TEST REPORT

Applicant:	Tescom Photoelectric Technology (Shenzhen) Co., Ltd.
Address:	Bld. 2b-1415, SKYWORTH Innovation Valley, Tangtou No. 1 Rd., Baoan Shenzhen, China
Equipment type:	Chip antenna
Description:	Nuvis® Wireless HD Camera System, Camera head video TX 5.8GHz antennas
Brand name:	ACX Advanced Ceramic X, AT3216-B5R5HAA
Test standard:	ANSI/IEEE Std 149-1979
Test date:	2023.12.01
Date of issue:	2023.12.15

ISSUED BY:

Shenzhen HX antenna Co., Ltd.

Tested by:	Checked by:	Approved by:
YuJiYuar	zhuangWF	jason

Shenzhen HX antenna Co., Ltd.
Add: Floor 2-5, Bd. C10, Xinan second industrial part, Gushu district, Shenzhen, China
Web: www.hxrf-antenna.com Tel: 0755-23205219 Email: yqh@hx-iot.com

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen HX antenna Co., Ltd.
Address	Floor 2-5, Bd. C10, Xinan second industrial part, Gushu district, Shenzhen, China
Phone Number	0755-23205219
Email	yqh@hx-iot.com
Web	www.hxrf-antenna.com

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen HX antenna Co., Ltd.
Address	Floor 2-5, Bd. C10, Xinan second industrial part, Gushu district, Shenzhen, China
Description	All measurement facilities used to collect the measurement data are located at Floor 2-5, Bd. C10, Xinan second industrial part, Gushu district, Shenzhen, China

2. PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Tescom Photoelectric Technology (Shenzhen) Co., Ltd.
Address	Bld. 2B-1415, SKYWORTH Innovation Valley, Tangtou No. 1 Rd., Baoan Shenzhen, China
Contact person	Jiang wenlai
Telephone number	86-18926044268
Email	El3imaging@aol.com

2.2 Manufacturer Information

Manufacturer	Advanced Ceramic X Corp.
Address	16 Tzu Chiang Road, Hsinchu Industrial District Hsinchu Hsien 303, Taiwan
Phone Number	TEL:886-3-5987008 FAX:886-3-5987001
Email	acx@acxc.com.tw
Web	http://www.acxc.com.tw

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment

EUT name	Chip antenna
Model name under test	AT3216-B5R5HAA
Antenna Type	Chip antenna
Dimensions	3.2*1.6*1.3mm

2.5 Ancillary Equipment

Not applicable

2.6 Technical Information

Frequency range	5150-5875 MHz

Test frequencies	5000-6000 MHz

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

Report Section	Description	Remark
1	ANSI/IEEE Std 149-1979	IEEE Standard Test Procedures for Antennas

3.2 Test Verdict

No.	Idendity	Document Title
ANNEX A.1	Gain and Efficiency	IEEE Standard Test Procedures for Antennas

3.3 Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

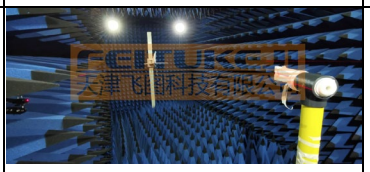
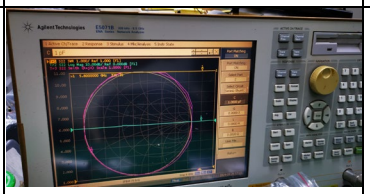
Item	Uncertainty
VSWR(S11)	1.5±0.5
Gain	5±2dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Condition

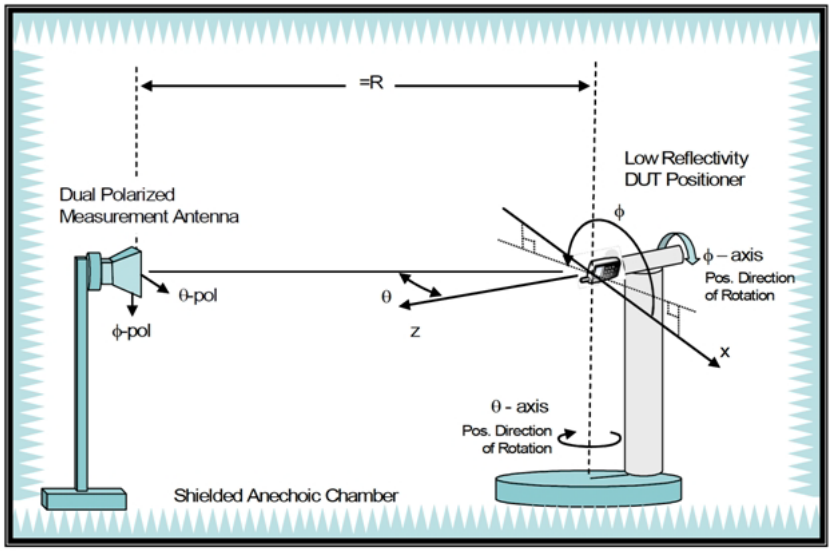
Environment Parameter	Selected Values During Tests			
	Ambient Pressure (KPa)	Temperature (℃)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	100 to 102	19 to 25	N/A	45 to 55

