

Prüfbericht-Nr.: Test report no.:	IN21YXO8 (LP0002-WPC) 001	Auftrags-Nr.: Order no.:	238519472	Seite 1 von 16 Page 1 of 16
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2021-08-30	
Auftraggeber: Client:	奇異亞洲醫療設備股份有限公司 臺北市中山區民生東路三段 8 號 6 樓			
Prüfgegenstand: Test item:	Probe			
Bezeichnung / Typ-Nr.: Identification / Type no.:	Vscan Air CL			
Auftrags-Inhalt: Order content:	NCC LP0002 Test Report (WPC)			
Prüfgrundlage: Test specification:	NCC Low-power Radio-frequency Devices Technology Regulations LP0002 (2020)			
Wareneingangsdatum: Date of sample receipt:	2021-08-26			
Prüfmuster-Nr.: Test sample no:	A003117699-002 A003117699-007			
Prüfzeitraum: Testing period:	2021-09-27 - 2021-10-07			
Ort der Prüfung: Place of testing:	EMC/RF Taipei Testing Site			
Prüflaboratorium: Testing laboratory:	Taipei Testing Laboratories			
Prüfergebnis*: Test result*:	Pass			
überprüft von: compiled by:			genehmigt von: authorized by:	
Datum: Date:	2020-09-11	Ausstellungsdatum: Issue date:	2020-09-11	
Stellung / Position:	Senior Project Engineer	Stellung / Position:	Senior Project Manager	
Sonstiges / Other:	Only Rx function is supported for this device.			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable
5 = mangelhaft N/T = nicht getestet				
5 = poor N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

Prüfbericht - Nr.: IN21YXO8 (LP0002-WPC) 001

Test Report No.

Seite 2 von 16

Page 2 of 16

TEST SUMMARY

Report Section	NCC Clause	Test Item	Result
5.1.1	LP0002 3.2	Antenna Requirement	Pass
5.1.2	LP0002 3.6	Radiated Spurious Emissions	Pass
-	LP0002 3.3	Mains Conducted Emission	N/A

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Contents

HISTORY OF THIS TEST REPORT	4
1. GENERAL REMARKS	5
1.1 COMPLEMENTARY MATERIALS.....	5
1.2 DECISION RULE OF CONFORMITY	5
2. TEST SITES	6
2.1 TEST LABORATORY	6
2.2 TEST FACILITY.....	6
2.3 TRACEABILITY	7
2.4 CALIBRATION	7
2.5 MEASUREMENT UNCERTAINTY	7
3. GENERAL PRODUCT INFORMATION.....	8
3.1 PRODUCT FUNCTION AND INTENDED USE	8
3.2 SYSTEM DETAILS AND RATINGS.....	8
3.3 NOISE GENERATING AND NOISE SUPPRESSING PARTS	9
3.4 SUBMITTED DOCUMENTS.....	9
4. TEST SET-UP AND OPERATION MODES.....	10
4.1 PRINCIPLE OF CONFIGURATION SELECTION	10
4.2 TEST OPERATION AND TEST SOFTWARE.....	10
4.3 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	11
4.4 TEST SETUP DIAGRAM	11
5. TEST RESULTS	12
5.1 TRANSMITTER REQUIREMENT & TEST SUITES	12
5.1.1 Antenna Requirement	12
5.1.2 Radiated Spurious Emissions	13
APPENDIX A - TEST RESULT OF RADIATED SPURIOUS EMISSIONS	
APPENDIX SP - PHOTOGRAPHS OF TEST SETUP	
APPENDIX EP - PHOTOGRAPHS OF EUT	

Prüfbericht - Nr.: IN21YXO8 (LP0002-WPC) 001
Test Report No.

Seite 4 von 16
Page 4 of 16

HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
IN21YXO8 (LP0002-WPC) 001	Original Release	2020-09-11

1. General Remarks

1.1 Complementary Materials

The following attachments are integral parts of this test report:

Appendix A - Test Result of Radiated Spurious Emissions
Appendix SP - Photographs of Test Setup
Appendix EP - Photographs of EUT

Test Specifications

The following standards were applied.

