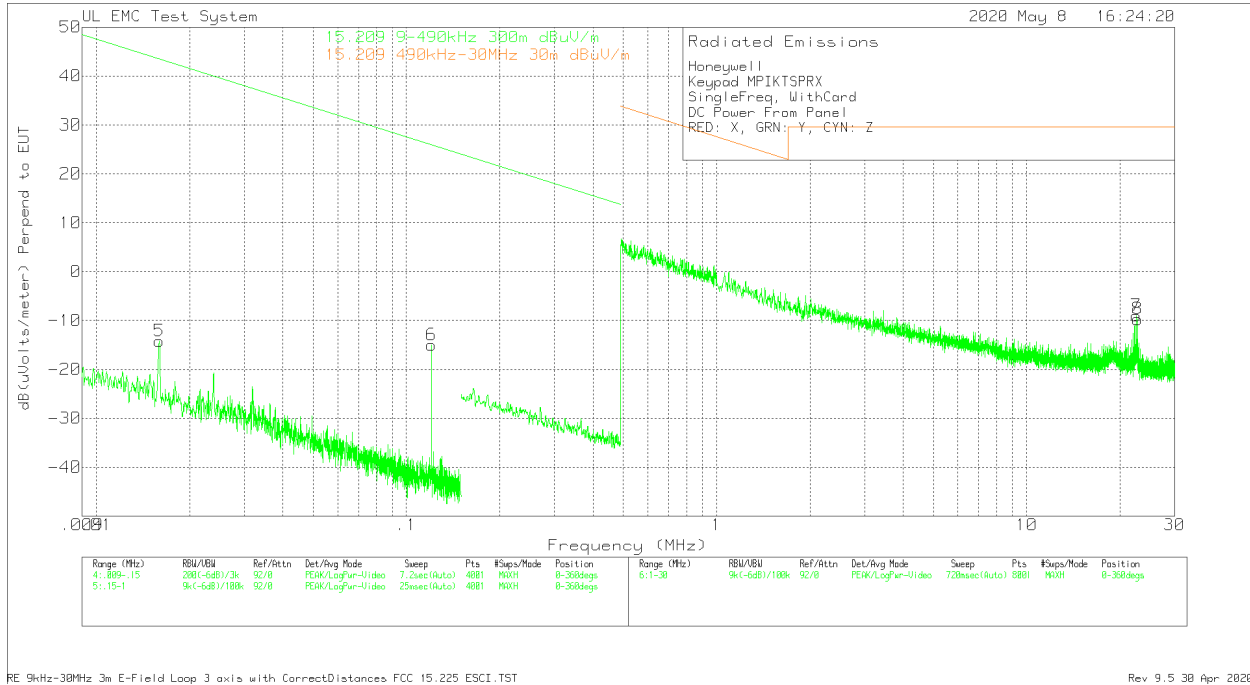
TESTED BY:

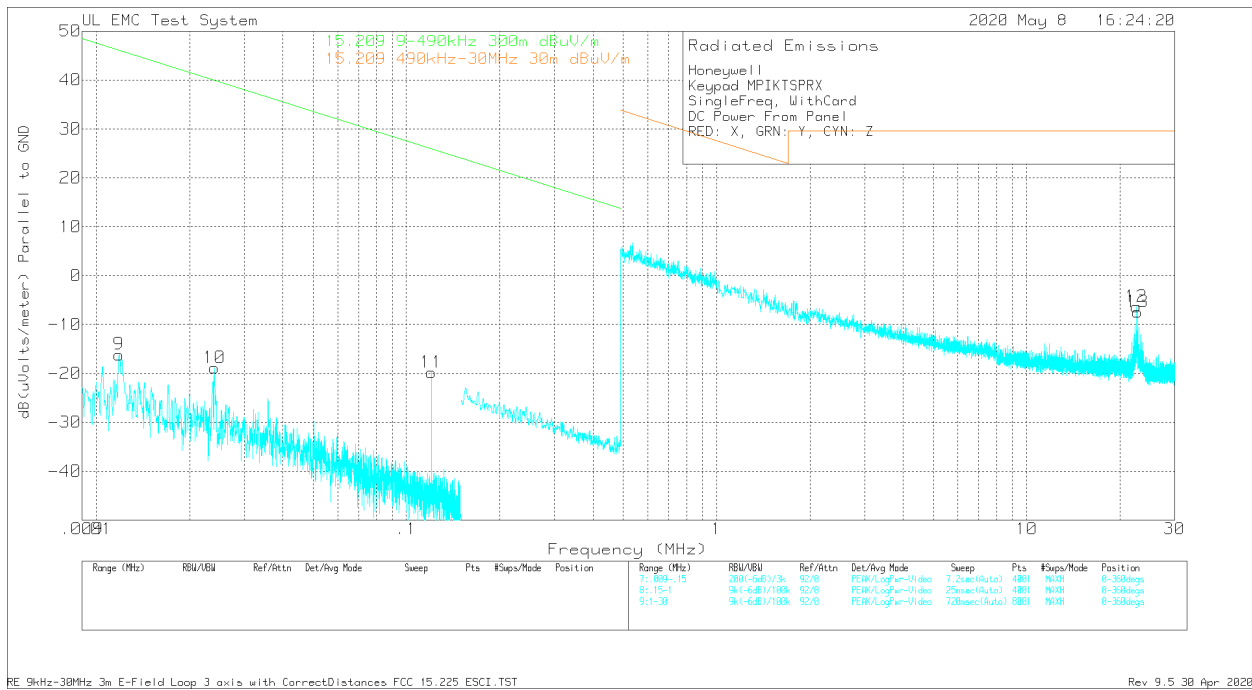
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RESULTS

