

EMC TEST REPORT

Applicant Phillips Connect Technologies, LLC

FCC ID 2ASKH-S7PR1

Product Smart-7 Pro

Brand Phillips Connect

Model 77-6801-AA2NA; 77-6801-AA2SA;
77-6811 CAN NP 0HA; 77-6811 CAN WP 0HA

Report No. R2311A1269-E1

Issue Date March 15, 2024

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2023)/ ANSI C63.4-2014**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion	
1	Radiated Emission	FCC Part15.109, ANSI C63.4-2014	77-6801-AA2NA; 77-6811 CAN NP 0HA; 77-6811 CAN WP 0HA	PASS
			77-6801-AA2SA	Not Test ¹
2	Conducted Emission	FCC Part15.107, ANSI C63.4-2014	Not Test ¹	
Date of Testing: December 20, 2023 ~ March 1, 2024				
Date of Sample Received: November 22, 2023				
Note:				
1. Not Test means after evaluation, test items are no need to test, the test results please refer to Original Report.				
2. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.				

77-6801-A A2NA; 77-6801-A A2SA; 77-6811 CAN NP 0HA; 77-6811 CAN WP 0HA (Report No.: R2311A1269-E1) is a variant model of 77-6800 CAN (Report No.: R2301A0045-E1).

The differences are show in the below:

- 1. 77-6801-A A2SA is all the same with 77-6800 CAN except the model number.**
- 2. 77-6801-A A2NA has the same appearance with 77-6800 CAN, 77-6801-A A2NA just remove the PLC reader.**
- 3. 77-6811 CAN WP 0HA has no base compared with 77-6800 CAN, it only contains the above part and with PLC reader.**
- 4. 77-6811 CAN NP 0HA has no base compared with 77-6800 CAN, it only contains the above part and without PLC reader.**

This report tests Radiated Emission for 77-6801-A A2NA; 77-6811 CAN NP 0HA and 77-6811 CAN WP 0HA, and recorded in the report.

For 77-6801-A A2SA, there is no test for variant in this report.

This report is used in conjunction with the original report (Report No.: R2301A0045-E1).

The detailed product change description please refers to the Difference Declaration Letter.

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
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2 General Description of Equipment Under Test

2.1 Applicant and Manufacturer Information

Applicant	Phillips Connect Technologies, LLC
Applicant address	5231 California Avenue, Suite 110, Irvine, CA 92617, USA
Manufacturer	Phillips Connect Technologies, LLC
Manufacturer address	5231 California Avenue, Suite 110, Irvine, CA 92617, USA

2.2 General Information

EUT Description			
Device Type	Movable Device		
Model	77-6801-A A2NA; 77-6801-A A2SA; 77-6811 CAN NP 0HA; 77-6811 CAN WP 0HA		
Lab internal SN	77-6801-A A2NA: R2311A1269/S01 77-6811 CAN NP 0HA: R2311A1269/S03 77-6811 CAN WP 0HA: R2311A1269/S02		
HW Version	Arrow-LA P3		
SW Version	V3		
Power Rating	DC 3.65V from battery DC 12 V from External power supply		
Connecting I/O Port(s)	Please refer to the User's Manual.		
Antenna Type	PIFA Antenna		
Frequency	Band	Tx (MHz)	Rx (MHz)
	WCDMA Band II	1850 ~ 1910	1930 ~ 1990
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	WCDMA Band V	824 ~ 849	869 ~ 894
	LTE Band 2	1850 ~ 1910	1930 ~ 1990
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 12	699 ~ 716	729 ~ 746
	Bluetooth LE	2400 ~ 2483.5	2400 ~ 2483.5
Date of Sample Received	November 22, 2023		
EUT Accessory			
Battery	Manufacturer: Dongguan Kingin Power Co., Ltd. Model: HRBS02-1S4P DC 3.65V, 5300mAh		
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.			

2.3 Applied Standards

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

Test standards

FCC Code CFR47 Part15B (2023)

ANSI C63.4-2014

2.4 Test Mode

Test Mode	
Mode 1	EUT +WCDMA/LTE/Bluetooth LE Receiver
Mode 2	EUT +WCDMA/LTE/Bluetooth LE Standby

Test Type	Test Mode	Worst Mode
Radiated Emission	Mode 1, 2	Mode 2
During the test, the preliminary test was performed in all modes, the test data of the worst-case condition was recorded in this report.		

