



VCCI TEST REPORT

Equipment	: Conference Cam with MIC
Model No.	: C220
Trade Name	: innex
Applicant	: Fun Technology Innovation Inc.
Address	: 18F-3, No. 93, Sec. 1, Sintai 5th Rd., Sijhih Dist., New Taipei City, 221
Standard	: VCCI-CISPR 32

HEREBY CERTIFY THAT :

The sample was received on : Dec. 16, 2021

The testing was carried out on : Dec. 22, 2021

The test result refers exclusively to the test presented test model / sample.

Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Kero Kuo / EMC/RF Manager





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History of this test report

Report No.	Issue Date	Description	Version
21120127-TEJV01	Dec. 27, 2021	Original	A



Summary of Test Results

1. Applicable Standards

The measurements shown in this test report were made in accordance with the procedures given in **Implementation Regulation for the VOLUNTARY CONTROL of RADIO INTERFERENCE by DATA PROCESSING EQUIPMENT and ELECTRONIC OFFICE MACHINES.**

The energy emitted by this equipment was **passed** both Radiated and Conducted Emissions **Class B** limits.

Test Item	Normative References	Test Result
Conducted Emission	VCCI CISPR 32:2016	N/A
Telecom Port Conducted Emissions	VCCI CISPR 32:2016	N/A
Radiated Emission	VCCI CISPR 32:2016	PASS

Note*: Pass criterion is defined by the applicant. The test report is to follow the applicant specification.

The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement.



2. General Description

2.1. Product Details

Please refer to user manual.

2.2. Accessories

N/A

3. Test Configuration of Equipment under Test

3.1. Test Software

The program under WIN 7 was executed as follows:

- Turn on the power of all equipment.
- The notebook reads the test program from the hard disk drive and runs it.
- The executive program "ITU-R.BT471" was executed to play colorbar.
- Repeat the steps from b to c.

At the same time, the following program was executed:

Executed "VLC" to use live view.

3.2. Test Manner

- During testing, the interface cables and equipment positions were varied according to VCCI CISPR 32
- The test mode of EMI test as follow:

Radiated Emissions	
Test Mode 1	Live View

- The maximum operating frequency is 480MHz above 108MHz, the test frequency range is from 30MHz to 6GHz.

3.3. Description of Support Unit

EMI				
No.	Device	Manufacturer	Model No.	Description
For Local				
1	Monitor	ViewSonic	VS16024	Power Cable, Unshielding 1.8m HDMI Cable, Shielding 1.8m
2	Mouse	DELL	MS111-P	USB Cable, Shielding 1.85m
3	iPod	APPLE	A1320	USB Cable, Shielding 1m
4	Notebook	DELL	Latitude E5440	Power Cable, Unshielding 1.8m



3.4. General Information of Test

Test Site	Cerpass Technology Corporation Test Laboratory
	Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881
	<input type="checkbox"/> C-14663 for Conducted emission test (CON01-NK) <input type="checkbox"/> T-12205 for Telecommunication Test (CON01-NK) <input type="checkbox"/> R-14218 for Radiated emission test (10M01-NK) <input checked="" type="checkbox"/> R-20126 for Radiated emission test (3M01-NK) <input type="checkbox"/> G-10812 for Radiated disturbance above 1GHz (10M01-NK) <input checked="" type="checkbox"/> G-10813 for Radiated disturbance above 1GHz (3M01-NK)
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 6000MHz
Test Distance :	The test distance of radiated emission below 1GHz from antenna to EUT is 3 M. The test distance of radiated emission above 1GHz from antenna to EUT is 3 M.



4. Test of Conducted Emission

4.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in VCCI CISPR 32. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane.

Requirements for conducted emissions from the AC mains power ports of Class A equipment

Table clause	Frequency range MHz	Coupling device (see Table A.7)	Detector type / bandwidth	Class A limits dB(μ V)
A8.1	0.15 – 0.5	AMN	Quasi Peak / 9 kHz	79
	0.5 - 30			73
A8.2	0.15 – 0.5	AMN	Average / 9 kHz	66
	0.5 - 30			60

NOTE Apply A8.1 and A8.2 across the entire frequency range.

Requirements for conducted emissions from the AC mains power ports of Class B equipment

Table clause	Frequency range MHz	Coupling device (see Table A.7)	Detector type / bandwidth	Class B limits dB(μ V)
A9.1	0.15 – 0.5	AMN	Quasi Peak / 9 kHz	66 – 56
	0.5 - 5			56
	5 - 30			60
A9.2	0.15 – 0.5	AMN	Average / 9 kHz	56 – 46
	0.5 - 30			46
	5 - 30			50

NOTE Apply A9.1 and A9.2 across the entire frequency range.

Requirements for asymmetric mode conducted emissions from Class A equipment

Table clause	Frequency range MHz	Coupling device (see Table A.7)	Detector type / bandwidth	Class A voltage limits dB(μ V)	Class A current limits dB(μ A)
A10.1	0.15 – 0.5	AAN	Quasi Peak / 9 kHz	97 – 87	n/a
	0.5 - 30			87	
	0.15 – 0.5	AAN	Average / 9 kHz	84 – 74	
	0.5 - 30			74	
A10.3	0.15 – 0.5	Current Probe	Quasi Peak / 9 kHz	n/a	53 – 43
	0.5 - 30				43
	0.15 – 0.5	Current Probe	Average / 9 kHz		40 - 30
	0.5 - 30				30

NOTE 1 The choice of coupling device and measurement procedure is defined in Annex C.

