

FCC Test Report

Report No.: AGC02157211205FE06A

FCC ID : 2AL9Y-PHONEP300

APPLICATION PURPOSE: Class II Equipment

PRODUCT DESIGNATION: VoIP Phone

BRAND NAME : Sangoma

MODEL NAME : P370, P330

APPLICANT: Sangoma Technologies Corp.

DATE OF ISSUE : Feb. 11, 2022

STANDARD(S) FCC Part 15.407

TEST PROCEDURE(S) KDB 789033 D02 v02r01

REPORT VERSION : V1.0

Attestation of Global Co., Ltd



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	1	Feb. 11, 2022	Valid	Initial Release

Note:

The original test report Ref. No. AGC02157211205FE06 dated Jan. 22, 2022, was modified on Feb. 11, 2022 to include the following changes:

- Increase the series models;
- The Radiated Emission and Line Conduction Emission tests of the series model have been updated.

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1. VERIFICATION OF CONFORMITY

Applicant	Sangoma Technologies Corp.		
Address	100 Renfrew Drive, Suite 100, Markham ON, L3R 9R6, Canada		
Manufacturer	Sangoma Technologies Corp.		
Address	100 Renfrew Drive, Suite 100, Markham ON, L3R 9R6, Canada		
Factory	Victory Telecom (Huizhou) LTD.		
Address	JiangBei85HaoXiaoQu, XiaoJinKouTown, HuiZhouCity, GuangDong, China		
Product Designation	VoIP Phone		
Brand Name	Sangoma		
Test Model	P370		
Series Model	P330		
Declaration of Difference	P370 is 7" color TFT with touch screen, and P330 is 4.3" TFT LCD display with traditional keypad		
Date of test	Dec. 23, 2021 to Feb. 11, 2022		
Deviation	No any deviation from the test method		
Condition of Test Sample	Normal		
Test Result	Pass		
Report Template	AGCRT-US-BGN/RF		

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Reviewed By

Calvin Liu
(Reviewer)

Approved By

Max Zhang
(Authorized Officer)

Feb. 11, 2022

Feb. 11, 2022

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as "VoIP Phone". It is designed by way of utilizing the OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Equipment Type	☐ Outdoor access points☐ Fixed P2P access points☐ Client devices		
Operation Frequency	☑ U-NII 1:5150MHz~5250MHz ☐ U-NII 2A: 5250MHz~5350MHz ☐ U-NII 2C:5470MHz~5725MHz ☑ U-NII 3: 5725MHz~5850MHz		
DFS Design Type	☐ Master ☐ Slave with radar detection ☐ Slave without radar detection		
TPC Function	☐ Yes ☐ No		
Test Frequency Range:	For 802.11a/n-HT20/ac-VHT20: 5180~5240MHz, 5745~5825MHz		
Output Power	IEEE 802.11a:11.29dBm; IEEE 802.11n-HT20:11.29dBm; IEEE 802.11ac-VHT20:10.41dBm;		
Modulation	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM, OFDM		
Data Rate	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps 802.11ac: up to 400Mbps		
Number of channels	4 channels of U-NII-1 Band 5 channels of U-NII-3 Band		
Hardware Version	V5		
Software Version	master_DEV		
Antenna Designation	PCB Antenna (Comply with requirements of the FCC part 15.203)		
Antenna Gain	2dBi		
Power Supply	DC 12V by adapter or DC 47V by POE		

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/Inspection The test results the test report.



2.2. TABLE OF CARRIER FREQUENCYS

For 5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel Frequency		Channel	Frequency	
36	5180 MHz	44	5220 MHz	
40	5200 MHz	48	5240 MHz	

For 5745~5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Channel Frequency		Frequency	
149	5745 MHz	161	5805 MHz	
153	5765 MHz	165	5825 MHz	
157	5785 MHz	9 .00		

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2.3. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID**: **2AL9Y-PHONEP300** filing to comply with the FCC Part 15 requirements.

2.4. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.407 rules KDB 789033 D02

2.5. SPECIAL ACCESSORIES

Refer to section 5.2.

2.6. EQUIPMENT MODIFICATIONS

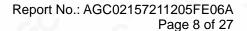
Not available for this EUT intended for grant.