3 Test Case Results

3.1 Radiated Emission

Ambient Condition

Temperature	Relative humidity
15°C ~ 35°C	30% ~ 60%

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

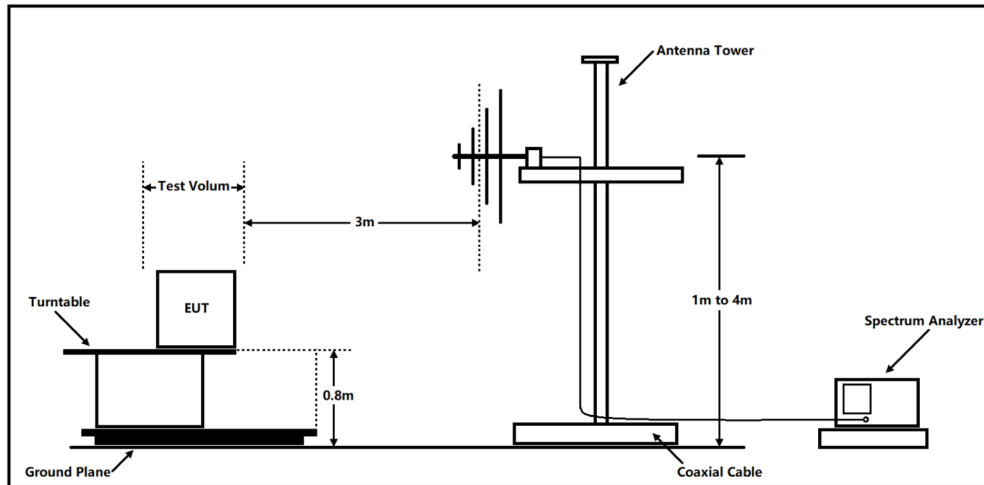
(a) PEAK Detector: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

(b) AVERAGE Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

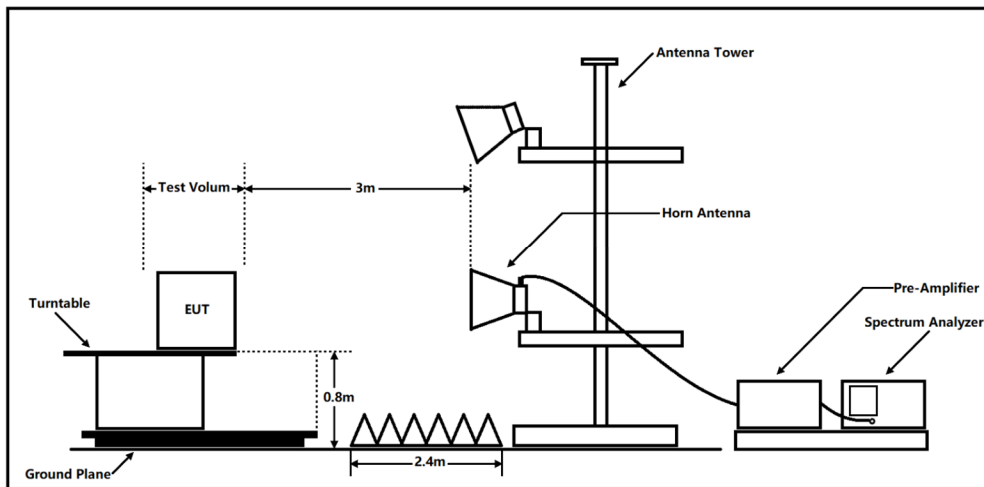
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

Test Setup

Below 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Class B

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

Frequency range of radiated measurements

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Test Results

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier.