8.2. Fundamental and SPURIOUS EMISSIONS 0.009 TO 30 MHz

8.2.1. Plot Data with Card



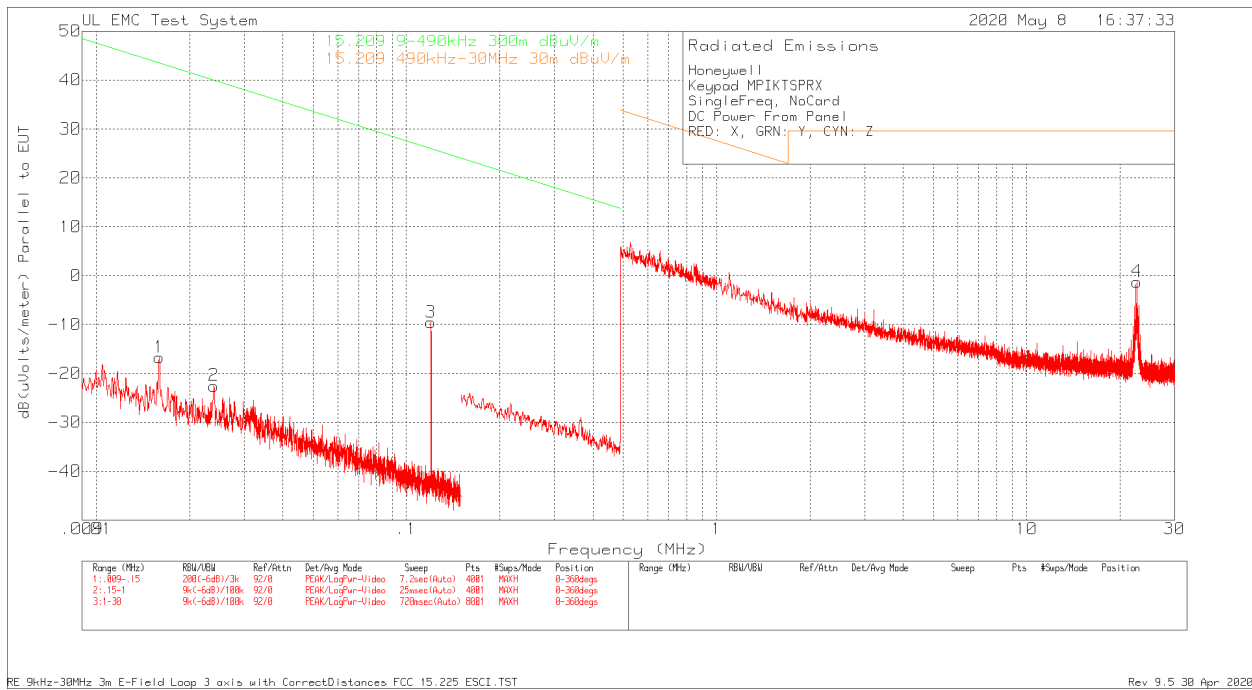
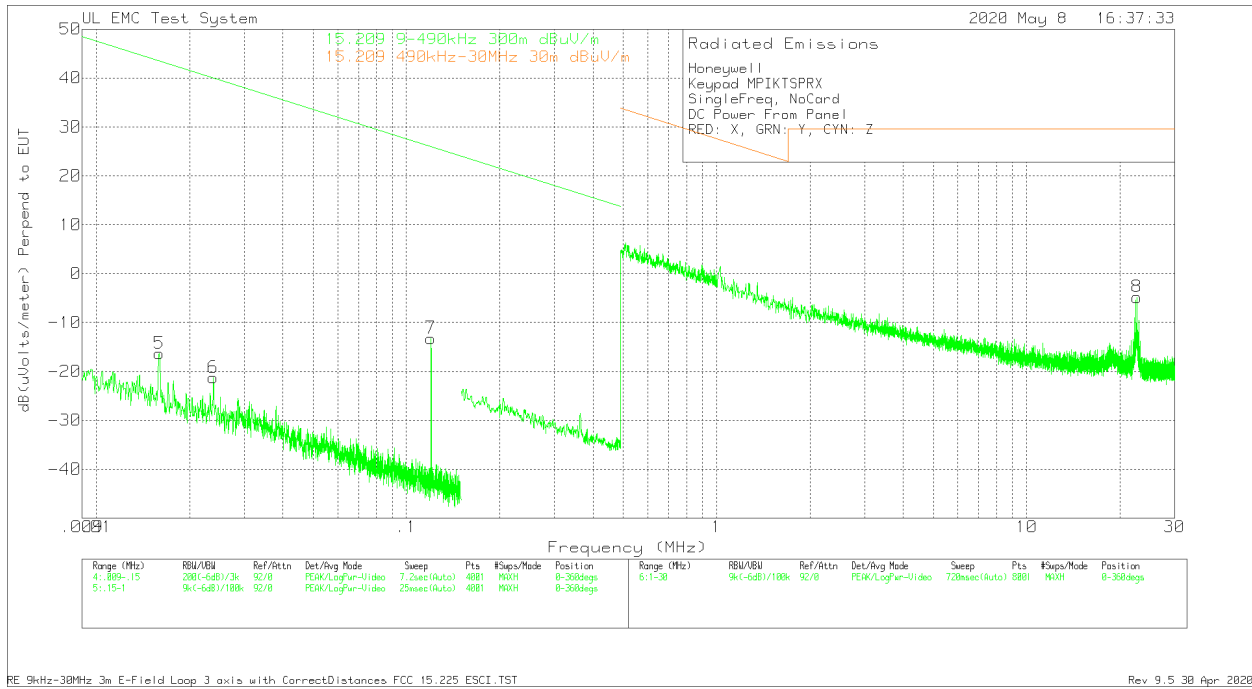


