

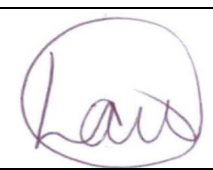




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**TEST REPORT No: (5217)091-0094**

# TEST REPORT

To:	<b>NEW BRIGHT INDUSTRIAL CO., LTD.</b>	To:	-
Attn:	Eric Kwok	Attn:	-
Address:	9/F., New Bright Building, 11 Sheung Yuet Road, Kowloon Bay, Kowloon, Hong Kong	Address:	-
Fax:	2795 3665	Fax:	-
E-mail:	<a href="mailto:ypeng01@newbright.com">ypeng01@newbright.com</a> / <a href="mailto:chkwok01@newbright.com">chkwok01@newbright.com</a>	E-mail:	-
Folder No.:	NBT-17MA258ETHS-B		
Factory name:	--		
Location:	--		
Product:	614VR wifi camera Model No.: GF614C		
	Sample No:	HK170330/024	
	Date of Receipt:	March 30, 2017	
	Test date:	April 26, 2017 to May 05, 2017	
	Test Requested:	FCC Part 15 - 2015	
	Test Method:	ANSI C63.10 - 2013	
	FCC ID:	G6DGF614C	
	<b>The results given in this report are related to the tested specimen of the described electrical apparatus.</b>		
<b>CONCLUSION: The submitted sample was found to <u>COMPLY</u> with requirement of FCC Part 15 Subpart C.</b>			
Authorized Signature:			
			
Reviewed by: Kinko Wong		Approved by: Law Man Kit	
Date: May 24, 2017		Date: May 24, 2017	

**BUREAU VERITAS HONG KONG LIMITED –**  
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This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



**TEST REPORT No: (5217)091-0094**  
**Test Result Summary**

<b>EMISSION TEST</b>			
<b>Test requirement: FCC Part 15 - 2015</b>			
Test Condition	Test Method	Test Result	
		Pass	Failed
Maximum Peak Conducted Output Power	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious RF Conducted Emission	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emission Test, 9kHz to 26.5GHz	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Band-edge measurement	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6dB Bandwidth of Fundamental Emission	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Maximum Power Spectral Density	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duty Cycle Correction	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Report Revision & Sample Re-submit History:**

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## TEST REPORT No: (5217)091-0094

### Location of the test laboratory

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013. An Open Area Test Site and Full Anechoic Chamber are set up for investigation and located at :

### BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE

No. 2106-2107, 21/F., Westin Centre,  
26 Hung To Road,  
Kwun Tong, Kowloon,  
Hong Kong

### List of measuring equipment

#### Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
EMI TEST RECEIVER	R&S	ESCI	100379	22-FEB-2017	21-FEB-2018
SIGNAL ANALYZER 40GHZ	R&S	FSV 40	100977	16-AUG-2016	15-AUG-2017
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	27-FEB-2016	26-FEB-2018
OPEN AREA TEST SITE	BVCPS	N/A	N/A	18-JUN-2016	17-JUN-2017
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	11-MAY-2016	10-MAY-2017
BICONICAL ANTENNA	R&S	HK116	100179	14-APR-2016	13-APR-2018
LOG-PERIODIC DIPOLE ARRAY ANTENNA	R&S	HL223	832369/001	07-APR-2016	06-APR-2018
LOOP ANTENNA	ETS-LINDGREN	6502	00102266	06-NOV-2015	05-NOV-2017
HORN ANTENNA (1-18GHZ)	SCHWARZBECK	BBHA9120D	9120D-692	05-NOV-2016	04-NOV-2018
HORN ANTENNA (7.5 – 18GHZ)	SCHWARZBECK	HWRD 750	00015	17-JUN-2016	16-JUN-2018
WIDEBAND HORN ANTENNA	STEATITE	QWH-SL-18-40- K-SG	12688	03-SEP-2015	02-SEP-2017
COAXIAL CABLE	SUHNER	N/A	N/A	06-JAN-2017	05-JAN-2018
COAXIAL CABLE	HUBER + SUHNER	RG214	N/A	04-OCT-2016	03-OCT-2017

### Measurement Uncertainty

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	9kHz to 30MHz	4.2dB
	30MHz to 200MHz	4.5dB
	200MHZ to 1GHz	5.6dB
	1GHz to 18GHz	4.7dB
	18GHz to 40GHz	5.2dB
Maximum Peak Conducted Output Power	30MHz to 18GHz	2.0dB

#### Remarks:-

N/A : Not Applicable or Not Available

The measurement instrumentation uncertainty would be taking into consideration on each of the test result

## TEST REPORT No: (5217)091-0094

### Equipment Under Test [EUT]

#### Description of Sample:

Model Name: 614VR wifi camera  
Model Number: GF614C  
Additional Model Name: --  
Additional Model Number: --  
Additional Model information: --  
Rating: 5Vd.c.