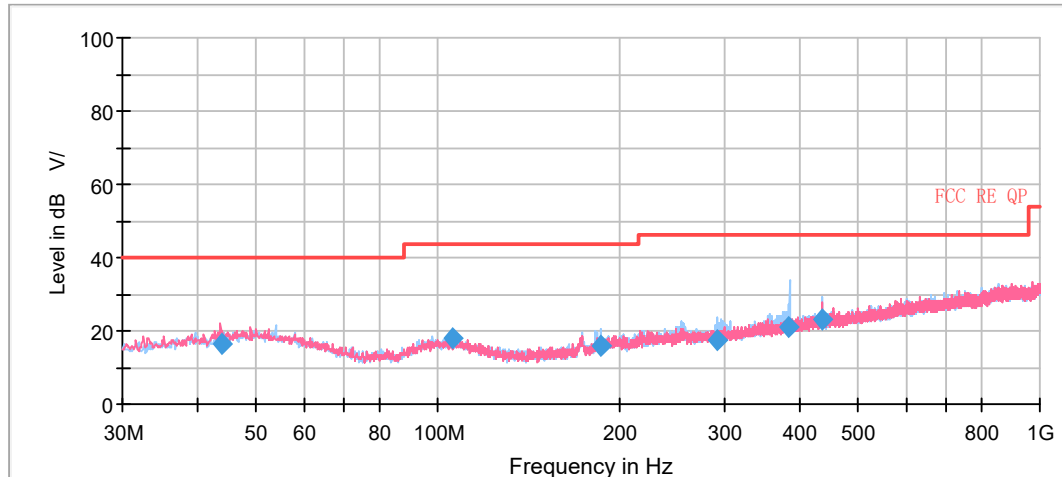
The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

A symbol ($\text{dB}_{\text{V/m}}$) in the test plot below means (dB $\mu\text{V/m}$)

A symbol ($\text{dB}_{\text{V/m}}$) in the test plot below means (dB $\mu\text{V/m}$)

77-6801-A A2NA

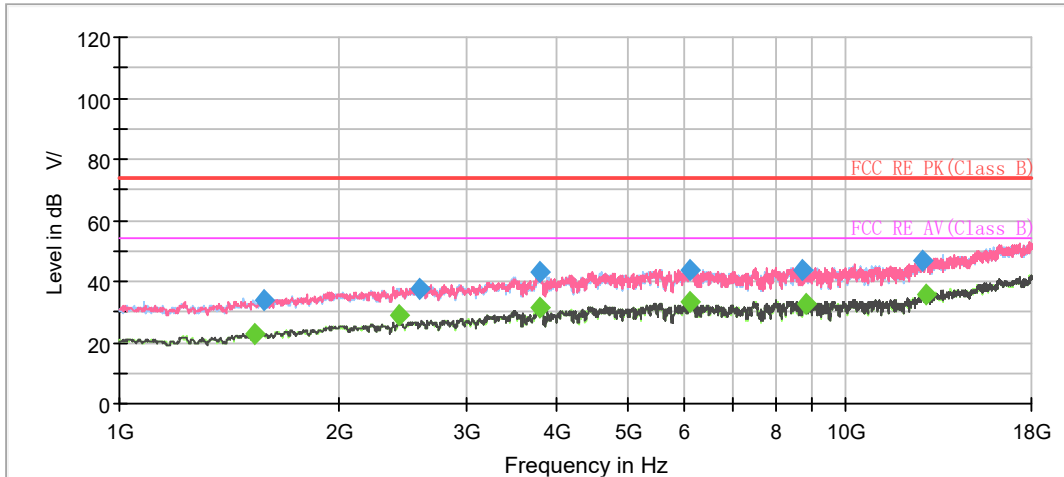


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dB $\mu\text{V/m}$)	Limit (dB $\mu\text{V/m}$)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
43.901250	16.35	40.00	23.65	110.0	V	327.0	20.6
105.700000	17.82	43.50	25.68	175.0	V	192.0	19.0
186.533750	15.73	43.50	27.77	184.0	H	45.0	17.8
292.220000	17.36	46.00	28.64	110.0	H	199.0	20.7
383.850000	21.13	46.00	24.87	100.0	H	166.0	22.7
435.217500	23.22	46.00	22.78	100.0	H	205.0	23.8

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss)