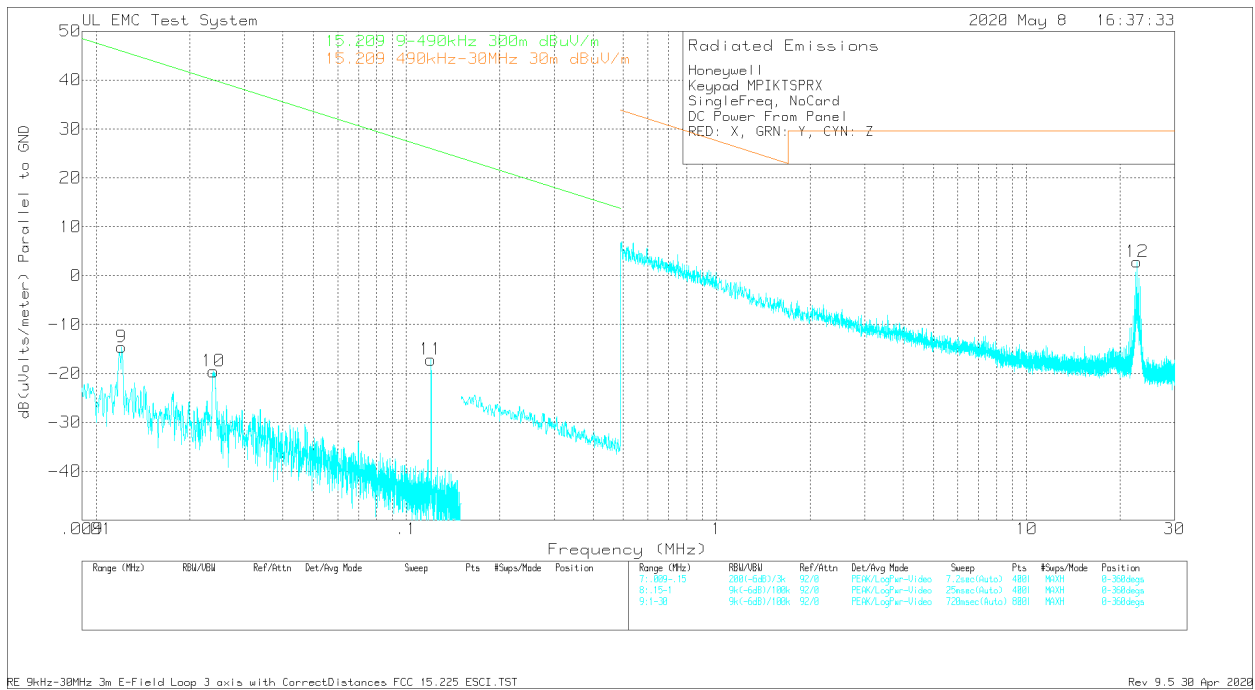
8.2.2. Tabular Data with Card

Honeywell												
Keypad MPIKTSPRX												
SingleFreq, WithCard												
DC Power From Panel												
RED: X, GRN: Y, CYN: Z												
Trace MArkers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Distance Factor 300mTo3m & 30mTo3m dB	Level dBuV/m	Limit 15.209 9-490kHz 300m dBuV/m	Margin (dB)	Limit 15.225 490kHz-30MHz 30m dBuV/m	Margin (dB)	Azimuth [Degs]
1*	0.01593	42.28	Pk	20.9	0.1	-80	-16.72	43.55	-60.27	-	-	0-360
2	0.12039	56.25	Pk	12.2	0.1	-80	-11.45	25.99	-37.44	-	-	0-360
3	22.53975	29.15	Pk	10.1	0.5	-40	-0.25	-	-	29.54	-29.79	0-360
4	22.779	29.68	Pk	10	0.5	-40	0.18	-	-	29.54	-29.36	0-360
5*	0.015965	44.78	Pk	20.9	0.1	-80	-14.22	43.53	-57.75	-	-	0-360
6	0.120405	52.71	Pk	12.2	0.1	-80	-14.99	25.99	-40.98	-	-	0-360
7	22.53975	20.36	Pk	10.1	0.5	-40	-9.04	-	-	29.54	-38.58	0-360
8	22.779	19.76	Pk	10	0.5	-40	-9.74	-	-	29.54	-39.28	0-360
9*	0.01185	40.76	Pk	23	0.1	-80	-16.14	46.12	-62.26	-	-	0-360
10*	0.02405	42.76	Pk	18.3	0.1	-80	-18.84	39.97	-58.81	-	-	0-360
11	0.12044	47.93	Pk	12.2	0.1	-80	-19.77	25.99	-45.76	-	-	0-360
12	22.55063	23.01	Pk	10.1	0.5	-40	-6.39	-	-	29.54	-35.93	0-360
13	22.78625	22.1	Pk	10	0.5	-40	-7.4	-	-	29.54	-36.94	0-360
Pk - Peak detector												

* ambient not subject to measurment

8.2.3. Plot Data no Card





8.2.4. Tabular Data no Card

Honeywell
 Keypad MPIKTSPRX
 SingleFreq, NoCard
 DC Power From Panel
 RED: X, GRN: Y, CYN: Z
 Trace MArkers