#### Description of EUT Operation:

The Equipment Under Test (EUT) is a NEW BRIGHT INDUSTRIAL CO., LTD of Digital Device. It is a transceiver which operating at 2417MHz. The EUT transmit while received the corresponding signal, Modulation by IC, and type is GFSK.

#### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. The antenna consists of 7cm long wire. It is soldered on the PCB. The antenna is not replaceable or user serviceable. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.

#### Photo of Antenna



TEST REPORT No: (5217)091-0094

## Test Results

### Maximum Peak Conducted Output Power (Fundamental)

Test Requirement: FCC Part 15 Section 15.247 (b)(3)  
Test Method: ANSI C63.10 Section 11.9.1.2  
Test Date(s): 2017-05-04  
Temperature: 25.0 °C  
Humidity: 67.0 %  
Atmospheric Pressure: 100.2 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 5Vd.c.

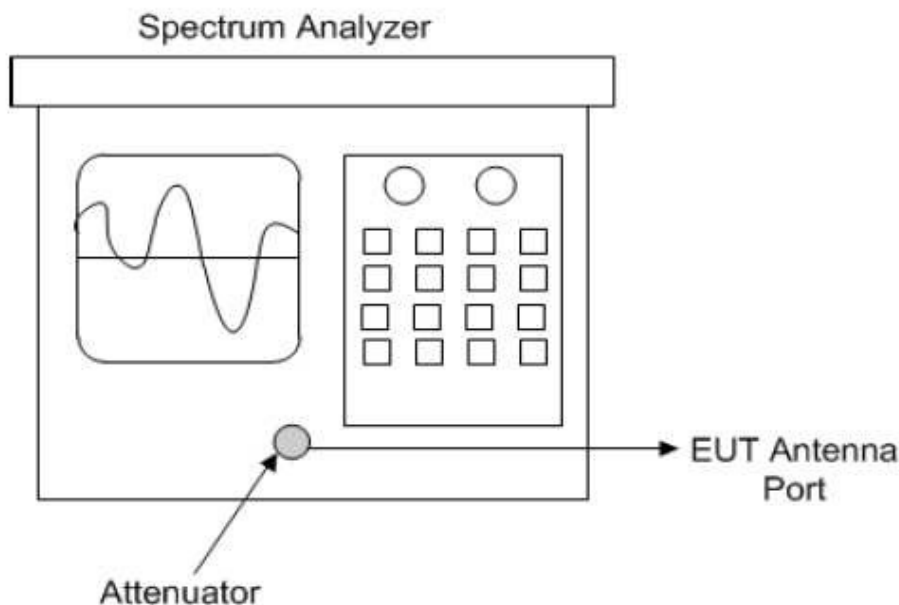
### Test Procedure:

Maximum Peak Conducted Output Power measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

The RF output of the EUT was connected to spectrum analyser. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in dBm.