Applied Standard and Test Levels

Radio
NCC Low-power Radio-frequency Devices Technical Regulations LP0002 (2020) (109 年 7 月 1 日) ANSI C63.10:2013

1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 226631
ISED Registration No.: 25563

2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicate a 95% level of confidence.

Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	± 1.15 dB
Radiated Emission (30 MHz ~ 200 MHz)	± 1.30 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.30 dB
Mains Conducted Emission	± 1.65 dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a Probe. It contains WPC compatible modules enabling the user to charge the battery through a wireless interface.

For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	Probe
Type Identification	Vscan Air CL
Brand Name	GE

Technical Specification of EUT

Item	EUT information
Operating Frequency	110 – 205 kHz
Operation Voltage	3.6 Vdc (Battery) 5 Vdc (USB)
Modulation	ASK
Field Strength	78.47 dBuV/m
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.3

3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.4 Submitted Documents

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum emission level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Setup for testing: Power on the EUT and put Load device on it. EUT will start providing wireless power. Power transmission and load status detection is done simultaneously using the fundamental frequency in the range of 110 – 205 kHz.

The samples were used as follows:

A003117699-002

A003117699-007

Full test was applied on all test modes, but only worst case was shown.

EUT Configure Mode	Applicable To		Description
	Radiated Spurious Emissions	Mains Conducted Emission	
-	√	-	-

Note: "-" means no effect.

Radiated Spurious Emissions

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (kHz)	Tested Frequency (kHz)
Rx		
-	110 – 205	127

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Radiated Spurious Emissions	23.1-25.1 °C	50-60 %	Simon Tsai

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

Accessory of EUT

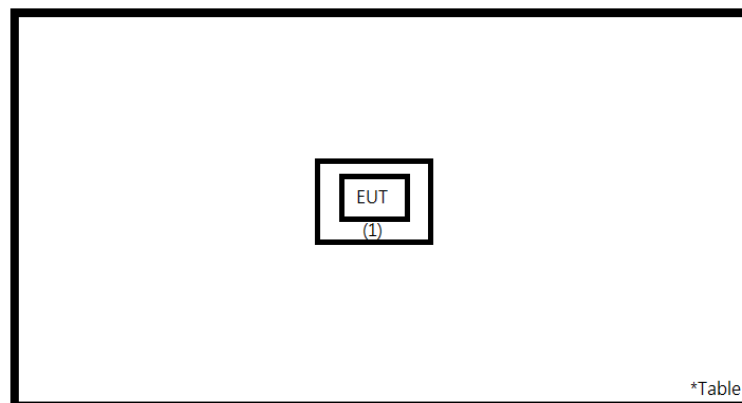
No.	Product	Brand	Model	Description
-	Micro USB Cable	ANKER	A2503	96 cm shielded cable w/o core
-	XP Power Adapter	XP	VEU10US050-US	I/P: 100-240 Vac, 50/60 Hz, 0.3 A O/P: 5 Vdc, 2.1 A
-	Battery	GE	GP100108	3.6 Vdc, 1250 mAh
-	PowerWave Pad	ANKER	A2503	--

Support Unit

Support Unit					
No.	Description	Brand	Model	S/N	Remark
1	Wireless Power Bank	Mi	WPB15ZM	26559/00139144	--

4.4 Test Setup Diagram

<Radiated Spurious Emissions mode>



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

Requirement Use of approved antennas only

According to the manufacturer declaration, the antenna information is as listed below. The antenna is with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

Brand Name	Model No.	Antenna Type
GE	Vscan Air CL	Induction Coil

Refer to EUT photo for details.