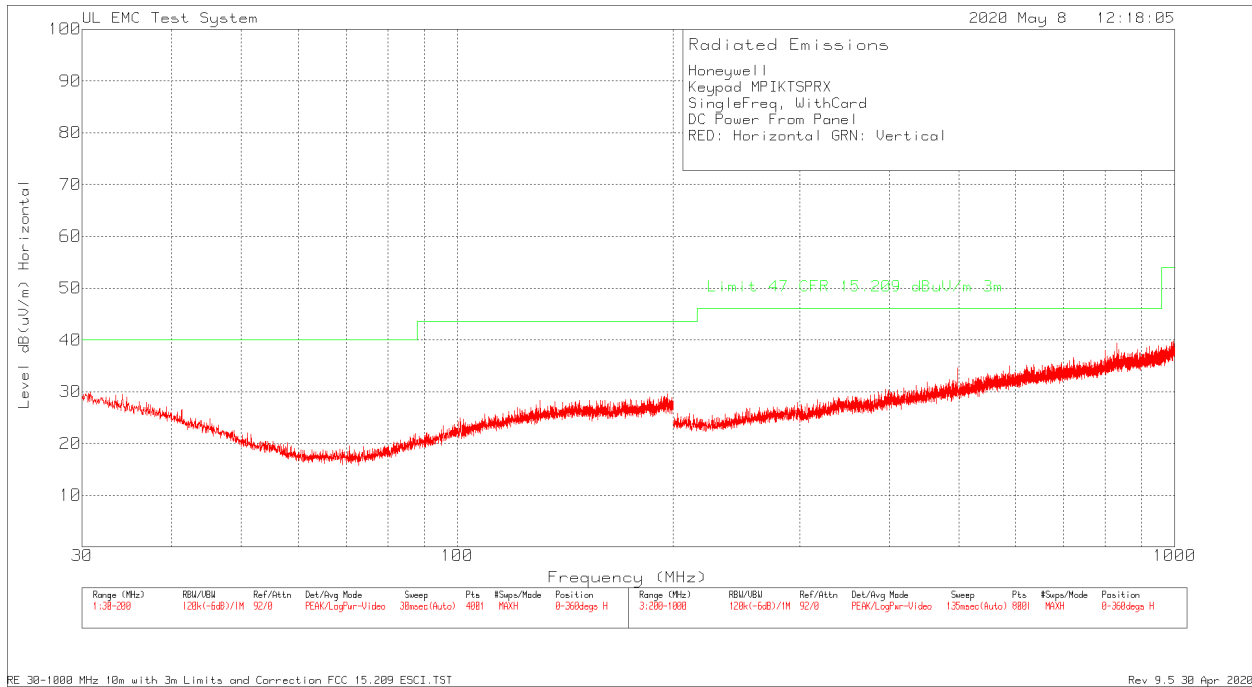
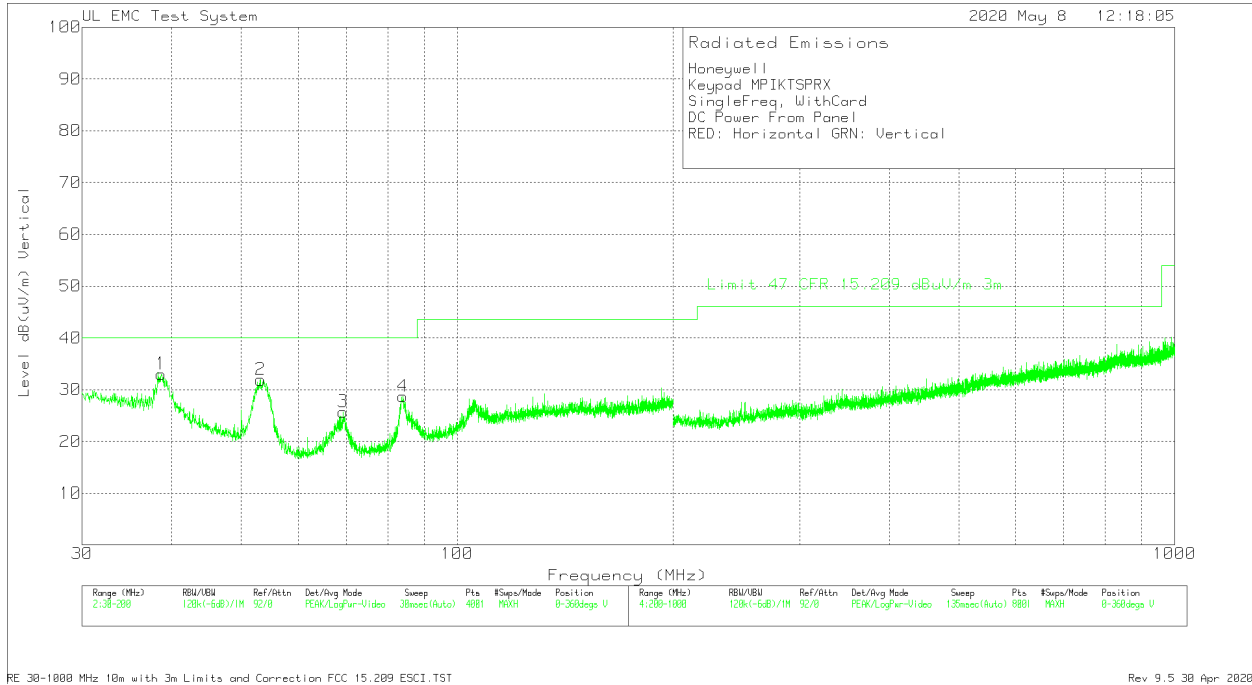
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	Distance Factor 300mTo3m & 30mTo3m dB	Level dBuV/m	Limit 15.209 9-490kHz 300m dBuV/m	Margin (dB)	Limit 15.225 490kHz-30MHz 30m dBuV/m	Margin (dB)	Azimuth [Degs]
1*	0.01593	42.22	Pk	20.9	0.1	-80	-16.78	43.55	-60.33	-	-	0-360
2*	0.02398	39.07	Pk	18.3	0.1	-80	-22.53	40	-62.53	-	-	0-360
3	0.120055	58.15	Pk	12.2	0.1	-80	-9.55	26.01	-35.56	-	-	0-360
4	22.721	28.16	Pk	10.1	0.5	-40	-1.24	-	-	29.54	-30.78	0-360
5*	0.01593	42.63	Pk	20.9	0.1	-80	-16.37	43.55	-59.92	-	-	0-360
6*	0.02384	40.3	Pk	18.3	0.1	-80	-21.3	40.05	-61.35	-	-	0-360
7	0.12007	54.47	Pk	12.2	0.1	-80	-13.23	26.01	-39.24	-	-	0-360
8	22.72463	24.58	Pk	10.1	0.5	-40	-4.82	-	-	29.54	-34.36	0-360
9*	0.01208	42.37	Pk	22.9	0.1	-80	-14.63	45.95	-60.58	-	-	0-360
10*	0.023875	42.01	Pk	18.3	0.1	-80	-19.59	40.04	-59.63	-	-	0-360
11	0.120055	50.51	Pk	12.2	0.1	-80	-17.19	26.01	-43.2	-	-	0-360
12	22.721	32.19	Pk	10.1	0.5	-40	2.79	-	-	29.54	-26.75	0-360