Location: Room 2106, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

### Test Setup:





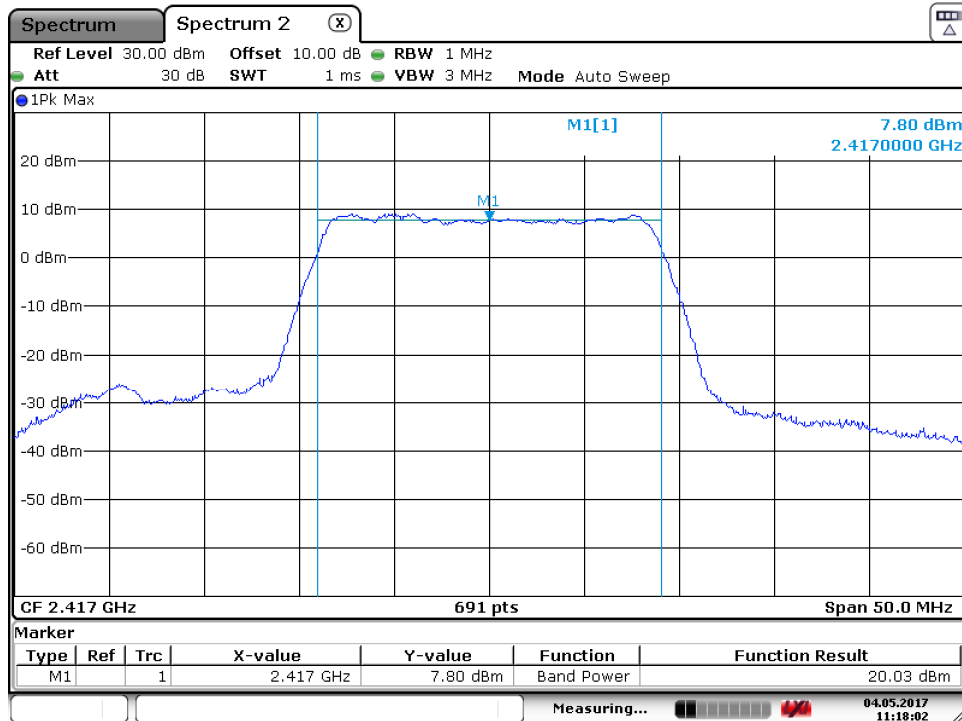
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**TEST REPORT No: (5217)091-0094**

**Limits for Maximum Peak Conducted Output Power of Fundamental [FCC 47CFR 15.247]:**

Frequency Band of Fundamental [MHz]	Maximum Peak Conducted Output Power of Fundamental (Peak) [dBm]
2400-2483.5	30 (1 Watt)

**Test Plot of the Maximum Conducted Output Power**



Date: 4.MAY.2017 11:18:02

**Measurement Data:**

**Test Result of (Transmission mode): PASS**

Frequency (MHz)	Maximum Conducted Output Power (dBm)	Maximum Conducted Output Power (Watt)	Limits (Watt)
2417	20.03	0.101	1

Note: includes Antenna Factor and Cable Loss.  
Receiver setting: RBW = ≥ DTS bandwidth  
VBW = 3 x RBW

## TEST REPORT No: (5217)091-0094

### Spurious RF Conducted Emissions Test

Test Requirement: FCC Part 15 Section 15.247(d)  
Test Method: ANSI C63.10 Section 11.11.1  
Test Date(s): 2017-05-04  
Temperature: 25.0 °C  
Humidity: 67.0 %  
Atmospheric Pressure: 100.2 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 5Vd.c.

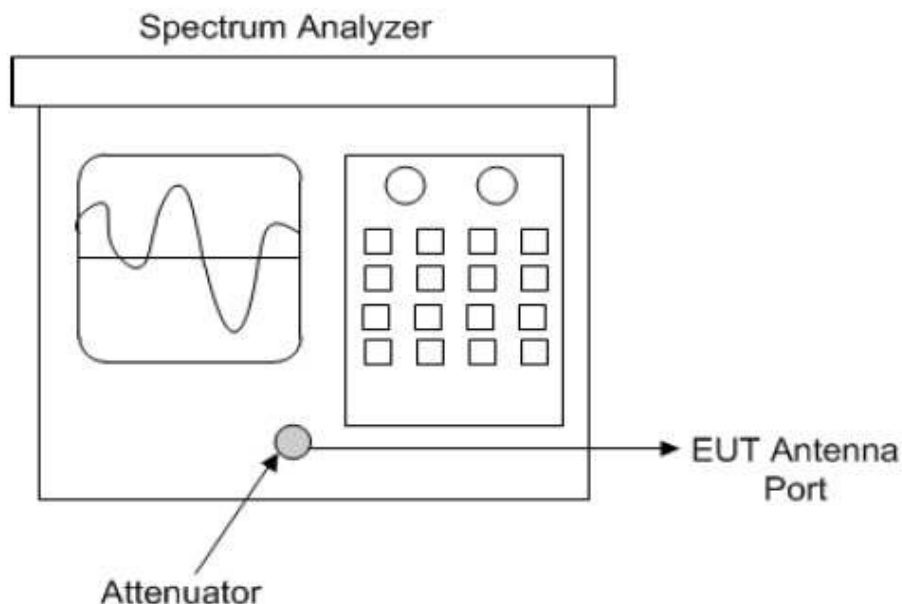
### Test Procedure:

Spurious RF Conducted Emissions Test measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

The RF output of the EUT was connected to spectrum analyser. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in dBm.