NOTE 2 AC mains power ports shall meet the limits given in Table A.8.

NOTE 3 The test shall cover the entire frequency range.

NOTE 4 The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to Table C.1 for applicability.

NOTE 5 Testing is required at only one EUT supply voltage and frequency.

NOTE 6 Applicable to ports listed above and intended to connect to cables longer than 3 m.



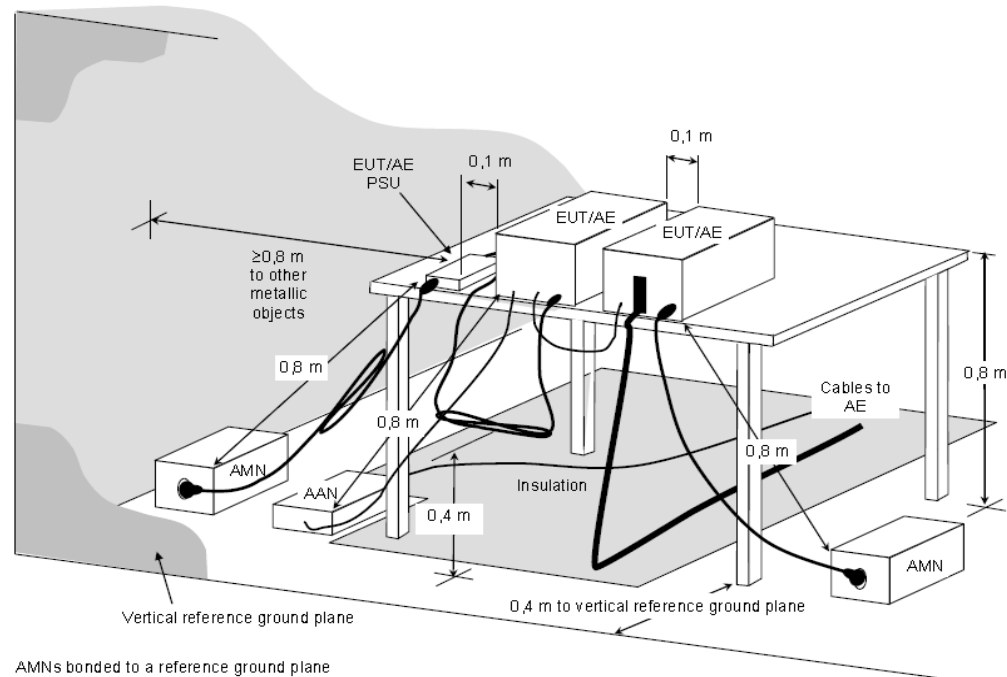
**Requirements for asymmetric mode conducted emissions
from Class B equipment**

Table clause	Frequency range MHz	Coupling device (see Table A.7)	Detector type / bandwidth	Class B voltage limits dB(μ V)	Class B current limits dB(μ A)
A11.1	0.15 – 0.5	AAN	Quasi Peak / 9 kHz	84 – 74	n/a
	0.5 - 30			74	
	0.15 – 0.5	AAN	Average / 9 kHz	74 – 64	
	0.5 - 30			64	
A11.3	0.15 – 0.5	Current Probe	Quasi Peak / 9 kHz	n/a	40 – 30
	0.5 - 30				30
	0.15 – 0.5	Current Probe	Average / 9 kHz		30 - 20
	0.5 - 30				20
NOTE 1 The choice of coupling device and measurement procedure is defined in Annex C.					
NOTE 2 Screened ports including TV broadcast receiver tuner ports are tested with a common-mode impedance of 150 Ω . This is typically accomplished with the screen terminated by 150 Ω to earth.					
NOTE 3 AC mains power ports shall meet the limits given in Table A.9.					
NOTE 4 The test shall cover the entire frequency range.					
NOTE 5 The application of the voltage and/or current limits is dependent on the measurement procedure used. Refer to Table C.1 for applicability.					
NOTE 6 Testing is required at only EUT supply voltage and frequency.					
NOTE 7 Applicable to ports listed above and intended to connect to cables longer than 3 m.					

4.2. Test Procedures

- The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The CISPR states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3. Typical Test Setup



NOTE The 0,8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be $\geq 0,8$ m.

**Figure D.2 – Example measurement arrangement for table-top EUT
(Conducted emission measurement – alternative 1)**

4.4. Test Result and Data of Power Port

The EUT is powered from system, this test item is not applicable.



5. Test of Radiated Emission

5.1. Test Limit

The EUT shall meet the limits of below Table when measured at the measuring distance R in accordance with the methods described in VCCI CISPR 32. If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the highest reading shall be recorded, with the exception of any brief isolated high reading, which shall be ignored.

Required highest frequency for radiated measurement

Highest internal frequency (F_x)	Highest measured frequency
$F_x \leq 108 \text{ MHz}$	1 GHz
$108 \text{ MHz} < F_x \leq 500 \text{ MHz}$	2 GHz
$500 \text{ MHz} < F_x \leq 1 \text{ GHz}$	5 GHz
$F_x > 1 \text{ GHz}$	$5 \times F_x$ up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, F_x is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.	
NOTE 2 F_x is defined in 3.1.19.	