Pk - Peak detector

* ambient not subject to measurment

8.3. TX SPURIOUS EMISSION 30 TO 1000 MHz

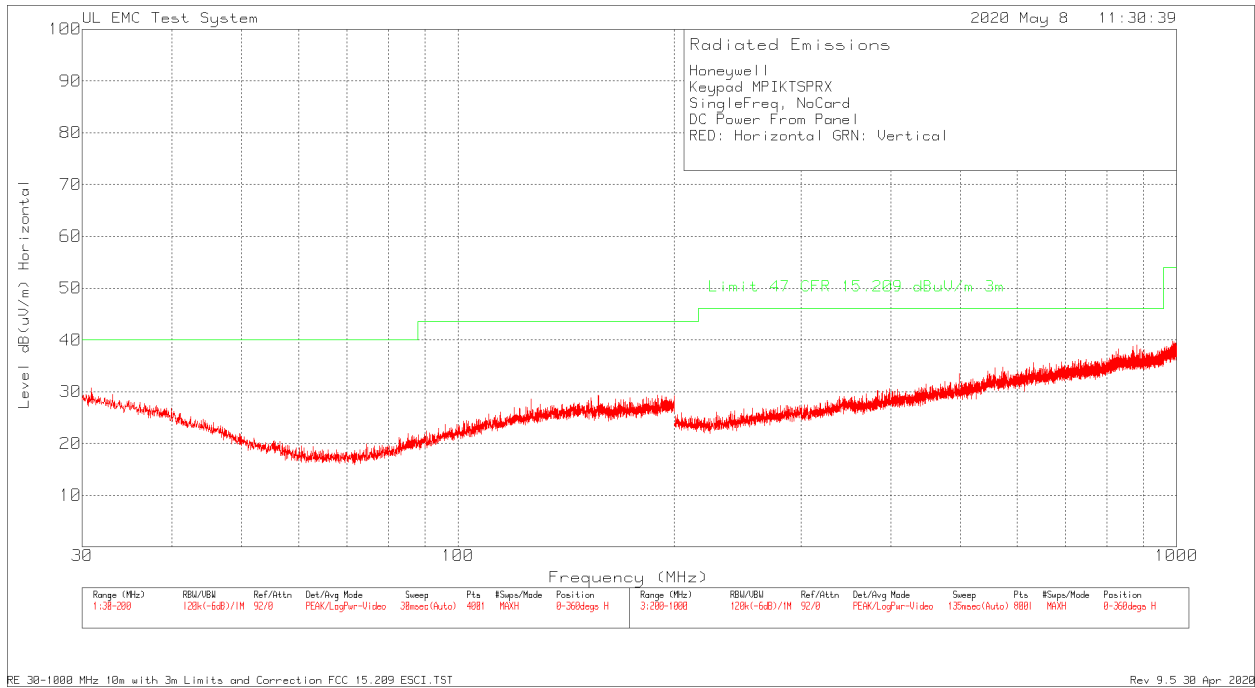
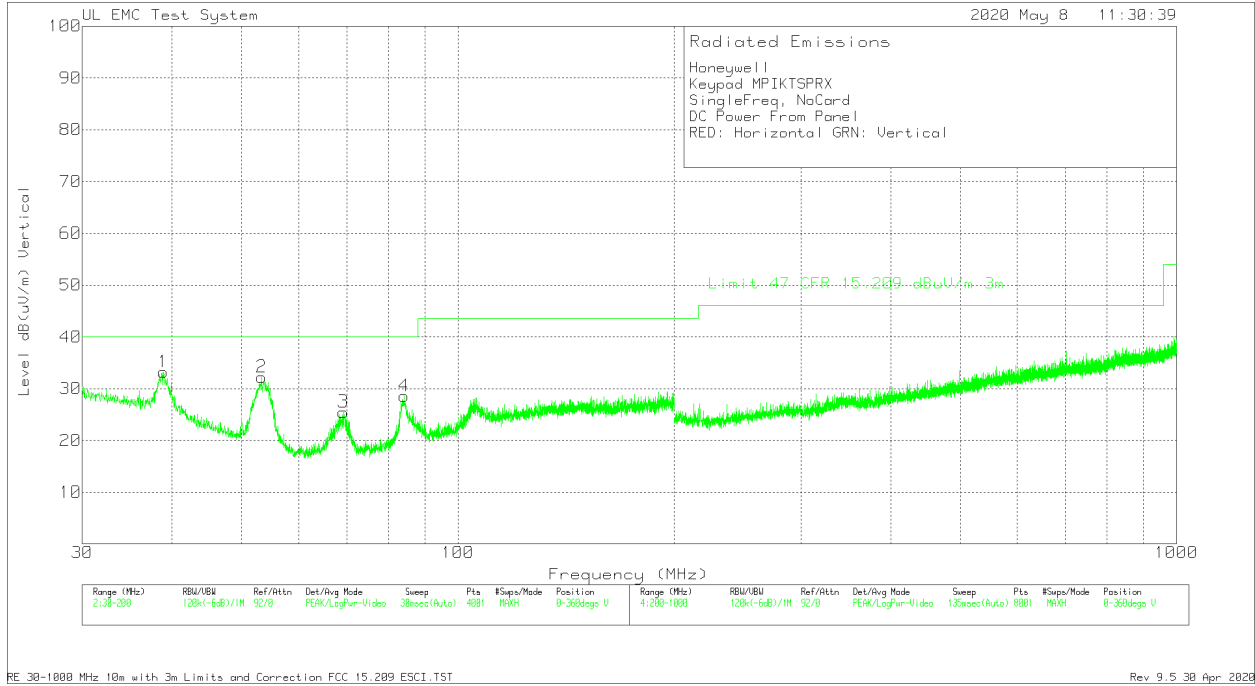
8.3.1. Plot Data with Card