Location: Room 2106, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

### Test Setup:





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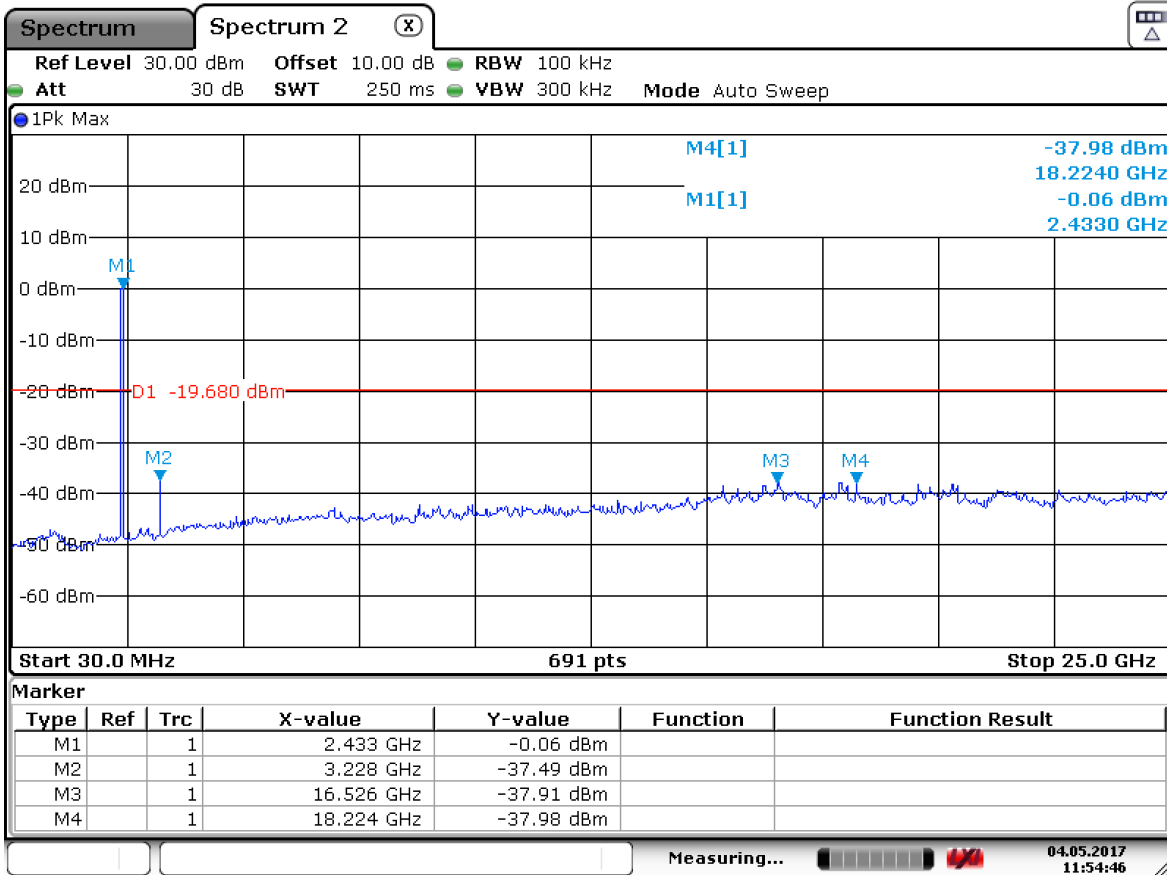
**TEST REPORT No: (5217)091-0094**

**Limits for Spurious RF Conducted Emissions Test [FCC 47CFR 15.247]:**

Frequency Range [MHz]	Limit [dBc]
30 - 25000	-20

**Measurement Data:**

**Test Result of (Transmission mode): PASS**



Date: 4.MAY.2017 11:54:46





**TEST REPORT No: (5217)091-0094**

**Radiated Emissions (9kHz – 26.5GHz)**

Test Requirement: FCC Part 15 Section 15.209  
 Test Method: ANSI C63.10 Section 11.12.1  
 Test Date(s): 2017-05-05  
 Temperature: 25.0 °C  
 Humidity: 67.0 %  
 Atmospheric Pressure: 100.2 kPa  
 Mode of Operation: On mode  
 Tested Voltage: 5Vd.c.