Where the F_x is unknown, the radiated emission measurements shall be performed up to 6 GHz.

Requirements for radiated emissions at frequencies up to 1 GHz for Class A equipment

Table clause	Frequency range MHz	Measurement		Class A limits dB(μ V/m)
		Distance m	Detector type / bandwidth	OATS / SAC (see Table A.1)
A2.1	30 – 230	10	Quasi Peak / 120 kHz	40
	230 – 1 000			47
A2.2	30 – 230	3		50
	230 – 1 000			57
NOTE Apply only A2.1 or A2.2 across the entire frequency range.				

Requirements for radiated emissions at frequencies above 1 GHz for Class A equipment

Table clause	Frequency range MHz	Measurement		Class A limits dB (μ V/m)
		Distance m	Detector type / bandwidth	FSOATS (see Table A.1)
A3.1	1 000 – 3 000	3	Average / 1 MHz	56
	3 000 – 6 000			60
A3.2	1 000 – 3 000		Peak / 1 MHz	76
	3 000 – 6 000			80
NOTE Apply A3.1 and A3.2 across the frequency range from 1000 MHz to the highest required frequency of measurement derived from Table 1.				



**Requirements for radiated emissions at frequencies up to 1 GHz
for Class B equipment**

Table clause	Frequency range MHz	Measurement		Class B limits dB(μ V/m)
		Distance m	Detector type / bandwidth	OATS / SAC (see Table A.1)
A4.1	30 – 230	10	Quasi Peak / 120 kHz	30
	230 – 1 000			37
A4.2	30 – 230	3		40
	230 – 1 000			47
NOTE Apply only table clause A4.1 or A4.2 across the entire frequency range.				

**Requirements for radiated emissions at frequencies above 1 GHz
for Class B equipment**

Table clause	Frequency range MHz	Measurement		Class B limits dB(μ V/m)
		Distance m	Detector type / bandwidth	FSOATS (see Table A.1)
A5.1	1 000 – 3 000	3	Average / 1 MHz	50
	3 000 – 6 000			54
A5.2	1 000 – 3 000		Peak / 1 MHz	70
	3 000 – 6 000			74

NOTE Apply A5.1 and A5.2 across the frequency range from 1000 MHz to the highest required frequency of measurement derived from Table 1.

Requirements for radiated emissions from FM receivers

Table clause	Frequency range MHz	Measurement		Class B limit dB(μ V/m)	
		Distance m	Detector type / bandwidth	Fundamental	Harmonics
				OATS/SAC (see Table A.1)	OATS/SAC (see Table A.1)
A6.1	30 – 230	10	Quasi peak / 120 kHz	50	42
	230 – 300				42
	300 – 1 000				46
A6.2	30 – 230	3		60	52
	230 – 300				52
	300 – 1 000				56

NOTE 1 Apply only A.6.1 or A.6.2 across the entire frequency range.

NOTE 2 These relaxed limits apply only to emissions at the fundamental and harmonic frequencies of the local oscillator. Signals at all other frequencies shall be compliant with the limits given in Table A.4.



**Requirements for conducted differential voltage emissions
from Class B equipment**

Table clause	Frequency Range MHz	Detector type / bandwidth	Class B limits dB(μ V) 75Ω			Applicability
			Other	Local Oscillator Fundamental	Local Oscillator Harmonics	
A12.1	30 - 950	For frequencies ≤ 1 GHz	46	46	46	See NOTE 1
	950 – 2 150		46	54	54	
A12.2	950 – 2 150	Quasi Peak / 120 kHz	46	54	54	See NOTE 2
A12.3	30 – 300		46	54	50	See NOTE 3
	300 – 1 000				52	
A12.4	30 - 300	For frequencies ≥ 1 GHz	46	66	59	See NOTE 4
	300 – 1 000				52	
A12.5	30 - 950	Peak / 1 MHz	46	76	46	See NOTE 5
	950 – 2 150			n/a	54	

NOTE 1 Television receivers (analogue or digital), video recorders and PC TV broadcast receiver tuner cards working in channels between 30 MHz and 1 GHz, and digital audio receivers.

NOTE 2 Tuner units (not the LNB) for satellite signal reception.

NOTE 3 Frequency modulation audio receivers and PC tuner cards.

NOTE 4 Frequency modulation car radios.

NOTE 5 Applicable to EUT2 with RF modulator output ports (for example DVD equipment, video recorders, camcorders and decoders etc.) designed to connect to TV broadcast receiver tuner ports.

NOTE 6 Testing is required at only one EUT supply voltage and frequency.

NOTE 7 The term 'other' refers to all emissions other than the fundamental and the harmonics of the local oscillator.

NOTE 8 The test shall be performed with the device operating at each reception channel.

NOTE 9 The test shall cover the entire frequency range.

5.2. Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be repeated one by one using the quasi-peak method and reported.