2.7. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

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3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%

Item	Measurement Uncertainty	
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$	
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$	
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$	
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$	
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$	
Uncertainty of spurious emissions, conducted	U _c = ±2 %	
Uncertainty of Occupied Channel Bandwidth	U _c = ±2 %	

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4. DESCRIPTION OF TEST MODES

Mode Available channel		Tested channel	Modulation	Date rate (Mbps)
802.11a/n/ac20	36,40,44,48, 149,153,157,161,165	36,40,48, 149,157,165	OFDM	6Mbps/MCS0

Note:

- 1. The EUT has been set to operate continuously on tested channel individually, and the EUT is operating at its maximum duty cycle>or equal 98%.
- 2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
- 3. The test software is the WL Command which can set the EUT into the individual test modes.

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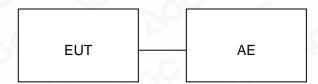
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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	VoIP Phone	P370	2AL9Y-PHONEP300	EUT
2	Adapter	HP18A-1201500-AU	Input:100-240v, 50/60Hz, 0.5A Output:12V, 1.5A	AE

5.3. SUMMARY OF TEST RESULTS

FCC RULES	CC RULES DESCRIPTION OF TEST	
§15.209	Radiated Emission	Compliant
§15.207	Line Conduction Emission	Compliant

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd			
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China			
Designation Number	CN1259			
FCC Test Firm Registration Number	975832			
A2LA Cert. No.	5054.02			
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA			

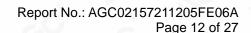
TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 15, 2021	May 14, 2022
LISN	R&S	ESH2-Z5	100086	Jun. 09, 2021	Jun. 08, 2022
Test software	R&S	ES-K1 (Ver V1.71)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2021	May 14, 2022
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
Power sensor	Aglient	U2021XA	MY54110007	Jun. 07, 2021	Jun. 06, 2022
5GHz Fliter	EM Electronics	5150-5880MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2022
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A

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7. RADIATED EMISSION

7.1. MEASUREMENT PROCEDURE

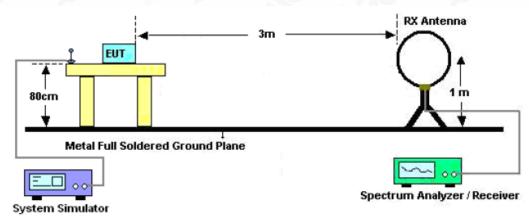
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3M VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

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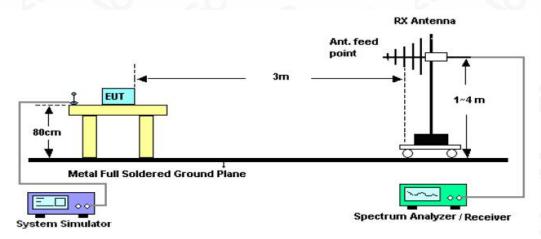


7.2. TEST SETUP

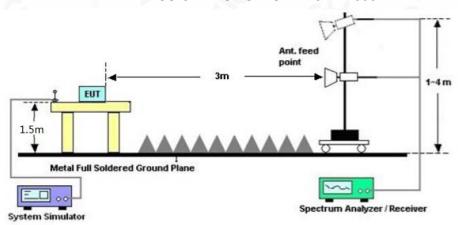
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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7.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)		
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		
88~216	150	3		
216~960	200	3		
Above 960	500	3		

Note: All modes were tested for restricted band radiated emission.

the test records reported below are the worst result compared to other modes.

7.4. TEST RESULT

Radiated emission below 30MHz

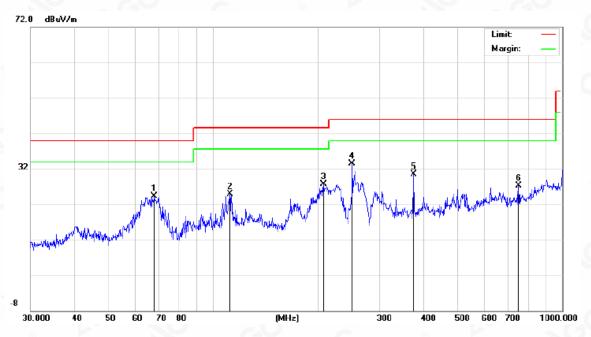
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

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Radiated emission from 30MHz to 1000MHz

EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal



No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		67.9128	12.41	11.98	24.39	40.00	-15.61	peak
2		111.7379	13.39	11.60	24.99	43.50	-18.51	peak
3		207.1226	19.27	8.41	27.68	43.50	-15.82	peak
4	*	250.3011	25.00	8.48	33.48	46.00	-12.52	peak
5		375.9384	15.39	15.14	30.53	46.00	-15.47	peak
6		750.1082	8.45	18.78	27.23	46.00	-18.77	peak