**Limits for Radiated Emissions [FCC 47 CFR 15.209]:**

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/m]	Measurement Distance m
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above960	500	3

**Measurement Data**

**Test Result of (On mode): PASS**

**Detection mode: Quasi-Peak**

Frequency	Polarity (H/V)	Field Strength	Limit	Margin (dB)
Emissions detected are more than 20 dB below the limit line(s) in 9kHz to 30MHz				

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 200Hz  
 VBW = 200Hz



**TEST REPORT No: (5217)091-0094**

**Measurement Data**

**Test Result of (On mode): PASS**

**Detection mode: Quasi-Peak**

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
120.00	H	31.7	43.5	-11.8
156.00	H	29.4	43.5	-14.1
264.00	H	34.5	46.0	-11.5
288.00	H	36.0	46.0	-10.0
336.00	H	32.8	46.0	-13.2
960.00	H	35.1	46.0	-10.9

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
120.00	V	34.6	43.5	-8.9
156.00	V	32.8	43.5	-10.7
264.00	V	26.6	46.0	-19.4
288.00	V	29.8	46.0	-16.2
336.00	V	31.5	46.0	-14.5
960.00	V	40.1	46.0	-5.9

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz  
 VBW = 120KHz



**TEST REPORT No: (5217)091-0094**

**Measurement Data:**

**Test Result of (Transmission mode): PASS**

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
2400.00	H	-4.8	-22.1	66.7	74.0	-7.3	**44.6	54.0	-9.4
4834.00	H	4.8	-22.1	51.4	74.0	-22.6	**29.3	54.0	-24.7
7251.00	H	12.4	-22.1	46.1	74.0	-27.9	**24.0	54.0	-30.0
9668.00	H	13.5	-22.1	46.2	74.0	-27.8	**24.1	54.0	-29.9
12085.00	H	19.6	-22.1	51.9	74.0	-22.1	**29.8	54.0	-24.2
14502.00	H	25.8	-22.1	53.8	74.0	-20.2	**31.7	54.0	-22.3
16919.00	H	21.2	-22.1	56.8	74.0	-17.2	**34.7	54.0	-19.3
19336.00	H	46.7	-22.1	56.8	74.0	-17.2	**34.7	54.0	-19.3
21753.00	H	46.9	-22.1	57.7	74.0	-16.3	**35.6	54.0	-18.4
24170.00	H	48.0	-22.1	58.2	74.0	-15.8	**36.1	54.0	-17.9
26587.00	H	48.5	-22.1	58.5	74.0	-15.5	**36.4	54.0	-17.6

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction =  $20\text{Log}(0.078) = -22.1\text{dB}$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



**TEST REPORT No: (5217)091-0094**

**Measurement Data:**

**Test Result of (Transmission mode): PASS**

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dB $\mu$ V/m)	Limit at 3m – Peak (dB $\mu$ V/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dB $\mu$ V/m)	Limit at 3m – Average (dB $\mu$ V/m)	Margin - Average (dB)
2400.00	V	-4.8	-22.1	68.7	74.0	-5.3	**46.6	54.0	-7.4
4834.00	V	4.8	-22.1	48.2	74.0	-25.8	**26.1	54.0	-27.9
7251.00	V	12.4	-22.1	45.2	74.0	-28.8	**23.1	54.0	-30.9
9668.00	V	13.5	-22.1	45.6	74.0	-28.4	**23.5	54.0	-30.5
12085.00	V	19.6	-22.1	52.1	74.0	-21.9	**30.0	54.0	-24.0
14502.00	V	25.8	-22.1	53.9	74.0	-20.1	**31.8	54.0	-22.2
16919.00	V	21.2	-22.1	56.4	74.0	-17.6	**34.3	54.0	-19.7
19336.00	V	46.7	-22.1	56.7	74.0	-17.3	**34.6	54.0	-19.4
21753.00	V	46.9	-22.1	58.2	74.0	-15.8	**36.1	54.0	-17.9
24170.00	V	48.0	-22.1	57.4	74.0	-16.6	**35.3	54.0	-18.7
26587.00	V	48.5	-22.1	58.7	74.0	-15.3	**36.6	54.0	-17.4

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction =  $20\text{Log}(0.078) = -22.1\text{dB}$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No: (5217)091-0094