2. Margin = Limit – Quasi-Peak



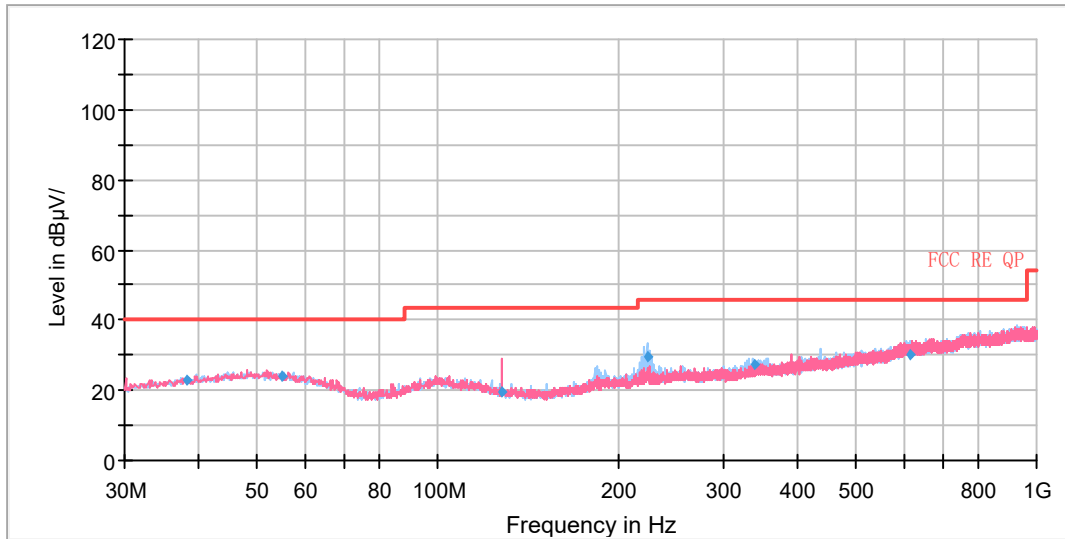
Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1532.899966	---	22.58	54.00	31.42	500.0	100.0	V	359.0	-14.7
1580.041666	33.73	---	74.00	40.27	500.0	100.0	V	274.0	-14.8
2429.784580	---	28.82	54.00	25.18	500.0	200.0	V	20.0	-10.5
2590.722388	37.38	---	74.00	36.62	500.0	100.0	V	321.0	-10.0
3797.013951	---	31.26	54.00	22.74	500.0	100.0	V	301.0	-3.7
3797.426353	42.83	---	74.00	31.17	500.0	200.0	V	99.0	-3.7
6080.991558	---	32.94	54.00	21.06	500.0	200.0	V	231.0	-0.3
6088.574497	43.87	---	74.00	30.13	500.0	200.0	V	264.0	-0.1
8725.650944	43.65	---	74.00	30.35	500.0	200.0	V	0.0	1.6
8840.224757	---	32.36	54.00	21.64	500.0	100.0	H	158.0	1.8
12748.997509	46.54	---	74.00	27.46	500.0	200.0	H	0.0	7.1
12921.691069	---	35.72	54.00	18.28	500.0	200.0	H	0.0	7.0

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Peak Margin = Limit –MAX Peak/ Average