5.3. Typical Test Setup

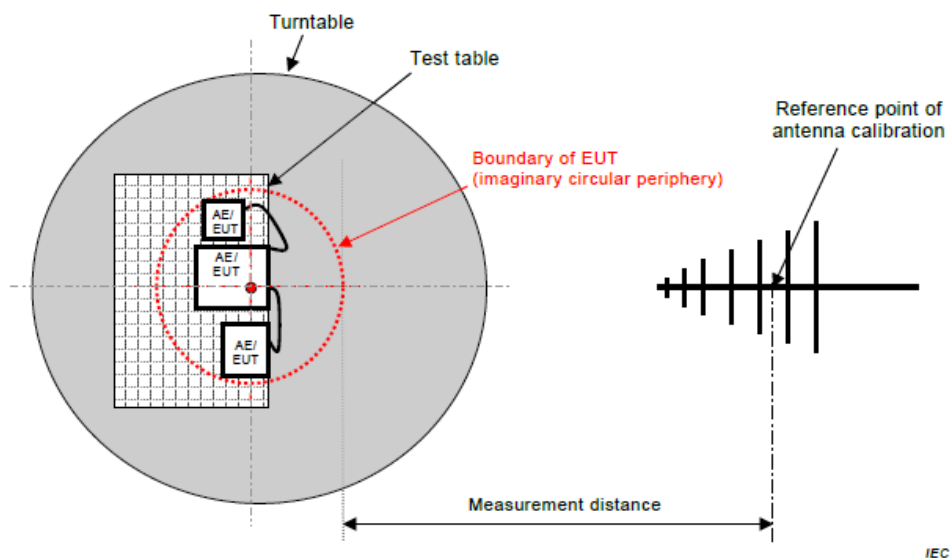
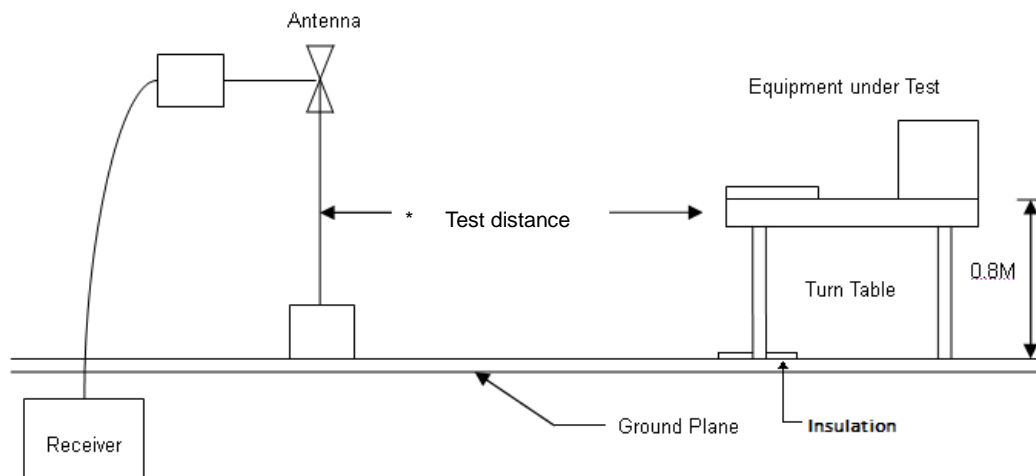