### Band-edge Measurement

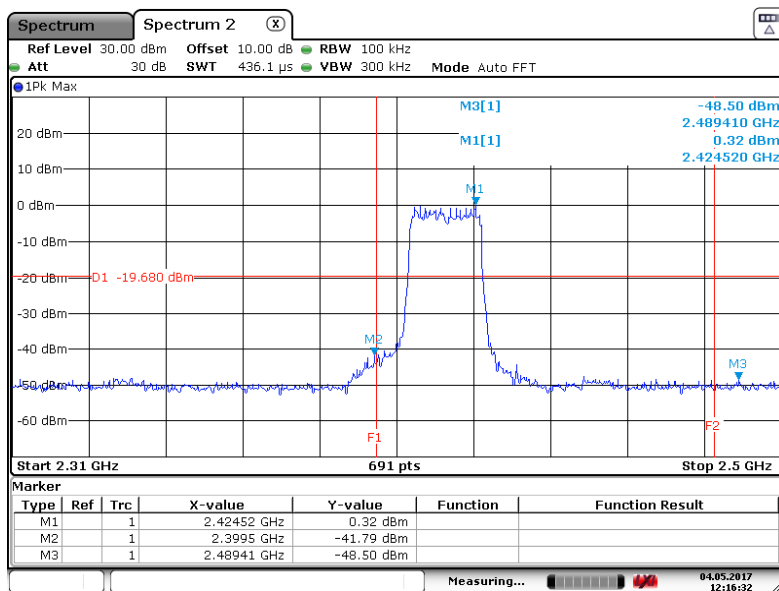
Test Requirement: FCC 47 CFR 15.247(d)  
 Test Method: ANSI C63.10 Section 11.13.2  
 Test Date(s): 2017-05-04  
 Temperature: 25.0 °C  
 Humidity: 67.0 %  
 Atmospheric Pressure: 100.2 kPa  
 Mode of Operation: Transmission mode  
 Tested Voltage: 5Vd.c.

#### Test Limits:

In any 100kHz bandwidth outside the frequency band in which the spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

#### Measurement Data :

Frequency Range [MHz]	Radiated Emission Attenuated below the Fundamental [dB]
2399.50	-41.79
2489.41	-48.50



Date: 4.MAY.2017 12:16:33



## TEST REPORT No: (5217)091-0094

### 6dB Bandwidth measurement

Test Requirement: FCC 47 CFR 15.247(a)(2)  
 Test Method: ANSI C63.10 Section 11.8.1  
 Test Date(s): 2017-05-04  
 Temperature: 25.0 °C  
 Humidity: 67.0 %  
 Atmospheric Pressure: 100.2 kPa  
 Mode of Operation: Transmission mode  
 Tested Voltage: 5Vd.c.

#### Test Method:

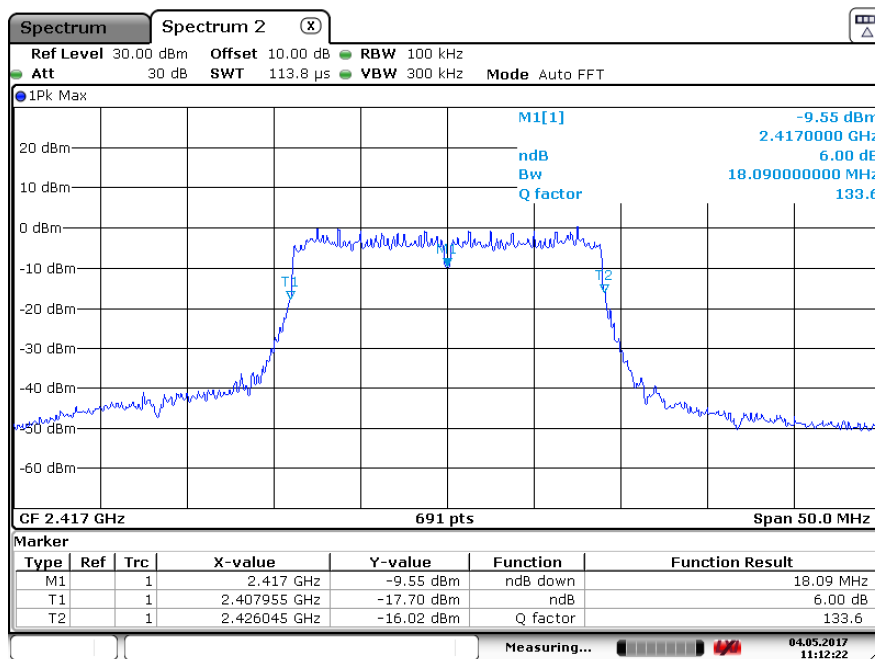
The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### Test Setup:

Refer to Maximum Peak Conducted Power Measurement

#### Measurement Data:

Fundamental Frequency [MHz]	6 dB Bandwidth [MHz]	FCC Limits
2417	18.09	≥500kHz



Date: 4.MAY.2017 11:12:23

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### Maximum Power Spectral Density Test

Test Requirement: FCC 47 CFR 15.247(e)  
Test Method: ANSI C63.10 Section 11.10.2  
Test Date(s): 2017-05-04  
Temperature: 25.0 °C  
Humidity: 67.0 %  
Atmospheric Pressure: 100.2 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 5Vd.c.