77-6811 CAN NP 0HA

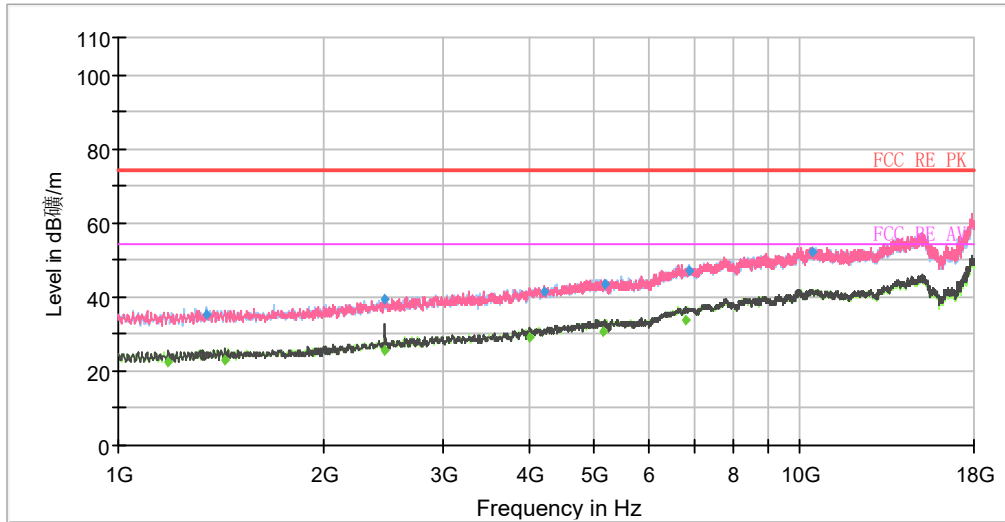


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
38.08	22.72	40.00	17.28	104.0	V	193.00	19
55.06	23.91	40.00	16.09	219.0	H	146.00	20
127.77	19.66	43.50	23.84	113.0	V	40.00	16
223.47	29.62	46.00	16.38	100.0	H	112.00	19
338.83	27.61	46.00	18.39	100.0	H	70.00	23
613.42	29.89	46.00	16.11	196.0	H	161.00	28

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss)

2. Margin = Limit – Quasi-Peak



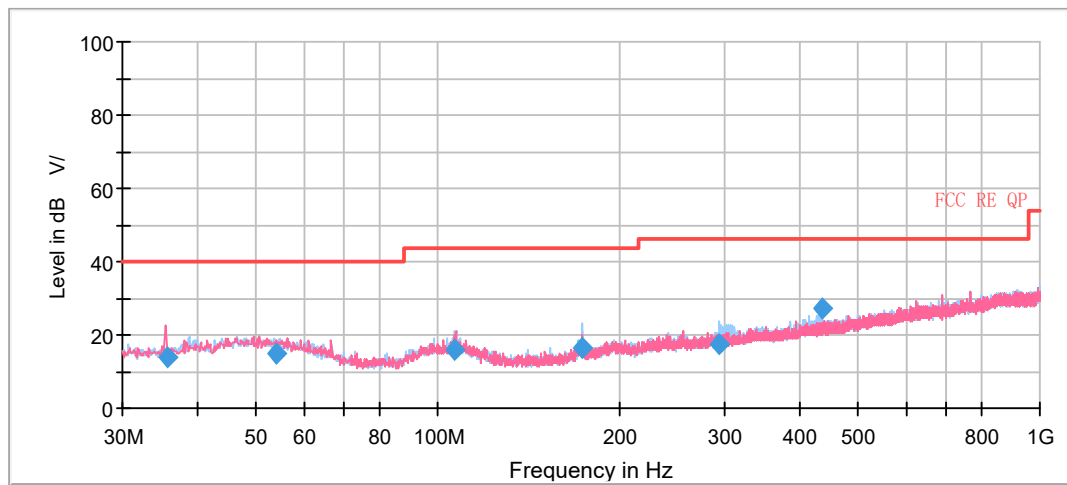
Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1184.88	---	22.35	54.00	31.65	1000.00	110.0	V	11.00	-21
1350.63	35.51	---	74.00	38.49	1000.00	106.0	H	301.00	-20
1433.50	---	23.14	54.00	30.86	1000.00	100.0	V	6.00	-19
2457.75	39.54	---	74.00	34.46	1000.00	190.0	V	0.00	-16
2459.88	---	25.53	54.00	28.47	1000.00	199.0	V	351.00	-16
4019.63	---	29.00	54.00	25.00	1000.00	207.0	V	227.00	-11
4215.13	41.36	---	74.00	32.64	1000.00	190.0	V	1.00	-11
5126.75	---	30.53	54.00	23.47	1000.00	110.0	H	0.00	-8
5175.63	43.31	---	74.00	30.69	1000.00	110.0	H	10.00	-8
6811.88	---	34.01	54.00	19.99	1000.00	194.0	V	353.00	-3
6867.13	47.13	---	74.00	26.87	1000.00	100.0	H	355.00	-3
10422.25	52.10	---	74.00	21.90	1000.00	103.0	H	153.00	2

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Peak Margin = Limit –MAX Peak/ Average