5.1.2 Radiated Spurious Emissions

Limit

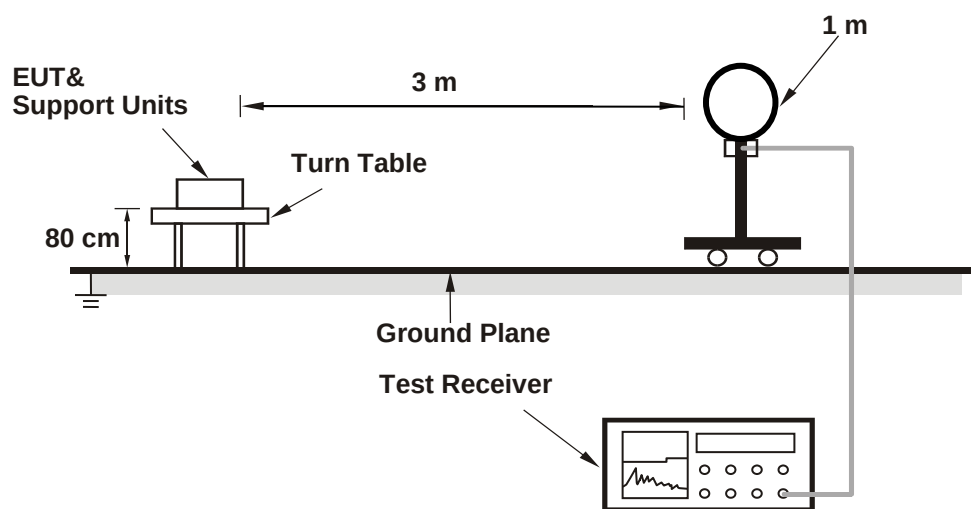
Radiated emissions must comply with the radiated emission limits specified in LP0002 (2020): 3.6.

Kind of Test Site

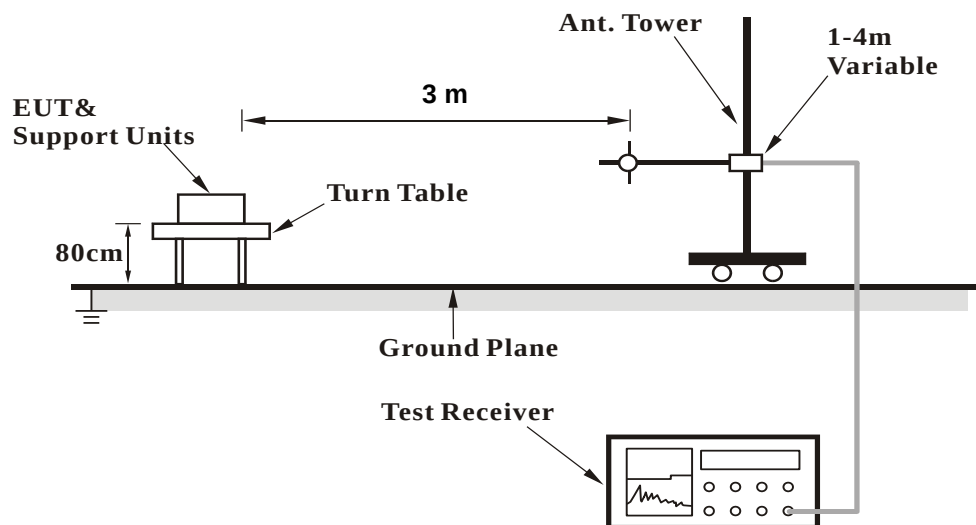
3m Semi-Anechoic Chamber

Test Setup

<Radiated Emissions below 30 MHz>



<Radiated Emissions 30 MHz to 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV40	101508	2021/3/16	2022/3/15
Receiver	R&S	ESR7	102109	2021/3/16	2022/3/15
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2021/2/18	2022/2/17
Horn Antenna	ETS-Lindgren	3117	00218930	2020/12/1	2021/11/30
LF-AMP	Agilent	8447D	2944A10772	2021/2/18	2022/2/17
HF-AMP + AC source	EMCI	EMC051845SE	980633	2021/2/9	2022/2/8
HF-AMP + AC source	EMCI	EMC184045SE	980657	2021/2/1	2022/1/31
Horn Antenna	SCHWARZBECK	BBHA 9170	00887	2021/4/8	2022/4/7
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104EA	800056/4EA	2021/3/17	2022/3/16
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	804680/4	2021/3/17	2022/3/16
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	MY37202/4	2021/3/17	2022/3/16
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800898/2EA	2021/4/16	2022/4/15
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800901/2EA	2021/4/16	2022/4/15
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	801027/2EA	2021/4/16	2022/4/15
Loop Antenna	SCHWARZBECK	FNZB1519B	00215	2020/9/17	2021/9/16

Test Procedures**For Radiated Emissions below 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated Emissions above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.
3. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.

