TEST REPORT

Application No.:	HKEM1810000806IT
Applicant:	VTECH TELECOMMUNICATIONS LTD
Address of Applicant:	23/F, Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong
Manufacturer:	VTECH TELECOMMUNICATIONS LTD
Address of Manufacturer:	23/F, Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong
Factory:	VTech (Dongguan) Telecommunications Limited.
Address of Factory:	VTech Science Park, Xia Ling Bei Management Zone, Liaobu, Dongguan, Guangdong, China.
Equipment Under Test (EUT):	
EUT Name:	Full HD Camera with Alarm
HVIN:	35-400190BU
Model No.:	VC9411 Camera, VC9411-2 Camera, VC9411-3 Camera, VC9411-12 Camera, VC9411-22 Camera, VC941z-abcd Camera ♣
Trade mark:	VTech
♣	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
Standard(s):	47 CFR Part 1.1307 (2016) 47 CFR Part 1.1310 (2016)
Date of Receipt:	2018-10-08
Date of Test:	2018-10-01 to 2018-10-26
Date of Issue:	2018-10-31
Test Result :	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Ivan Toa

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		10/31/2018		*Original*

Authorized for issue by:				
Tested By				2018-10-26
		Leo Xu /Project Engineer		**Date**
Checked By				2018-10-31
		Ivan Toa /Reviewer		**Date**

1 Contents

2 General Information

2.1 Details of E.U.T.

Power supply:	AC100-240V, 50/60Hz 0.5A
Adapter	Adaptor 1*
	Adapter Model: CS12N05015FUF
	Input: AC100-240V, 50/60Hz 0.5A
	Output: DC 5.0V, 1.5A
	Adaptor 2
	Adapter Model: S012CDU0500150
	Input: AC100-240V, 50/60Hz 0.4A
	Output: DC 5.0V, 1.5A
	*Remark: Complete measurement was performed with Adaptor 1
Cable	295cm 2 wires unshielded DC power cable
Funtion	Wireless Network camera, Local storage (micro sd card) recording
Test Voltage	AC120V 60 Hz
Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
	IEEE 802.11n(HT40): 2422MHz to 2452MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
	IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK)
	IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK)
	IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK,BPSK)
Sample Type:	Fixed production
Antenna Type:	PIFA Antenna
Antenna Gain:	2 dBi
Frequency List	

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447		
Remark: Test frequencies for 20MHz bandwidth are the lowest channel: 1 channel(2412MHz), middle channel: 6 channel (2437 MHz) and highest channel: 11 channel (2462 MHz).					

Test frequencies for 40MHz bandwidth are the lowest channel: 1 channel(2412MHz), middle channel: 6 channel (2437 MHz) and highest channel: 9 channel (2492 MHz).

Model: VC9411 Camera, VC9411-2 Camera, VC9411-3 Camera, VC9411-12 Camera, VC9411-22 Camera, and
VC941z-abcd Camera
Suffix (" a, b, c, d, z" of "VC941z-abcd Camera") represents
☐ Color code
☐ Packing configuration
☒ (Others, please specify)
z=packaging, can be 0-9, a-z, A-Z
a=number of IP Cam; can be 0-9, a-z, A-Z or blank
b=color options, can be 0-9, a-z, A-Z or blank
c= combinations of sensor types/ other accessory in the bundle, can be 0-9, 00-99 or blank
d= combinations of sensor types/ other accessory in the bundle, can be 0-9, 00-99 or blank

According to the confirmation from the applicant, the above models are identical in all electrical aspects in relating to the circuit design, PCB layout, electrical components used, internal wiring and function. The differences are only the model and color for trading purpose
Therefore only the model VC9411 Camera was tested in this report.

2.2 Test Location

All tests were performed at:

SGS IECC Limited (Member of the SGS Group (SGS SA))
No. 16-B, Yip Wo Street, On Lok Tsuen, Fanling, N.T., Hong Kong
Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

2.3 Test Facility

The test facility is recognized or accredited by the following organizations:

- **HOKLAS (Lab Code: 125)**

SGS IECC Limited has been accepted by HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a HOKLAS Accredited Laboratory, this laboratory meets the requirements of ISO/IEC 17025:2005 an it has been accredited for performing specific test as listed in the scope of accreditation within the test category of Electrical and Electronic Products.

- **FCC Recognized Accredited Test Firm(CAB Registration No.: 446297)**

SGS IECC Limited has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: HK0010, Test Firm Registration Number: 446297.

- **Industry Canada (Registration No.: 5193A-2)**

The 3m Alternative Semi-anechoic chamber of SGS IECC Limited has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 5193A-2..

2.4 Deviation from Standards

None

2.5 Abnormalities from Standard Conditions

None

2.6 Deviation from Standards

None.

2.7 Abnormalities from Standard Conditions

None.

2.8 Other Information Requested by the Customer

None.

3 RF Exposure Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*($900/f^2$)	6
30–300	61.4	0.163	1.0	6
300–1500	.....	.....	f/300	6
1500–100,000	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1500	.....	.....	f/1500	30
1500–100,000	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4* Pi * R 2)

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

3.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.1.3 EUT RF Exposure Evaluation

For 2.4G WiFi

Antenna Gain: 2dBi

The maximum Gain measured in fully anechoic chamber is 1.58 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

SISO mode (Worst case: 802.11b

Channel	Frequency (MHz)	Conduct power (including Tune-up tolerance) (dBm)	E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm2)	Limit	MPE Ratios	Result
Middle	2437	15.4	54.954	0.0109	1	0.0109	PASS

SISO mode (Worst case: 802.11n(HT40)

Channel	Frequency (MHz)	Conduct power (including Tune-up tolerance) (dBm)	E.I.R.P (mW)	Power Density at R = 20 cm (mW/cm2)	Limit	MPE Ratios	Result
Lowest	2422	13.5	35.48	0.0071	1	0.0071	PASS

Note: Refer to report No. HKEM181000080601for EUT test EIRP value. The distancer (5th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.

- End of the Report -