4.2 Test Equipment List

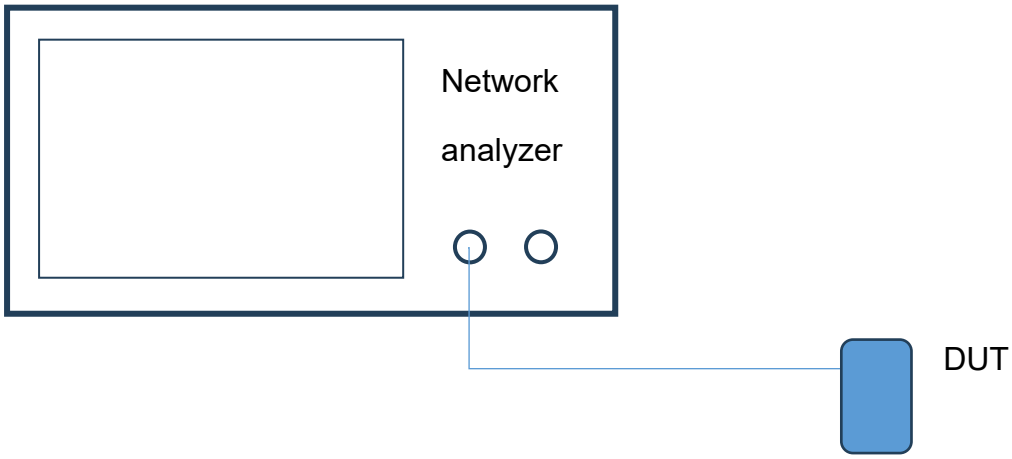
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Single-probe test system	FEITUKEJI	6585			
ENA series network analyzers	Agilent Technologies	E5071B			
Wideband radio communication tester	Rohde & Schwarz	CMW500			
Description					
Test Software					

4.3 Test Setup

4.3.1 Antenna gain, efficiency and radiation pattern test setup



4.3.2 S11 parameter test setup



ANNEX A TEST RESULTS

A.1 Gain and Efficiency

Frequency (MHz)	Gain (dBi)	Efficiency (%)
5000	-2.14	17.03
5005	-2.06	17.30
5010	-2.07	17.52
5015	-1.94	18.25
5020	-1.98	18.52
5025	-1.99	18.49
5030	-1.90	18.81
5035	-1.76	19.20
5040	-1.71	19.54
5045	-1.68	20.07
5050	-1.34	21.22
5055	-1.35	21.37
5060	-1.34	21.11
5065	-1.36	21.21
5070	-1.20	21.69
5075	-0.97	22.17
5080	-1.00	22.30
5085	-1.07	22.12
5090	-0.92	22.58
5095	-0.74	23.76
5100	-0.49	24.68
5105	-0.50	24.92
5110	-0.36	25.39
5115	-0.26	26.33
5120	-0.10	26.85
5125	-0.15	27.53
5130	0.00	27.78
5135	-0.17	26.82
5140	-0.24	26.47
5145	-0.19	27.18
5150	-0.09	28.06
5155	0.13	28.74

Frequency (MHz)	Gain (dBi)	Efficiency (%)
5505	0.89	35.21
5510	0.90	34.42
5515	0.80	34.22
5520	0.90	34.93
5525	0.92	35.56
5530	0.94	35.83
5535	0.89	35.99
5540	0.83	36.31
5545	0.91	36.40
5550	0.79	36.63
5555	0.63	36.43
5560	0.75	36.26
5565	0.67	36.47
5570	0.80	37.22
5575	0.72	37.25
5580	0.72	37.52
5585	0.80	37.62
5590	0.73	37.86
5595	0.88	38.34
5600	0.85	38.87
5605	0.99	39.30
5610	0.97	39.39
5615	1.07	39.50
5620	1.01	39.65
5625	1.21	39.94
5630	1.15	40.54
5635	1.32	41.17
5640	1.18	40.66
5645	1.04	39.91
5650	1.10	40.40
5655	1.21	41.29
5660	1.22	41.60