Prüfbericht - Nr.: IN21YXO8 (LP0002-WPC) 001
Test Report No.

Seite 16 von 16
Page 16 of 16

Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)

Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Please refer to Appendix A.

Appendix A: Test Results of Radiated Spurious Emissions

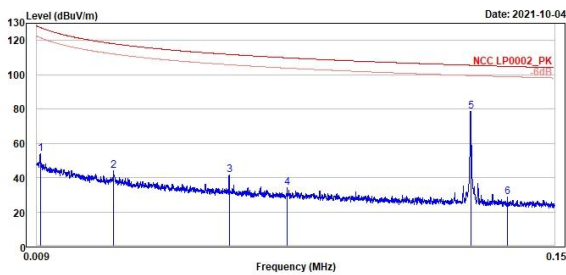
Spurious Emissions, Rx Mode, 9kHz ~ 30MHz

WPC

9kHz~150kHz (Open)



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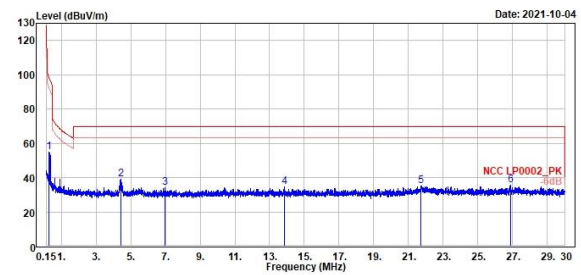


	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.018801	53.63	33.66	19.97	127.58	-73.95	100	337 QP	Open	
2	0.029939	44.22	23.91	20.31	118.07	-73.05	100	53 QP	Open	
3	0.061424	41.39	21.10	20.29	111.83	-70.44	100	205 QP	Open	
4	0.077188	34.31	14.03	20.28	109.84	-75.53	100	142 QP	Open	
5	0.127144	78.47	58.26	20.21	105.51	-27.04	100	300 QP	Open	
6	0.137127	28.63	8.43	20.20	104.86	-76.23	100	142 QP	Open	

150kHz~30MHz (Open)



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	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.308205	54.84	34.70	20.14	97.82	-42.98	100	148 QP	Open	
2	4.412580	38.84	18.60	20.24	69.50	-30.66	100	176 QP	Open	
3	6.985650	34.20	13.92	20.28	69.50	-35.30	100	186 QP	Open	
4	13.842200	34.59	14.17	20.42	69.50	-34.91	100	347 QP	Open	
5	21.737520	35.32	14.80	20.52	69.50	-34.18	100	268 QP	Open	
6	26.871720	35.35	14.82	20.53	69.50	-34.15	100	46 QP	Open	

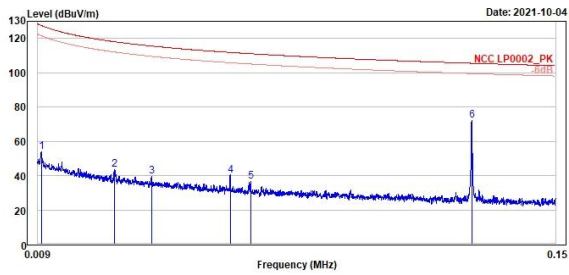
WPC

9kHz~150kHz (Close)

9kHz~150kHz (Ground)