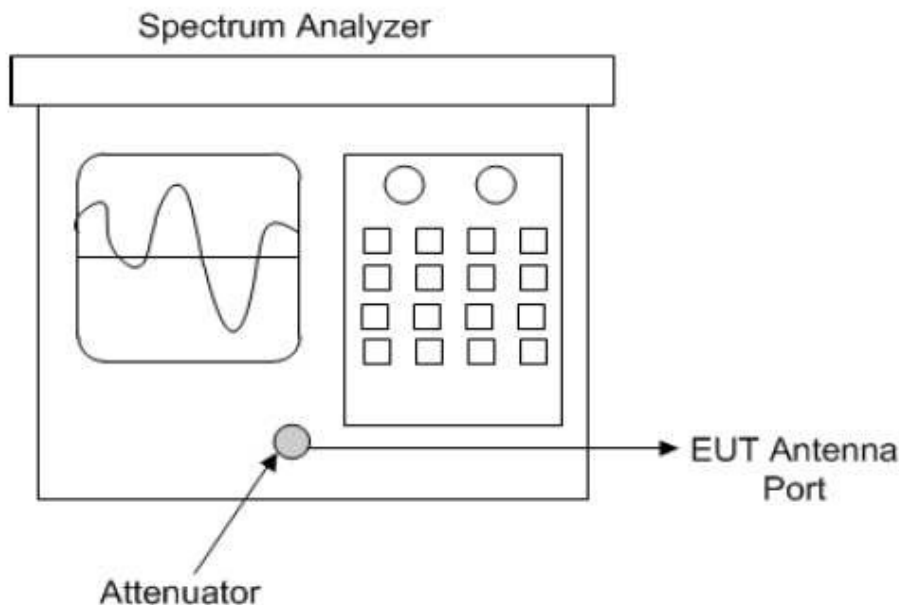
### Test Procedure:

Maximum Power Spectral Density Test measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

The RF output of the EUT was connected to spectrum analyser. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in dBm.

Location: Room 2106, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

### Test Setup:

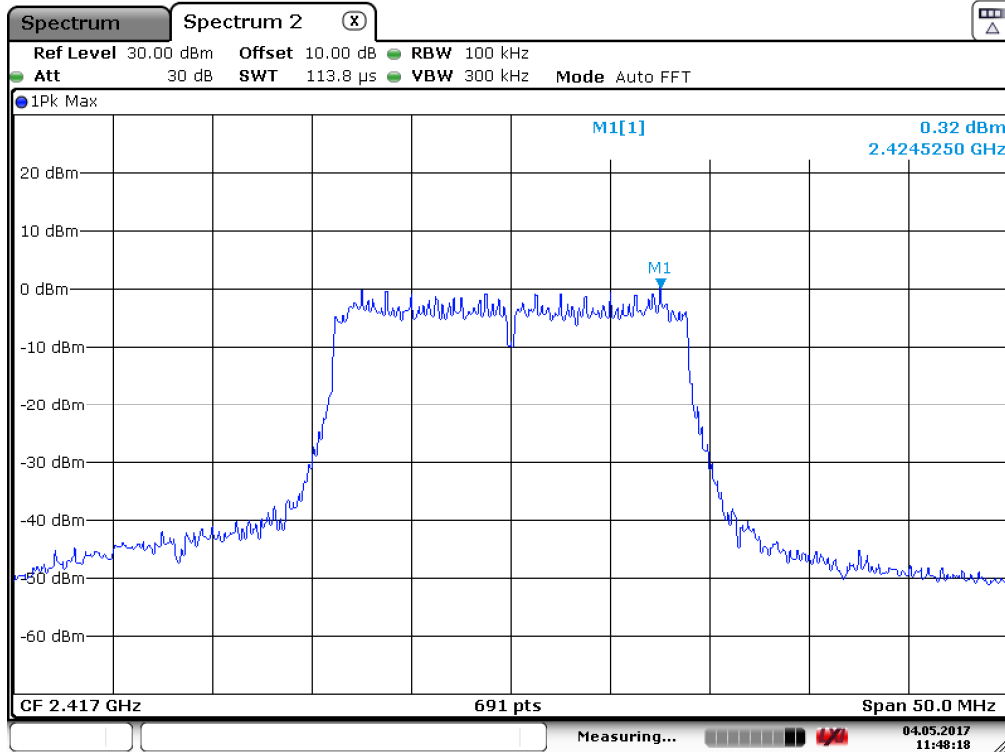




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**Test Plot of the Maximum Power Spectral Density**