77-6811 CAN WP 0HA

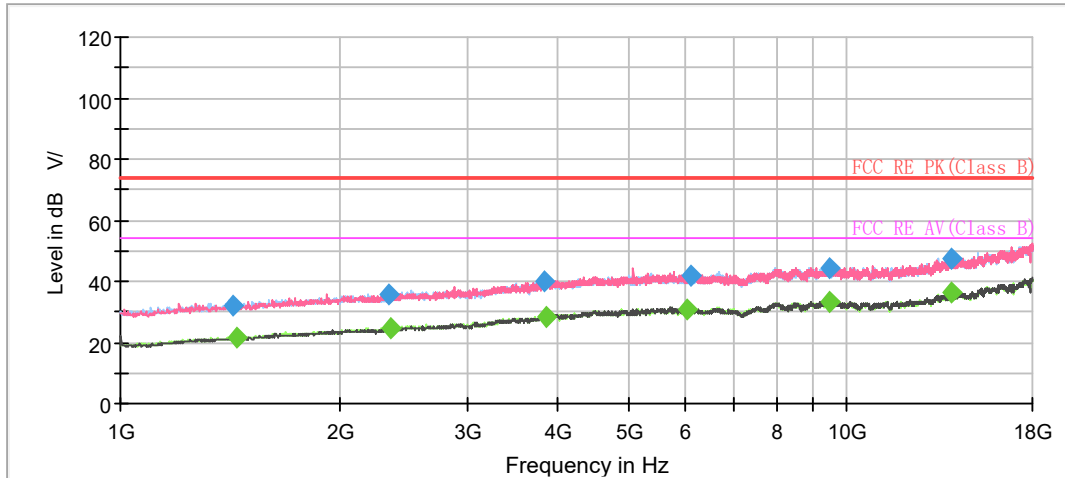


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
35.616250	14.10	40.00	25.90	200.0	V	127.0	18.3
54.013750	14.84	40.00	25.16	208.0	H	136.0	20.7
106.710000	15.85	43.50	27.65	175.0	H	274.0	18.9
173.805000	16.35	43.50	27.15	200.0	H	110.0	19.8
294.202500	17.36	46.00	28.64	125.0	H	1.0	20.8
435.217500	26.94	46.00	19.06	100.0	H	1.0	23.8

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss)

2. Margin = Limit – Quasi-Peak



Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1429.288750	32.24	---	74.00	41.76	500.0	200.0	H	91.0	-17.3
1442.925000	---	21.57	54.00	32.43	500.0	100.0	H	78.0	-17.2
2343.956250	35.87	---	74.00	38.13	500.0	200.0	H	319.0	-13.1
2360.633750	---	24.85	54.00	29.15	500.0	100.0	H	84.0	-13.0
3829.956250	40.14	---	74.00	33.86	500.0	200.0	V	0.0	-7.7
3847.120000	---	28.35	54.00	25.65	500.0	200.0	H	286.0	-7.7
6034.212500	---	30.73	54.00	23.27	500.0	100.0	V	309.0	-3.7
6091.335000	41.88	---	74.00	32.12	500.0	200.0	V	88.0	-3.8
9452.603750	44.42	---	74.00	29.58	500.0	100.0	H	78.0	-0.4
9487.490000	---	33.38	54.00	20.62	500.0	100.0	H	57.0	-0.3
13904.642500	47.64	---	74.00	26.36	500.0	100.0	V	290.0	4.3
13906.578750	---	36.15	54.00	17.85	500.0	200.0	H	155.0	4.3

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Peak Margin = Limit –MAX Peak/ Average

4 Uncertainty Measurement

Case	Uncertainty	Factor k
Radiated Emission 30MHz – 200MHz	4.17 dB	1.96
Radiated Emission 200MHz – 1GHz	4.84 dB	1.96
Radiated Emission 1GHz – 18GHz	4.35 dB	1.96

5 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Wideband radio communication tester	R&S	CMW500	113645	2023-03-16	2024-03-15
Radiated Emission					
EMI Test Receiver	R&S	ESR	102389	2023-05-12	2024-05-11
Signal Analyzer	R&S	FSV40	101186	2023-05-12	2024-05-11
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	1023	2023-07-14	2026-07-13
Horn Antenna	R&S	HF907	102723	2021-07-24	2024-07-23
Amplifier	R&S	SCU18	10034	2023-05-12	2024-05-11
Software	R&S	EMC32	9.26.01	/	/

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.

ANNEX C: Product Change Description

The Product Change Description are submitted separately.

***** END OF REPORT *****