RESULT: PASS

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EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		40.2757	21.81	10.04	31.85	40.00	-8.15	peak
2	*	66.2661	22.67	12.02	34.69	40.00	-5.31	peak
3		111.7379	25.28	10.92	36.20	43.50	-7.30	peak
4		225.3079	28.56	11.15	39.71	46.00	-6.29	peak
5		501.1788	16.92	17.02	33.94	46.00	-12.06	peak
6		625.0778	14.18	20.00	34.18	46.00	-11.82	peak

RESULT: PASS

Note: All test channels had been tested. The 802.11a20 at 5180MHz is the worst case and recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

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Radiated emission above 1GHz

EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ-Horizontal

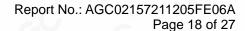
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10360.042	46.23	9.14	55.37	68.20	-12.83	peak
15540.063	40.15	10.22	50.37	74.00	-23.63	peak
15540.063	31.85	10.22	42.07	54.00	-11.93	AVG

RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10360.042	46.45	9.14	55.59	68.20	-12.61	peak
15540.063	42.16	10.22	52.38	74.00	-21.62	peak
15540.063	31.25	10.22	41.47	54.00	-12.53	AVG

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

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/Inspection The test results



EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5200MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ-Horizontal

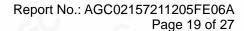
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10400.042	47.58	9.14	56.72	68.20	-11.48	peak
15600.063	42.15	10.22	52.37	74.00	-21.63	peak
15600.063	32.16	10.22	42.38	54.00	-11.62	AVG

RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
10400.042	46.23	9.14	55.37	68.20	-12.83	peak
15600.063	42.18	10.22	52.40	74.00	-21.60	peak
15600.063	31.58	10.22	41.80	54.00	-12.20	AVG

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

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EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5240MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ-Horizontal

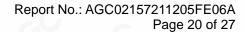
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10480.042	48.52	9.27	57.79	68.20	-10.41	peak
15720.063	42.16	10.38	52.54	74.00	-21.46	peak
15720.063	32.57	10.38	42.95	54.00	-11.05	AVG

RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
10480.042	46.25	9.27	55.52	68.20	-12.68	peak
15720.063	42.58	10.38	52.96	74.00	-21.04	peak
15720.063	32.48	10.38	42.86	54.00	-11.14	AVG

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

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/Inspection The test results



EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5745MHz	Antenna	Horizontal/Vertical

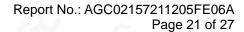
RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11490.042	46.25	9.42	55.67	74.00	-18.33	peak
11490.042	37.84	9.42	47.26	54.00	-6.74	AVG
17235.063	40.26	10.51	50.77	68.20	-17.43	peak

RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11490.042	46.25	9.42	55.67	74.00	-18.33	peak
11490.042	36.57	9.42	45.99	54.00	-8.01	AVG
17235.063	41.15	10.51	51.66	68.20	-16.54	peak

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/Inspection The test results



EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5785MHz	Antenna	Horizontal/Vertical

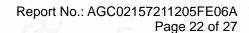
RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11570.042	46.26	9.42	55.68	74.00	-18.32	peak
11570.042	36.57	9.42	45.99	54.00	-8.01	AVG
17355.063	41.15	10.51	51.66	68.20	-16.54	peak

RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11570.042	47.58	9.42	57.00	74.00	-17.00	peak
11570.042	36.94	9.42	46.36	54.00	-7.64	AVG
17355.063	42.56	10.51	53.07	68.20	-15.13	peak

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EUT	VoIP Phone	Model Name	P330
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5825MHz	Antenna	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tree
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
11650.042	47.53	9.62	52.98	74.00	-21.02	peak
11650.042	38.54	9.62	45.05	54.00	-8.95	AVG
17475.063	42.16	10.75	47.61	68.20	-26.39	peak

RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11650.042	46.25	9.62	53.55	74.00	-20.45	peak
11650.042	36.57	9.62	47.64	54.00	-6.36	AVG
17475.063	42.18	10.75	48.61	68.20	-25.39	peak

Note 1: All test channels had been tested. The 802.11a20 is the worst case and recorded in the test report.

Other frequencies radiation emission from 1GHz to 40GHz at least have 20dB margin and not recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

- **Note 2:** 1. All the 20MHz bandwidth modulation had been tested, the 802.11a20 at 5180MHz was the worst case and record in his test report.
 - 2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer.
 - 3. Only the data of band edge emission at the restricted band 4.5GHz-5.15GHz and 5.35GHz-5.46GHz record in the report. Other restricted band 7.25GHz-7.77GHz were considered as ambient noise. No recording in the test report.