5160	0.05	28.83
5165	0.03	28.96
5170	0.09	29.44
5175	0.23	30.37
5180	0.19	30.47
5185	0.15	30.76
5190	0.21	31.07
5195	0.13	31.15
5200	0.07	31.56
5205	0.20	32.51
5210	0.32	32.46
5215	0.24	31.50
5220	0.25	31.72
5225	0.53	32.86
5230	0.81	34.10
5235	0.74	34.11
5240	0.64	32.99
5245	0.51	32.34
5250	0.67	33.27
5255	0.69	34.02
5260	0.64	33.48
5265	0.59	33.42
5270	0.66	33.87
5275	0.64	33.92
5280	0.78	34.30
5285	0.86	34.87
5290	0.86	35.04
5295	0.83	35.45
5300	0.89	35.84
5305	0.84	35.93
5310	0.86	35.56
5315	0.65	34.58
5320	0.50	33.48
5325	0.60	33.66
5330	0.79	34.49
5335	0.74	34.49
5340	0.67	34.21
5345	0.80	34.72
5350	0.79	35.24
5355	0.82	35.20
5360	0.74	34.98
5365	0.63	34.64
5370	0.55	34.18
5375	0.53	34.09
5380	0.45	34.64

5665	1.17	41.00
5670	1.14	41.15
5675	1.27	42.02
5680	1.32	42.95
5685	1.30	42.56
5690	1.31	42.40
5695	1.37	42.74
5700	1.41	43.44
5705	1.64	44.12
5710	1.63	44.26
5715	1.61	44.44
5720	1.65	44.52
5725	1.75	45.14
5730	1.79	45.96
5735	1.96	46.19
5740	1.92	45.28
5745	1.75	44.72
5750	1.82	45.50
5755	1.86	46.20
5760	1.82	46.19
5765	1.73	45.79
5770	1.67	46.21
5775	1.85	47.04
5780	1.79	47.44
5785	1.86	47.44
5790	1.72	46.91
5795	1.69	47.29
5800	1.50	47.17
5805	1.55	46.65
5810	1.50	46.72
5815	1.43	46.12
5820	1.27	45.06
5825	1.35	44.52
5830	1.41	44.92
5835	1.57	45.20
5840	1.61	45.25
5845	1.66	45.05
5850	1.50	44.70
5855	1.68	45.34
5860	1.68	45.72
5865	1.71	45.28
5870	1.64	44.77
5875	1.77	44.97
5880	1.82	45.18
5885	1.93	44.70

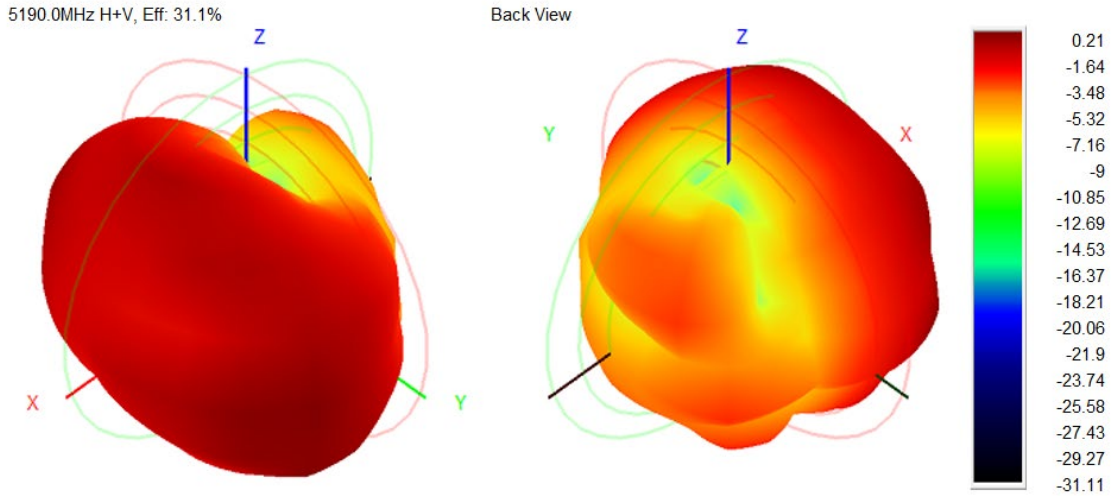
5385	0.53	34.79
5390	0.55	34.44
5395	0.51	33.98
5400	0.56	33.60
5405	0.62	34.22
5410	0.74	34.77
5415	0.59	33.93
5420	0.40	32.74
5425	0.50	33.20
5430	0.58	33.90
5435	0.59	34.04
5440	0.75	34.07
5445	0.69	34.12
5450	0.76	34.62
5455	0.83	35.03
5460	0.79	34.98
5465	0.81	34.29
5470	0.80	33.71
5475	0.80	34.21
5480	0.88	35.30
5485	0.87	35.88
5490	0.97	35.10
5495	0.77	34.58
5500	0.95	35.23