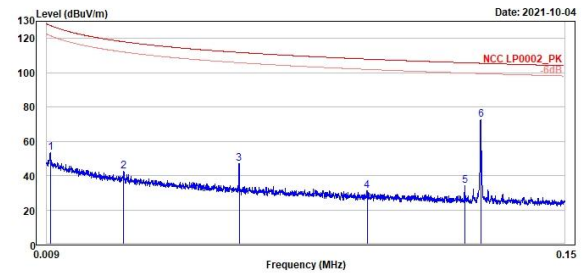
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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	0.018015	53.89	33.92	19.97	127.57	-73.68	100	0	QP	Close		
2	0.029981	43.60	23.29	20.31	118.05	-74.45	100	102	QP	Close		
3	0.040006	39.46	19.12	20.34	115.55	-76.09	100	208	QP	Close		
4	0.061452	40.12	19.83	20.29	111.82	-71.70	100	277	QP	Close		
5	0.066993	36.36	16.08	20.28	111.07	-74.71	100	135	QP	Close		
6	0.127158	72.18	51.97	20.21	105.51	-33.33	100	204	QP	Close		



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	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	0.018015	53.44	33.47	19.97	127.57	-74.13	100	87	QP	Ground		
2	0.029981	42.49	22.18	20.31	118.05	-75.56	100	83	QP	Ground		
3	0.061410	47.04	26.75	20.29	111.83	-64.79	100	58	QP	Ground		
4	0.096223	31.30	11.05	20.25	107.93	-76.63	100	89	QP	Ground		
5	0.122829	34.31	14.09	20.22	105.81	-71.50	100	32	QP	Ground		
6	0.127130	72.47	52.26	20.21	105.51	-33.04	100	295	QP	Ground		

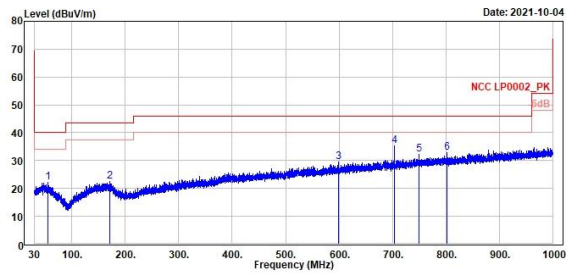
Spurious Emissions, Rx Mode, 30MHz ~ 1GHz

WPC

Horizontal



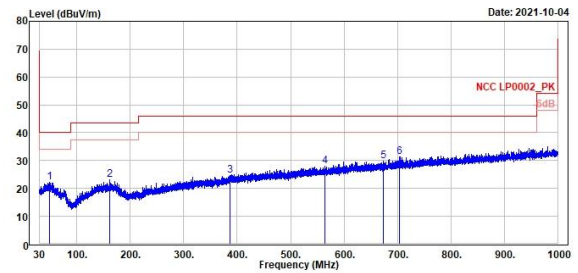
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 55.511800	22.11	30.15	-8.04	40.00	-17.89	100	280 QP	Horizontal	
2 170.94100	22.40	29.70	-7.30	43.50	-21.10	100	143 QP	Horizontal	
3 599.29300	29.40	30.73	-1.33	46.00	-16.60	300	0 QP	Horizontal	
4 704.24700	35.28	35.01	0.27	46.00	-10.72	400	121 QP	Horizontal	
5 749.15800	32.27	31.02	1.25	46.00	-13.73	100	29 QP	Horizontal	
6 802.79900	32.70	30.84	1.86	46.00	-13.30	200	360 QP	Horizontal	



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 40.624000	22.19	30.02	-7.83	40.00	-17.81	400	147 QP	Vertical	
2 161.24100	22.97	29.98	-7.01	43.50	-20.53	100	204 QP	Vertical	
3 385.89300	24.49	28.91	-4.42	46.00	-21.51	100	10 QP	Vertical	
4 563.98500	27.90	29.93	-2.03	46.00	-18.10	100	1 QP	Vertical	
5 673.69200	29.75	29.86	-0.11	46.00	-16.25	300	209 QP	Vertical	
6 704.34400	31.23	30.96	0.27	46.00	-14.77	400	262 QP	Vertical	