8.3.2. Tabular Data with Card

Honeywell												
Key pad MPIKTSPRX												
SingleFreq, WithCard												
DC Power From Panel												
RED: Horizontal GRN: Vertical												
Trace MArkers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading Level dB(uV/m)	Limit 47 CFR 15.209 dBuV/m 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	38.67	38.13	Pk	14.5	-30.1	10.5	33.03	40	-6.97	0-360	101	V
2	53.1625	43.22	Pk	8.2	-30	10.5	31.92	40	-8.08	0-360	101	V
3	69.3125	38.83	Pk	6.3	-29.9	10.5	25.73	40	-14.27	0-360	400	V
4	83.975	39.5	Pk	8.6	-29.9	10.5	28.7	40	-11.3	0-360	400	V
Radiated Emission Data												
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading Level dB(uV/m)	Limit 47 CFR 15.209 dBuV/m 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
38.6988	35.23	Qp	14.5	-30.1	10.5	30.13	40	-9.87	126	113	V	
Pk - Peak detector												
Qp - Quasi-Peak detector												

8.3.3. Plot Data no Card



8.3.4. Tabular Data no Card

Honeywell												
Keypad MPIKTSPRX												
SingleFreq, NoCard												
DC Power From Panel												
RED: Horizontal GRN: Vertical												
Trace MArkers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading Level dB(uV/m)	Limit 47 CFR 15.209 dBuV/m 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	38.8825	38.42	Pk	14.4	-30.1	10.5	33.22	40	-6.78	0-360	98	V
2	53.29	43.55	Pk	8.2	-30	10.5	32.25	40	-7.75	0-360	98	V
3	69.27	38.59	Pk	6.3	-29.9	10.5	25.49	40	-14.51	0-360	401	V
4	84.145	39.35	Pk	8.6	-29.9	10.5	28.55	40	-11.45	0-360	401	V
Radiated Emission Data												
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path Factor dB	10m to 3m Factor dB	Corrected Reading Level dB(uV/m)	Limit 47 CFR 15.209 dBuV/m 3m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
38.9161	34.74	Qp	14.4	-30.1	10.5	29.54	40	-10.46	352	102	V	
Pk - Peak detector												
Qp - Quasi-Peak detector												

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 7.2.2

Frequency of emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4

TESTED BY:

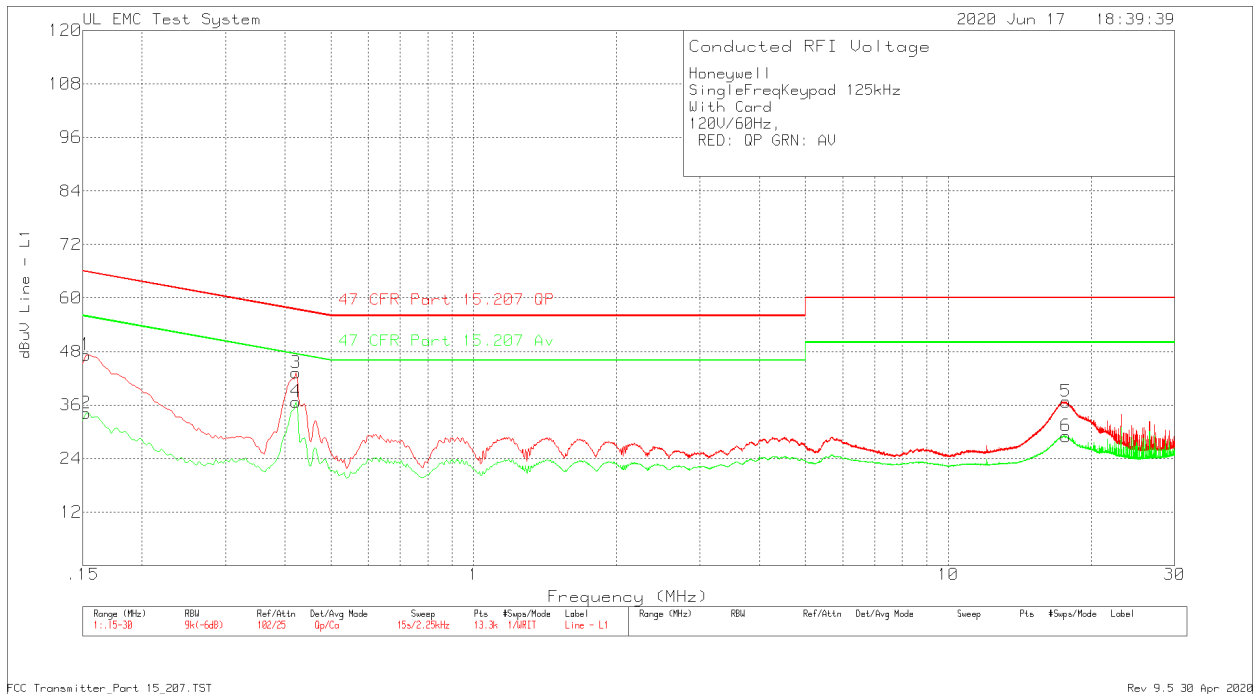
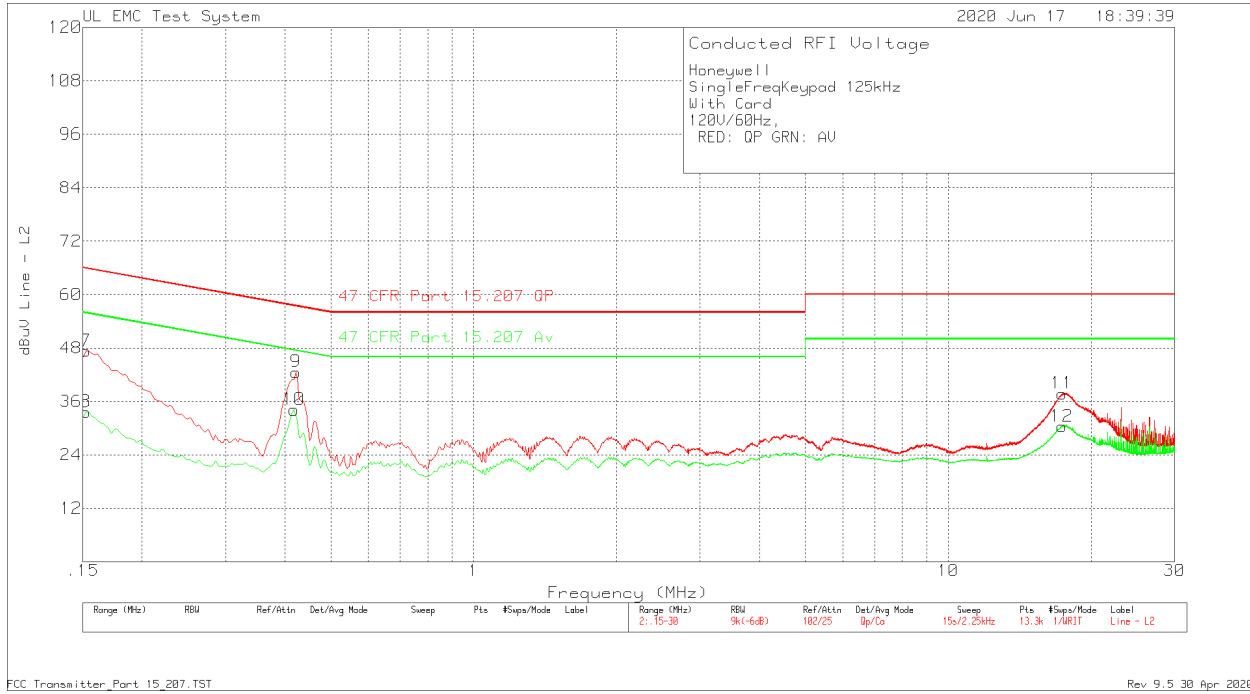
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RESULTS