Date: 4.MAY.2017 11:48:18

**Measurement Data:**

**Test Result of (Transmission mode): PASS**

Frequency (MHz)	Maximum Power Spectral Density (dBm)	Limits (dBm)
2417	0.32	8

Note: includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100kHz  
VBW = 3 x RBW



**TEST REPORT No: (5217)091-0094**

**Duty Cycle Correction During 100msec:**

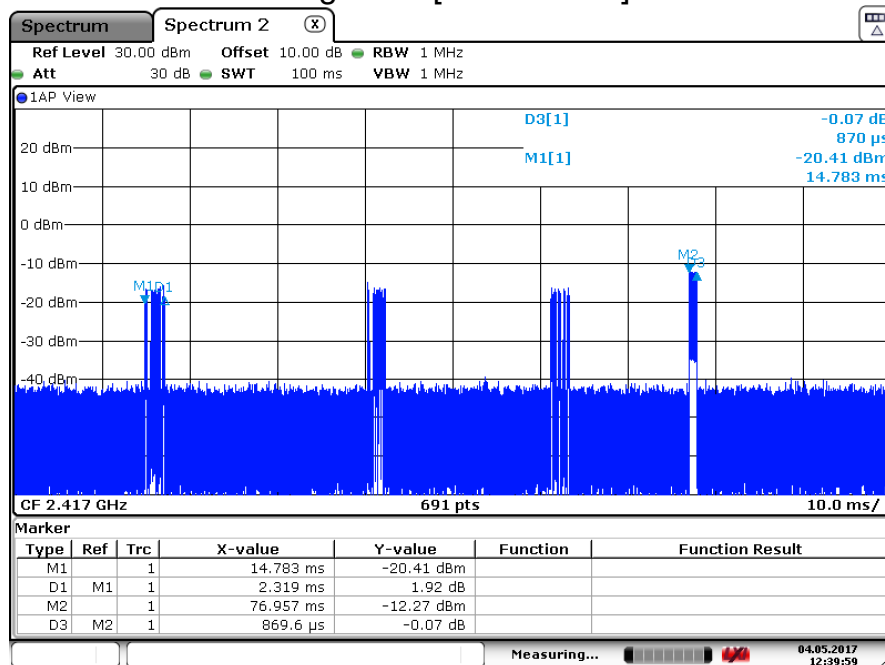
Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 3 long pulses (2.319msec) and 1 short pulse (0.8696msec). Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered  $3 \times (2.319\text{msec}) + 1 \times (0.8696\text{msec})$  per 100msec = 7.8% duty cycle. Figure A show the characteristics of the pulse train for one of these functions

Remarks:

Duty Cycle Correction =  $20\text{Log}(0.078) = -22.1\text{dB}$

The following figures [Figure A] show the characteristics of the pulse train for one of these functions.

**Figure A [Pulse Train]**



Date: 4.MAY.2017 12:39:59

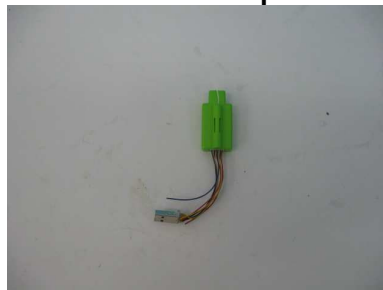
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**Photographs of EUT**

**Front View of the product**



**Rear View of the product**



**Top View of the product**



**Bottom View of the product**



**Side View of the product**



**Side View of the product**



**TEST REPORT No: (5217)091-0094**

**Photographs of EUT**

**Internal View of the product**



**Internal View of the product**



**Inner Circuit Top View**



**Inner Circuit Bottom View**



**Inner Circuit Bottom View**



**Inner Circuit Top View**



**Inner Circuit Bottom View**



**Antenna**



**TEST REPORT No: (5217)091-0094**

### **Measurement of Radiated Emission Test Set Up**



**\*\*\*\*\* End of Report \*\*\*\*\***