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8. LINE CONDUCTED EMISSION TEST

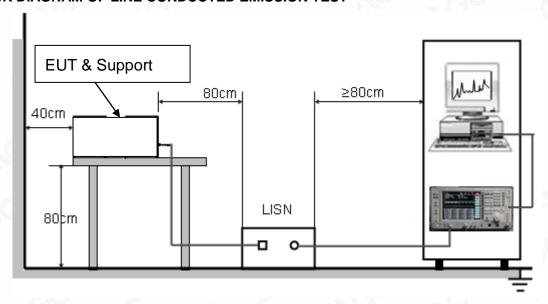
8.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Eroguenev	Maximum RF Line Voltage			
Frequency	Q.P (dBμV)	Average (dBμV)		
150kHz~500kHz	66-56	56-46		
500kHz~5MHz	56	46		
5MHz~30MHz	60	50		

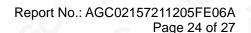
Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

8.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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8.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

8.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

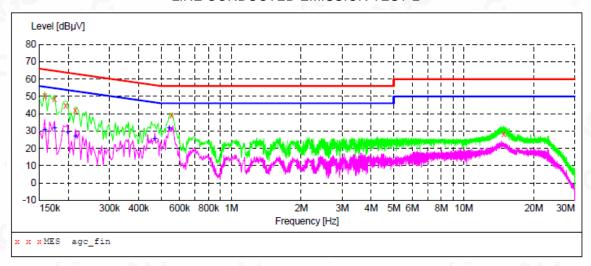
- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case was reported on the Summary Data page.

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8.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST-L



MEASUREMENT RESULT: "agc fin"

2021/12/24 13:39

2021/12/24 13						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000	50.50	6.8	66	15.1	QP	L1
0.174000	48.30	6.7	65	16.5	QP	L1
0.194000	44.90	6.6	64	19.0	QP	L1
0.214000	41.80	6.5	63	21.2	QP	ь1
0.554000	39.10	5.4	56	16.9	QP	ь1
14.834000	28.50	8.3	60	31.5	QP	ь1

MEASUREMENT

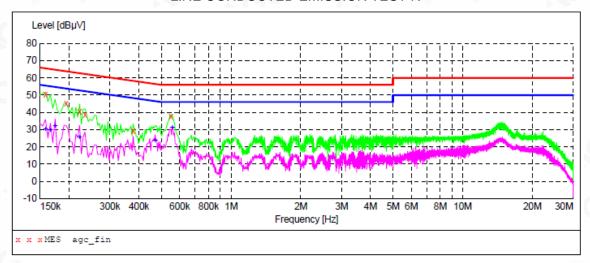
2021/12/24 13:39

,,						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000	30.50	6.8	56	25.1	AV	L1
0.174000	31.50	6.7	55	23.3	AV	L1
0.198000	29.40	6.6	54	24.3	AV	L1
0.214000	27.10	6.5	53	25.9	AV	L1
0.470000	25.40	5.5	47	21.1	AV	L1
0.542000	31.60	5.4	46	14.4	AV	L1

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LINE CONDUCTED EMISSION TEST-N



MEASUREMENT RESULT: "agc fin"

2021/12/24 13 Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000	50.50	6.8	66	15.1	_	N
0.194000	45.00	6.6	64	18.9	QP	N
0.222000	40.70	6.4	63	22.0	QP	N
0.234000	38.80	6.3	62	23.5	QP	N
0.378000	29.40	5.8	58	28.9	QP	N
0.550000	37.50	5.4	56	18.5	QP	N

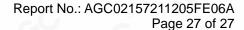
MEASUREMENT

2021/12/24 Frequency MHz	Level	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000 0.166000		6.8 6.8	56 55	25.3 25.4		N N
0.174000	32.10	6.7	55	22.7	AV	N
0.222000	25.40	6.4	53	27.3	AV	N
0.470000 0.558000		5.5 5.4	47 46	23.0 15.1	AV AV	N N

RESULT: PASS

Note: All test channels had been tested. The 802.11a20 at 5180MHz is the worst case and recorded in the test report.

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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC02157211206AP01

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC02157211206AP02

----END OF REPORT----

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Conditions of Issuance of Test Reports

- 1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
- 2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the Bedicated restriction Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written enhorization of AGC the test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.