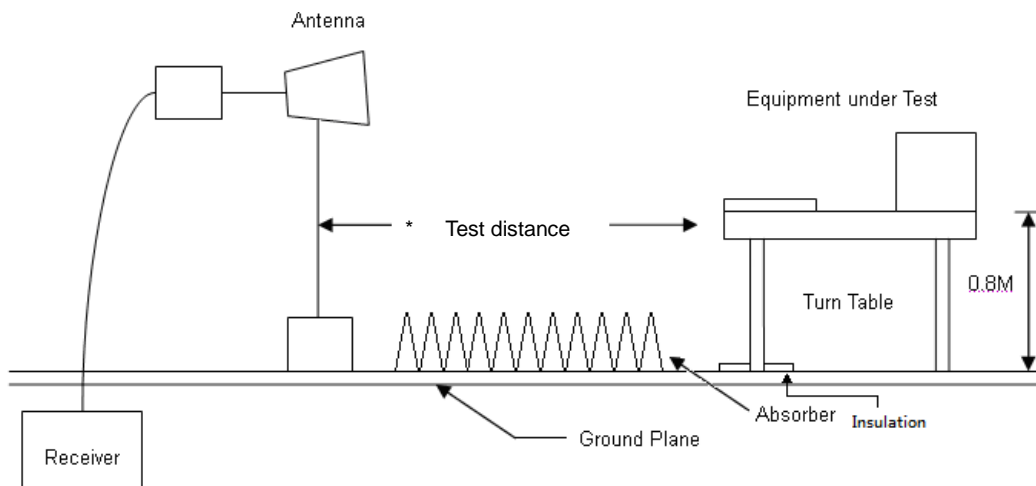
Figure C.1 – Measurement distance



Below 1GHz Test Setup



Above 1GHz Test Setup

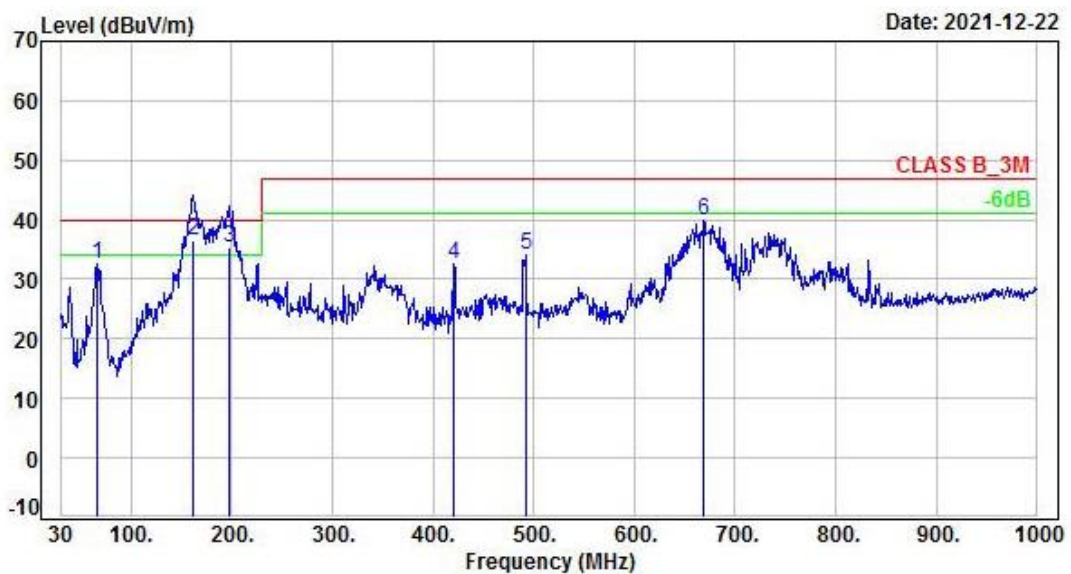




5.4. Test Result and Data (30MHz ~ 1GHz)

Test Mode	Mode 1	Pol/Phase	VERTICAL
Test Frequency	30MHz ~ 1GHz	Test Voltage	From System
Test Date	Dec. 22, 2021	Test Engineer	Kevin
Temperature	20.7 °C	Relative Humidity	62 %

Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor

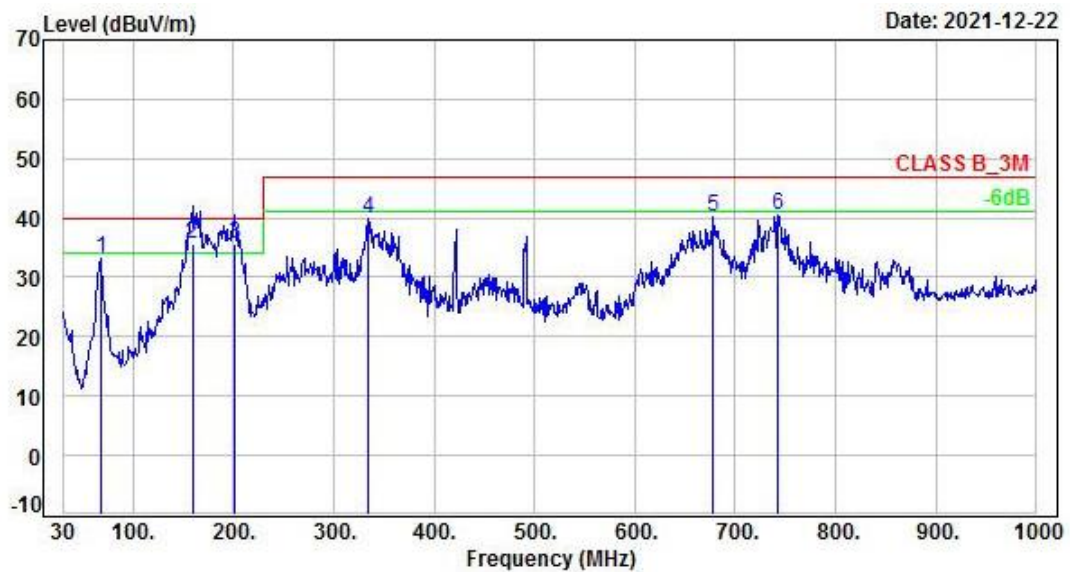


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	66.86	-16.43	49.07	32.64	40.00	-7.36	Peak	100	332	P
2	160.95	-11.13	47.80	36.67	40.00	-3.33	QP	100	71	P
3	197.81	-10.28	45.48	35.20	40.00	-4.80	QP	100	91	P
4	419.94	-6.19	38.68	32.49	47.00	-14.51	Peak	100	150	P
5	491.72	-4.68	38.74	34.06	47.00	-12.94	Peak	100	335	P
6	669.23	-1.93	41.84	39.91	47.00	-7.09	Peak	100	244	P



Test Mode	Mode 1	Pol/Phase	HORIZONTAL
Test Frequency	30MHz ~ 1GHz	Test Voltage	From System
Test Date	Dec. 22, 2021	Test Engineer	Kevin
Temperature	20.7 °C	Relative Humidity	62 %

Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	67.83	-16.25	49.44	33.19	40.00	-6.81	Peak	200	214	P
2	159.01	-11.13	46.79	35.66	40.00	-4.34	QP	200	277	P
3	200.72	-10.23	45.97	35.74	40.00	-4.26	QP	200	153	P
4	334.58	-8.56	48.52	39.96	47.00	-7.04	Peak	100	313	P
5	677.96	-1.81	42.07	40.26	47.00	-6.74	Peak	100	157	P
6	742.95	-0.70	41.18	40.48	47.00	-6.52	Peak	100	197	P