No non-compliance noted:

9.1. Line Conducted Emissions

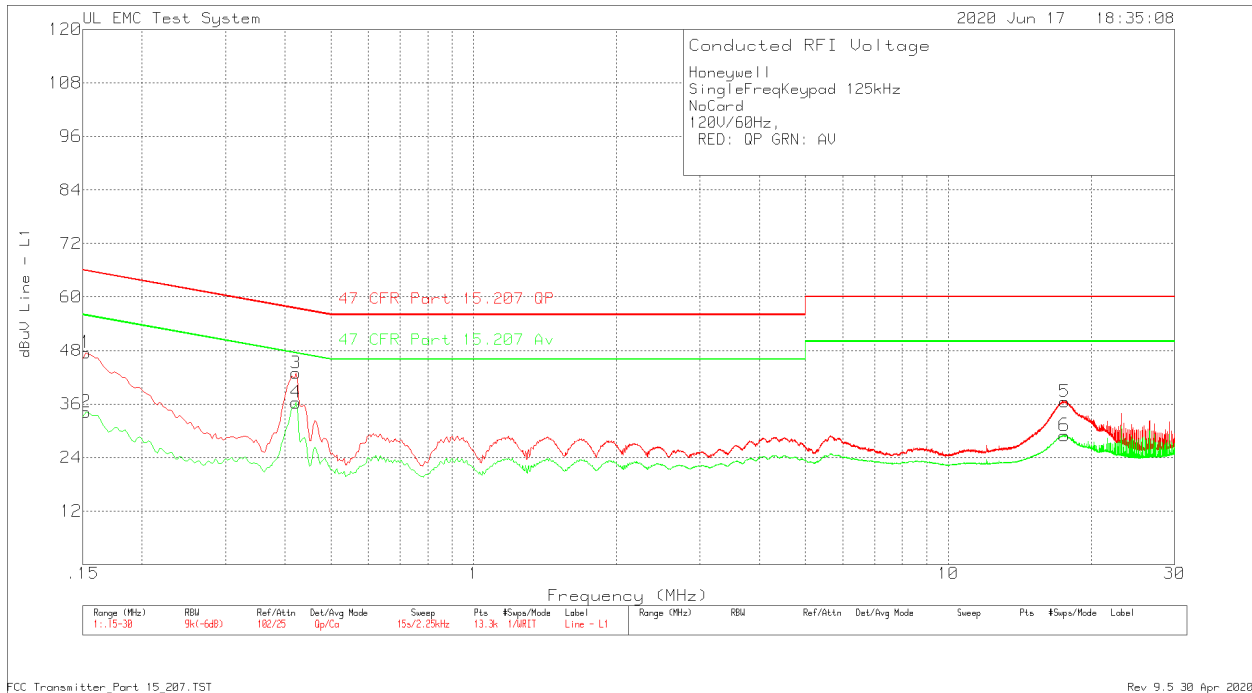
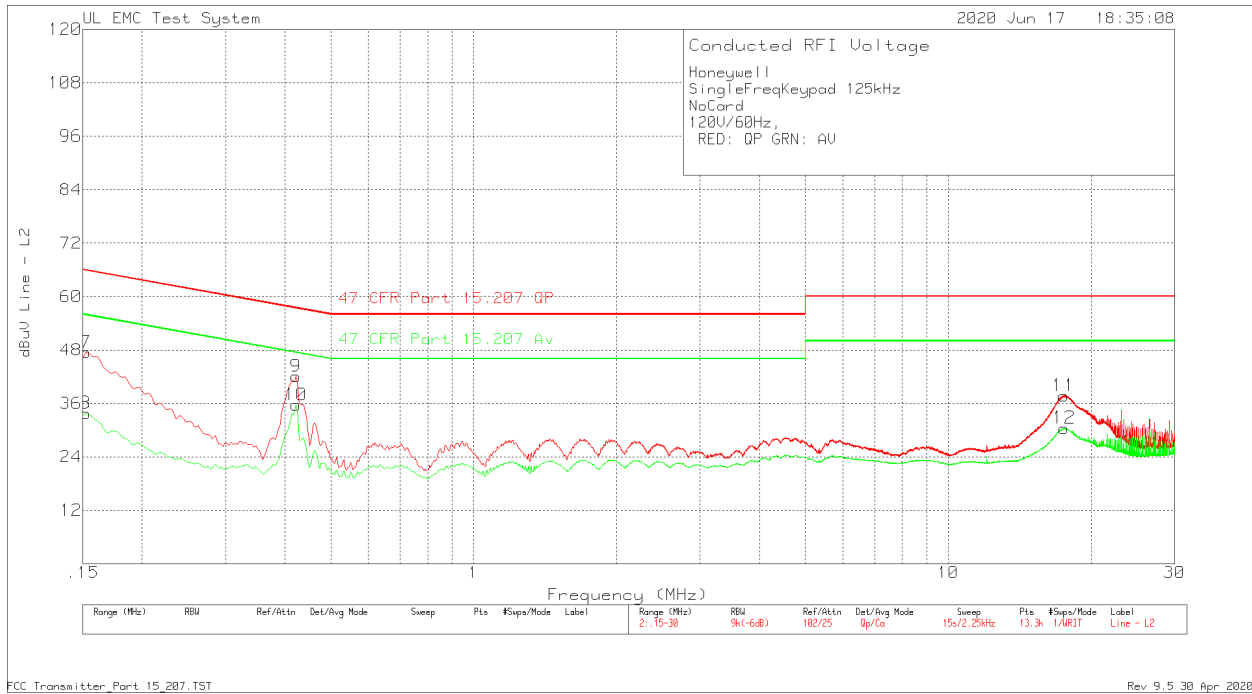
9.1.1. Plot data with Card