5890	1.86	44.08
5895	1.63	42.10
5900	1.76	42.32
5905	1.91	43.54
5910	2.02	44.31
5915	1.94	43.50
5920	1.87	42.64
5925	1.82	42.01
5930	1.82	41.68
5935	1.77	41.35
5940	1.72	40.08
5945	1.48	39.15
5950	1.62	39.23
5955	1.68	39.31
5960	1.51	38.67
5965	1.50	38.35
5970	1.40	38.04
5975	1.27	36.83
5980	1.07	35.60
5985	1.11	35.73
5990	1.03	35.90
5995	0.94	34.92
6000	0.64	33.46

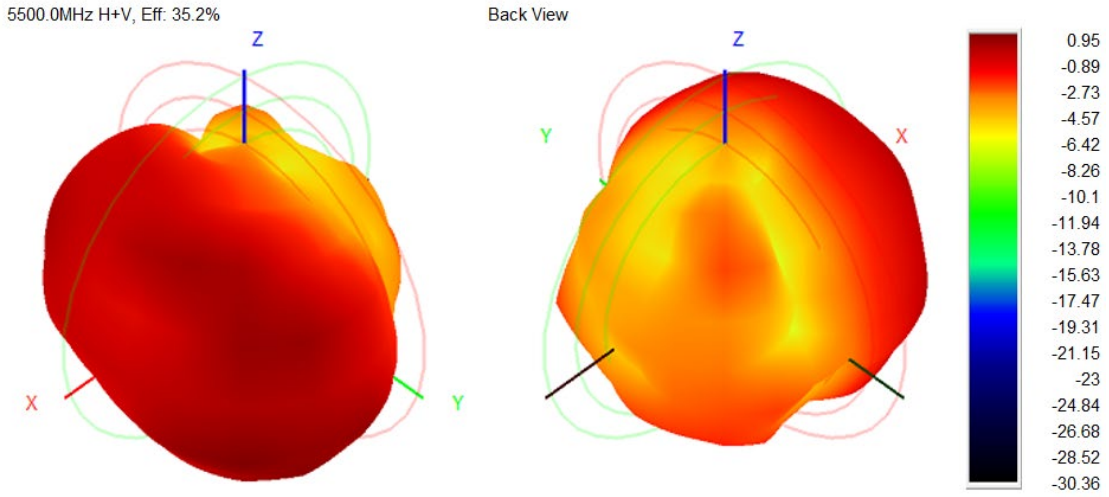
ANNEX B RADIATION PATTERN

B.1 3D Pattern

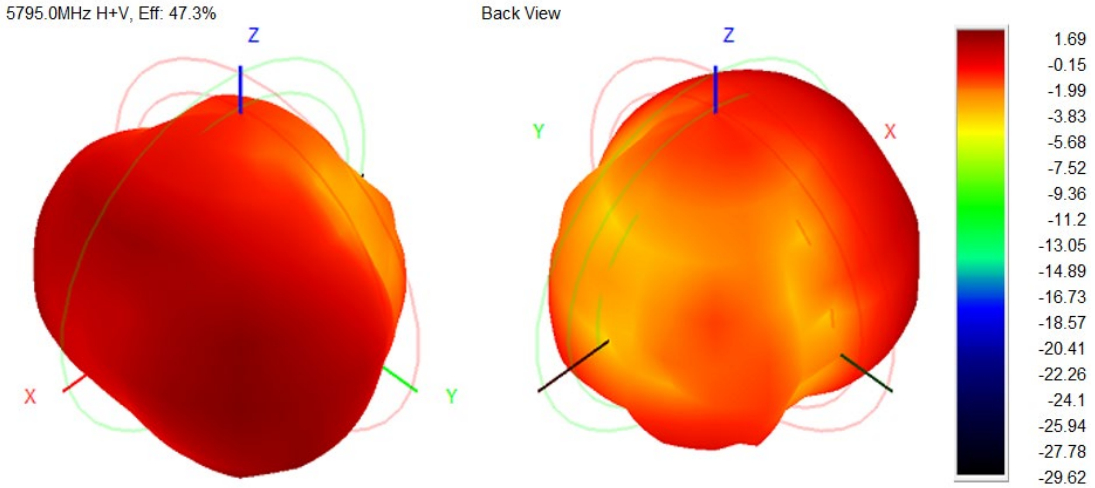
B1.1 3D Pattern for 5190MHz



B1.2 3D Pattern for 5500MHz



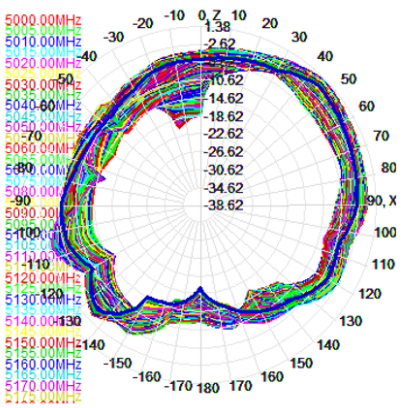
B1.3 3D Pattern for 5795MHz



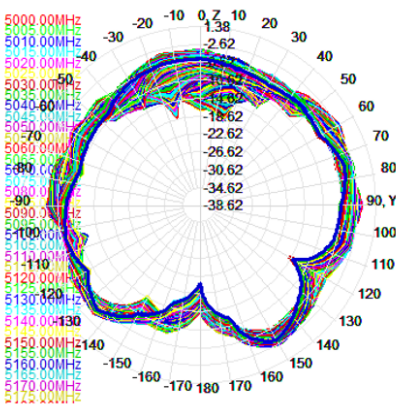