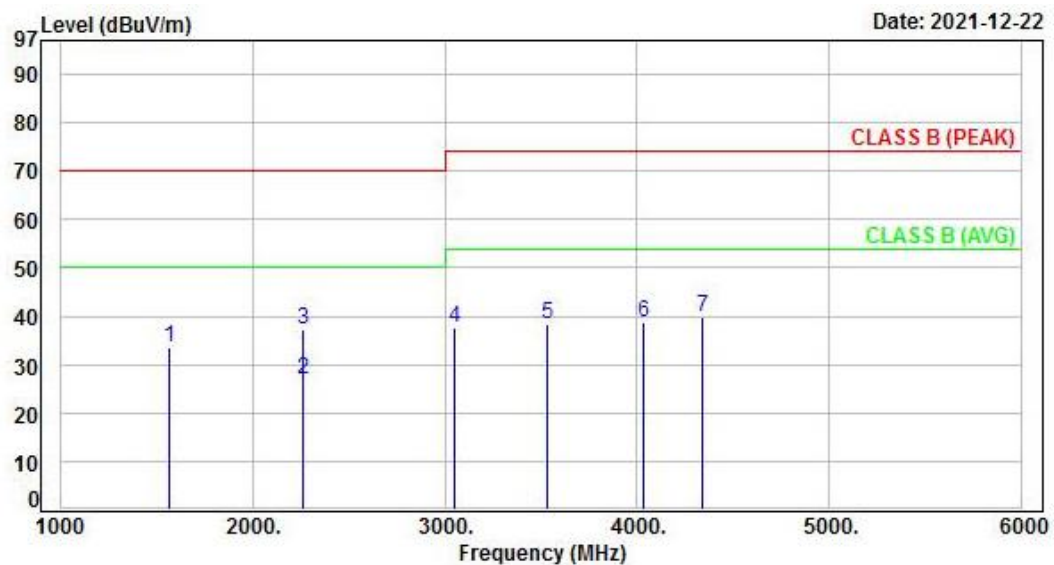
5.5. Test Result and Data (1GHz ~ 6GHz)

Test Mode	Mode 1	Pol/Phase	VERTICAL
Test Frequency	1GHz ~ 6GHz	Test Voltage	From System
Test Date	Dec. 22, 2021	Test Engineer	Kevin
Temperature	20.7 °C	Relative Humidity	62 %

Note : Level = Reading + Factor

Margin = Level – Limit

Factor = Antenna Factor + Cable Loss – Amplifier Factor

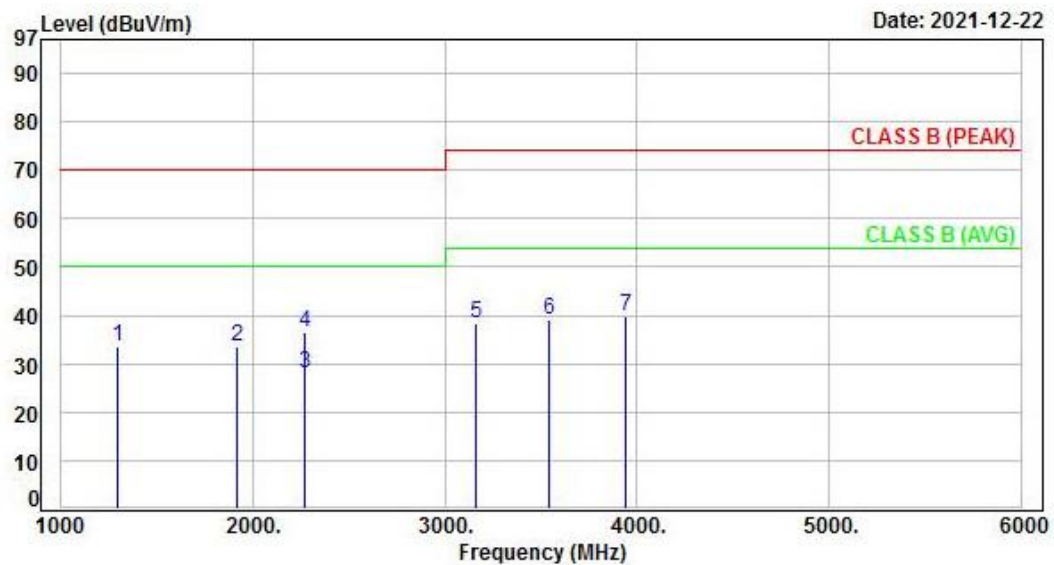


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1570.00	-34.10	67.61	33.51	70.00	-36.49	Peak	400	0	P
2	2260.00	-30.92	57.95	27.03	50.00	-22.97	Average	100	320	P
3	2260.00	-30.92	68.25	37.33	70.00	-32.67	Peak	100	320	P
4	3050.00	-29.78	67.22	37.44	74.00	-36.56	Peak	400	0	P
5	3535.00	-29.12	67.31	38.19	74.00	-35.81	Peak	400	0	P
6	4035.00	-28.26	67.11	38.85	74.00	-35.15	Peak	400	0	P
7	4335.00	-27.35	67.22	39.87	74.00	-34.13	Peak	400	0	P



Test Mode	Mode 1	Pol/Phase	HORIZONTAL
Test Frequency	1GHz ~ 6GHz	Test Voltage	From System
Test Date	Dec. 22, 2021	Test Engineer	Kevin
Temperature	20.7 °C	Relative Humidity	62 %

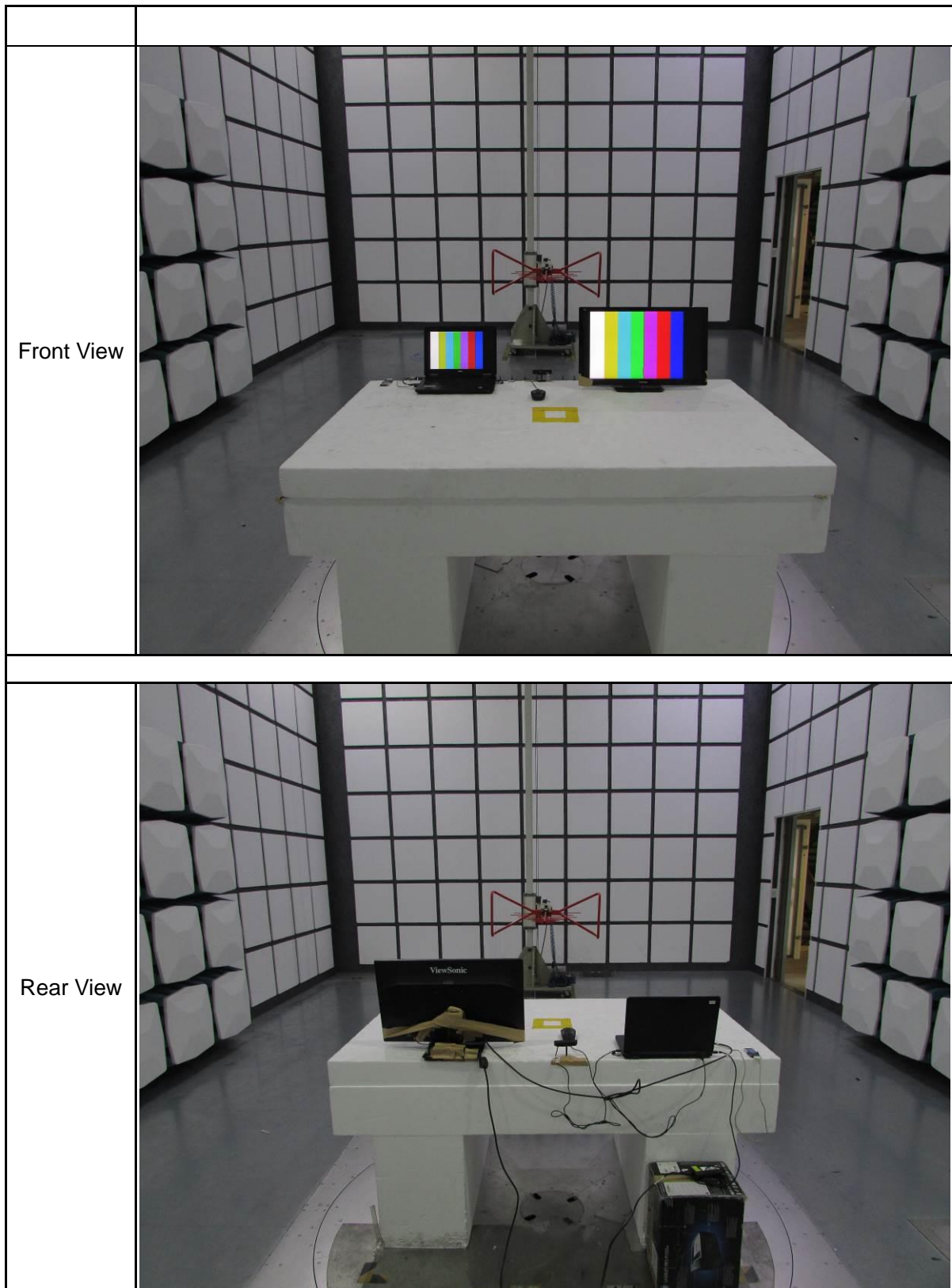
Note : Level = Reading + Factor
Margin = Level – Limit
Factor = Antenna Factor + Cable Loss – Amplifier Factor



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	1300.00	-33.70	67.22	33.52	70.00	-36.48	Peak	100	0	P
2	1920.00	-33.25	66.86	33.61	70.00	-36.39	Peak	100	0	P
3	2270.00	-30.91	59.00	28.09	50.00	-21.91	Average	100	122	P
4	2270.00	-30.91	67.50	36.59	70.00	-33.41	Peak	100	122	P
5	3160.00	-29.58	67.94	38.36	74.00	-35.64	Peak	100	0	P
6	3540.00	-29.11	68.18	39.07	74.00	-34.93	Peak	100	0	P
7	3940.00	-28.30	68.24	39.94	74.00	-34.06	Peak	100	0	P

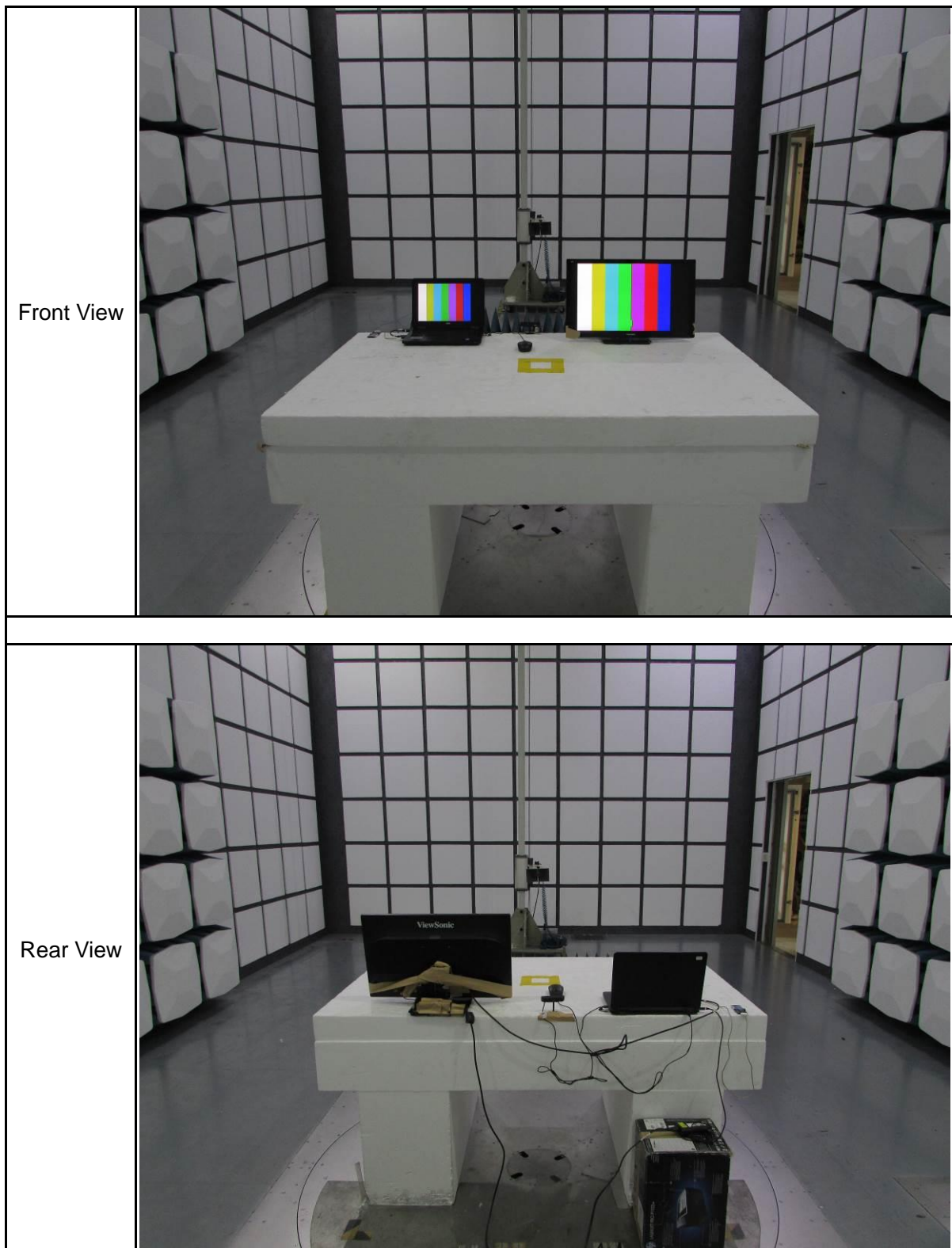


5.6. Test Photographs (30MHz ~ 1GHz)





5.7. Test Photographs (1GHz ~ 6GHz)





6. Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	150 kHz ~ 30 MHz	N/A	±3.12dB
Conducted Emission (Telecommunication Port)	150 kHz ~ 30 MHz	N/A	±2.60dB
Radiated Emission Conducted Emission	30 MHz ~ 1,000 MHz	Vertical / Horizontal	±4.58dB
	1,000 MHz ~ 6,000 MHz	Vertical / Horizontal	±5.11dB
	6,000 MHz ~ 18,000 MHz	Vertical / Horizontal	±5.24dB

The measurement uncertainty will be considered, when test result margin to the limit.

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

7. List of Measuring Equipment

Radiated Emission below 1GHz (Test date: 2021/12/22)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Bilog Antenna	Sunol	JB1	A051717	2021/06/03	2022/06/02
EMI Receiver	R&S	ESCI 7	100963	2021/03/12	2022/03/11
Preamplifier	EM Electronics corp.	EM330	60611	2021/03/26	2022/03/25
Cable-0.5m (30M-1G)	HUBER SUHNER	RG-214	Cable-08	2021/03/15	2022/03/14
Cable-1m (30M-1G)	HUBER SUHNER	RG-214	Cable-09	2021/03/15	2022/03/14
Cable-6m (30M-1G)	HUBER SUHNER	RG-214	Cable-10	2021/03/15	2022/03/14
Software	AUDIX	E3	Version: V8.2014-8-6	N/A	N/A

Radiated Emission above 1GHz (Test date: 2021/12/22)					
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1785	2021/10/20	2022/10/19
Spectrum Analyzer	R&S	FSV3044	101149	2021/06/04	2022/06/03
Preamplifier	EM Electronics corp.	EM01G18G	60700	2021/09/08	2022/09/07
Cable-0.5m (1G-40G)	HUBER SUHNER	SUCOFLEX 102	MY4569/2	2021/09/03	2022/09/02
Cable-1m (1G-40G)	HUBER SUHNER	SUCOFLEX 102	MY5739/2	2021/09/03	2022/09/02
Cable-6m (1G-40G)	HUBER SUHNER	SUCOFLEX 102	MY5740/2	2021/09/03	2022/09/02
Software	AUDIX	E3	Version: V8.2014-8-6	N/A	N/A