9.1.2. Tabular Data with Card

Honeywell										
SingleFreqKeypad 125kHz										
With Card										
120V/60Hz,										
RED: QP GRN: AV										
Trace MArkers										
Marker No.	Test Frequency (MHz)	Meter Reading (dBUV)	Detector	LISN Factor dB	Path Factor	Corrected Reading dBuV	Limit 47 CFR Part 15.207 QP	Margin (dB)	Limit 47 CFR Part 15.207 Av	Margin (dB)
Line 1										
1	0.15225	32.52	Qp	0	14.7	47.22	65.88	-18.66	55.88	-8.66
2	0.15225	19.48	Ca	0	14.7	34.18	65.88	-31.7	55.88	-21.7
3	0.42225	32.51	Qp	0	10.7	43.21	57.4	-14.19	47.4	-4.19
4	0.42225	26.01	Ca	0	10.7	36.71	57.4	-20.69	47.4	-10.69
5	17.6955	25.45	Qp	0	11.3	36.75	60	-23.25	50	-13.25
6	17.69438	17.71	Ca	0	11.3	29.01	60	-30.99	50	-20.99
Line 2										
7	0.15225	32.5	Qp	0.1	14.7	47.3	65.88	-18.58	55.88	-8.58
8	0.15225	18.85	Ca	0.1	14.7	33.65	65.88	-32.23	55.88	-22.23
9	0.42225	31.88	Qp	0	10.7	42.58	57.4	-14.82	47.4	-4.82
10	0.41775	23.44	Ca	0	10.7	34.14	57.49	-23.35	47.49	-13.35
11	17.38725	26.46	Qp	0	11.3	37.76	60	-22.24	50	-12.24
12	17.35575	19.07	Ca	0	11.3	30.37	60	-29.63	50	-19.63
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										

9.1.3. Plot Data no Card



9.1.4. Tabular Data no Card

Honeywell										
SingleFreqKeypad 125kHz										
NoCard										
120V/60Hz,										
RED: QP GRN: AV										
Trace MArkers										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	LISN Factor dB	Path Factor	Corrected Reading dBuV	Limit 47 CFR Part 15.207 QP	Margin (dB)	Limit 47 CFR Part 15.207 Av	Margin (dB)
Line 1										
1	0.15225	32.81	Qp	0	14.7	47.51	65.88	-18.37	55.88	-8.37
2	0.15225	19.5	Ca	0	14.7	34.2	65.88	-31.68	55.88	-21.68
3	0.42225	32.23	Qp	0	10.7	42.93	57.4	-14.47	47.4	-4.47
4	0.42225	25.63	Ca	0	10.7	36.33	57.4	-21.07	47.4	-11.07
5	17.574	25.21	Qp	0	11.3	36.51	60	-23.49	50	-13.49
6	17.5695	17.63	Ca	0	11.3	28.93	60	-31.07	50	-21.07
Line 2										
7	0.15225	32.66	Qp	0.1	14.7	47.46	65.88	-18.42	55.88	-8.42
8	0.15225	18.95	Ca	0.1	14.7	33.75	65.88	-32.13	55.88	-22.13
9	0.42225	31.34	Qp	0	10.7	42.04	57.4	-15.36	47.4	-5.36
10	0.42225	24.91	Ca	0	10.7	35.61	57.4	-21.79	47.4	-11.79
11	17.51775	26.4	Qp	0	11.3	37.7	60	-22.3	50	-12.3
12	17.54925	19.12	Ca	0	11.3	30.42	60	-29.58	50	-19.58
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										