B.2 1D Radiation Pattern

B . 2.1 1D Radiation pattern

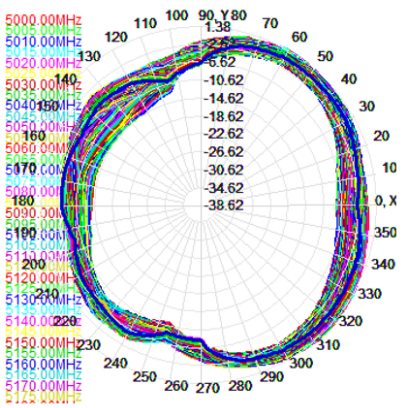
E1-XZ



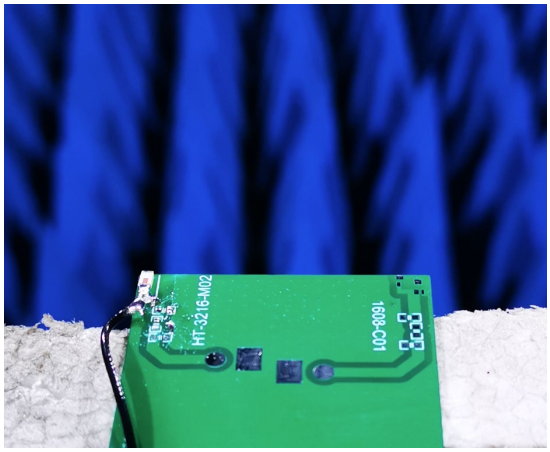
E2-YZ



H-XY

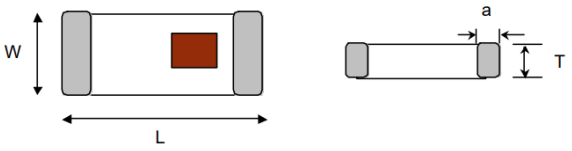


ANNEX C TEST SETUP PHOTO



ANNEX D EUT PHOTO

Unit : mm



Mark	L	W	T	a
Dimensions	3.2±0.2	1.6±0.2	1.3+ 0.1/-0.2	0.5±0.3

Statement

1) The laboratory guarantees the scientific, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2) The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3) For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
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7) Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT-