

TEST REPORT

FCC Part 22 Subpart H / Part 24 Subpart E/ Part 27

Report Reference No. : LCS170831042AE5

Date of Issue..... : Nov. 13, 2017

Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address..... : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
Bao'an District, Shenzhen, Guangdong, China

Applicant's Name..... : Covert Scouting Cameras, Inc

Address..... : 4338 Greenridge Spa Rd, Lewisburg, KY 42256 , US

Test SpecificationStandard..... : FCC CFR Title 47 Part 2, Part 22H, Part 24E and Part 27
EIA/TIA 603-D: 2010
KDB 971168 D01

Test Report Form No. : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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Test Item Description. : Code Black LTE

Trade Mark..... : Covert

Model/Type reference : 5472

Listed Models..... : N/A

Modulation Type : QPSK

Ratings..... : DC 6V

Hardware version..... : L4V52MG

Software version : V1.00.01

Date of Test..... : Oct. 17, 2017–Nov. 12, 2017

Result : Pass

Compiled by:



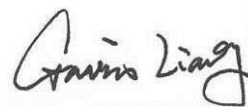
Ada Liang/ File administrators

Supervised by:



Glin Lu/ Technique principal

Approved by:



Gavin Liang/ Manager

TEST REPORT

Test Report No. :	LCS170831042AE5	Nov. 13, 2017
		Date of issue

Equipment under Test : Code Black LTE

Model /Type : 5472

Listed Models : /

Applicant : **Covert Scouting Cameras, Inc**

Address : 4338 Greenridge Spa Rd, Lewisburg, KY 42256, US

Manufacturer : **UOVision Technology (Shenzhen) Co., Ltd.**

Address : 4th Floor, A1 Building, Shunheda Factory,
liuxiandong Industrial Zone, Xili street, Nanshan
District, Shenzhen CHN 518055

Test result	Pass *
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* In the configuration tested, the EUT complied with the standards specified page 5.

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	Nov. 13, 2017	Initial Issue	Gavin Liang

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1 SUMMARY

1.1 TEST STANDARDS

The tests were performed according to following standards:

[FCC Part 22](#): PRIVATE LAND MOBILE RADIO SERVICES.

[FCC Part 24](#): PUBLIC MOBILE SERVICES

[FCC Part 27](#): MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

[TIA/EIA 603 D June 2010](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[FCC Part 2](#): FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[KDB971168 D01:v02r02](#) MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

[ANSI C63.10-2013](#) Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

1.2 Test Description

Test Item	Section in CFR 47	Result
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c) Part 27.50(d)	Pass
Peak-to-Average Ratio	Part 24.232 (d) Part 27.50(d)	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a) Part 27.53(h)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a) Part 27.53(h)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a) Part 27.53(h)	Pass
Frequency stability	Part 2.1055 Part 22.355 Part 24.235 Part 27.54	Pass

1.3 Test Facility

1.3.1 Address of the test laboratory

Shenzhen LCS Compliance Testing Laboratory Ltd.

1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China

There is one 3m semi-anechoic chamber fulfils CISPR 16-1-4 according to ANSI C63.10:2013 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.3.2 Laboratory accreditation

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

CNAS Registration Number. is L4595.

FCC Designation Number. is CN5024.

Industry Canada Registration Number. is 9642A-1.

ESMD Registration Number. is ARCB0108.

UL Registration Number. is 100571-492.

TUV SUD Registration Number. is SCN1081.

TUV RH Registration Number. is UA 50296516-001

1.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	3.10 dB	(1)
Radiated Emission	1~18GHz	3.80 dB	(1)
Radiated Emission	18-40GHz	3.90 dB	(1)
Conducted Disturbance	0.15~30MHz	1.63 dB	(1)
Conducted Power	9KHz~18GHz	0.61 dB	(1)
Spurious RF Conducted Emission	9KHz~40GHz	1.22 dB	(1)
Band Edge Compliance of RF Emission	9KHz~40GHz	1.22 dB	(1)
Occupied Bandwidth	9KHz~40GHz	-	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

2 GENERAL INFORMATION

2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2 General Description of EUT

Product Name:	Code Black LTE
Model/Type reference:	5472
Power supply:	DC 6.0V from battery
WCDMA	
Operation Band:	FDD Band II & Band IV & Band V
Power Class:	Power Class 3
Modulation Type:	QPSK for WCDMA/HSUPA/HSDPA
WCDMA Release Version:	R99
HSDPA Release Version:	Release 7, CAT14
HSUPA Release Version:	Release 6, CAT6
Antenna type:	External antenna
Antenna gain:	5dBi

Note: For more details, refer to the user's manual of the EUT.

2.3 Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The CUM200 used to control the EUT staying in continuous transmitting and receiving mode for testing. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

Test Frequency:

FDD Band II		FDD Band IV		FDD Band V	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
9262	1852.4	1312	1712.4	4132	826.40
9400	1880.0	1413	1732.6	4182	836.60
9538	1907.6	1513	1752.6	4233	846.60

Test Modes:

The test mode(s) are selected according to relevant radio technology specifications.

Test Mode	Test Modes Description
Mode 1	WCDMA system, QPSK modulation
Mode 2	HSDPA system, QPSK modulation
Mode 3	HSUPA system, QPSK modulation

Note:

1. As WCDMA, HSDPA and HSUPA with the same emission designator, test result recorded in this report at the worst case Mode 1 only after exploratory scan.

2.4 Equipments Used during the Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	EMC Receiver	R&S	ESCS 30	100174	2017-06-18	2018-06-17
2	Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	2017-07-16	2018-06-17
3	Spectrum Analyzer	Agilent	N9020A	MY50510140	2017-10-27	2018-10-26
4	LISN	MESS Tec	NNB-2/16Z	99079	2017-06-18	2018-06-17
5	LISN	EMCO	3819/2NM	9703-1839	2017-06-18	2018-06-17
6	RF Cable-CON	UTIFLEX	3102-26886-4	CB049	2017-06-18	2018-06-17
7	ISN	SCHAFFNER	ISN ST08	21653	2017-06-18	2018-06-17
8	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2017-06-18	2018-06-17
9	Amplifier	SCHAFFNER	COA9231A	18667	2017-06-18	2018-06-17
10	Amplifier	Agilent	8449B	3008A02120	2017-06-16	2018-06-15
11	Amplifier	MITEQ	AMF-6F-260400	9121372	2017-06-16	2018-06-15
12	Loop Antenna	R&S	HFH2-Z2	860004/001	2017-06-18	2018-06-17
13	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2017-06-10	2018-06-09
14	Horn Antenna	EMCO	3115	6741	2017-06-10	2018-06-09
15	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	2017-06-10	2018-06-09
16	RF Cable-R03m	Jye Bao	RG142	CB021	2017-06-18	2018-06-17
17	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2017-06-18	2018-06-17
18	Power Sensor	R&S	NRV-Z81	100458	2017-06-18	2018-06-17
19	Power Sensor	R&S	NRV-Z32	10057	2017-06-18	2018-06-17
20	Power Meter	R&S	NRVS	100444	2017-06-18	2018-06-17
21	Universal Radio Communication Tester	R&S	CMU200	112012	2017-10-27	2018-10-26
22	Wideband Radio Communication Tester	R&S	CMW500	1201.0002K50	2016-11-19	2017-11-18

2.5 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2ANR6-5472 filing to comply with of the FCC Part 22 and Part 24 Rules.

2.6 Modifications

No modifications were implemented to meet testing criteria.

3 TEST CONDITIONS AND RESULTS

3.1 Output Power

LIMIT

GSM850/WCDMA Band V: 7W

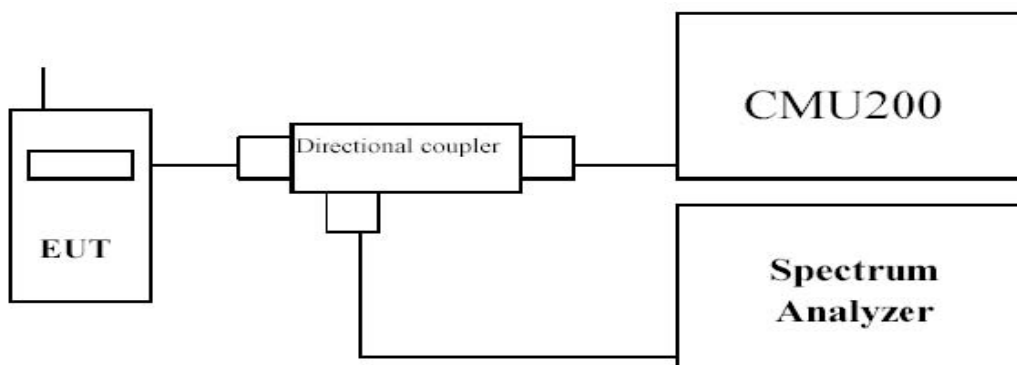
PCS1900/WCDMA Band II: 2W

WCDMA Band IV: 1W

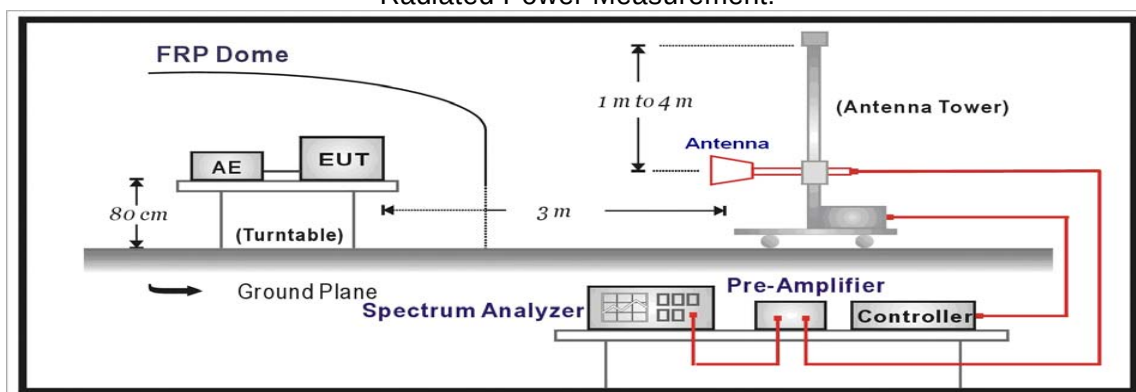
The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION

Conducted Power Measurement



Radiated Power Measurement:



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Conducted Power Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- EUT Communicate with CMU200 then selects a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

Radiated Power Measurement:

- a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c) The output of the test antenna shall be connected to the measuring receiver.
- d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h) The maximum signal level detected by the measuring receiver shall be noted.
- i) The transmitter shall be replaced by a substitution antenna.
- j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k) The substitution antenna shall be connected to a calibrated signal generator.
- l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

TEST RESULTS**Conducted Measurement:**

EUT Mode	Channel	Frequency (MHz)	Avg.Burst Power (dBm)	Peak-to-Average Ratio (dB)	Limit (dBm)	Result
WCDMA Band II (QPSK)	9262	1852.40	23.39	3.54	33.01	Pass
	9400	1880.00	23.86	3.69		
	9538	1907.60	23.80	3.48		
WCDMA Band IV (QPSK)	1312	1712.40	23.62	3.26	30.00	Pass
	1412	1732.60	23.44	3.55		
	1513	1752.60	23.62	3.15		
WCDMA Band V (QPSK)	4132	826.40	23.29	/	38.45	Pass
	4183	836.60	23.39	/		
	4233	846.60	23.46	/		

Note: 1. Peak-to-Average Ratio= maximum PK burst power-maximum Avg. burst power.

Radiated Measurement:

Note: 1. The field strength of radiation emission was measured in the following position: EUT stand-up position (Zaxis), lie-down position (X, Y axis). The data show in this report only with the worst case setup. After exploratory measurement the worst case of Z axis was reported.

Note: 2. We test the H direction and V direction and V direction is worse.

WCDMA BAND II

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
9262	-15.00	3.42	10.24	33.6	25.42	33.01	7.59	V
9400	-14.10	3.49	10.24	33.6	26.25	33.01	6.76	V
9538	-14.60	3.54	10.23	33.6	25.69	33.01	7.32	V

WCDMA BAND IV

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	P _{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1312	-13.92	3.15	9.58	33.6	26.11	30.00	3.89	V
1413	-14.82	3.17	9.62	33.6	25.23	30.00	4.77	V
1513	-14.18	3.26	9.71	33.6	25.87	30.00	4.13	V

WCDMA BAND V

Channel	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Correction (dB)	P _{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4132	-15.84	2.43	8.45	2.15	36.82	24.85	38.45	13.60	V
4183	-15.56	2.46	8.45	2.15	36.82	25.10	38.45	13.35	V
4233	-15.53	2.52	8.36	2.15	36.82	24.98	38.45	13.47	V

Remark:

1. $EIRP = P_{Mea}(dBm) - P_{cl}(dB) + P_{Ag}(dB) + G_a(dBi)$

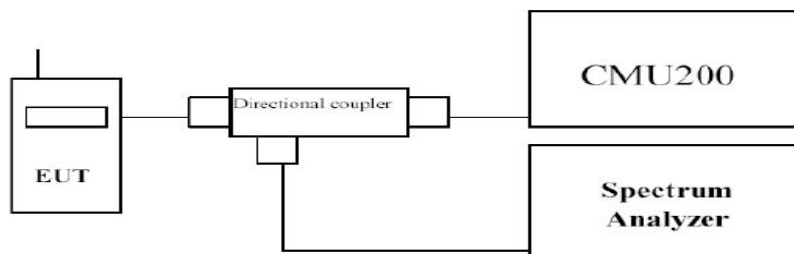
2. $ERP = EIRP - 2.15dBi$ as EIRP by subtracting the gain of the dipole.

3.2 Occupied Bandwidth

LIMIT

N/A

TEST CONFIGURATION



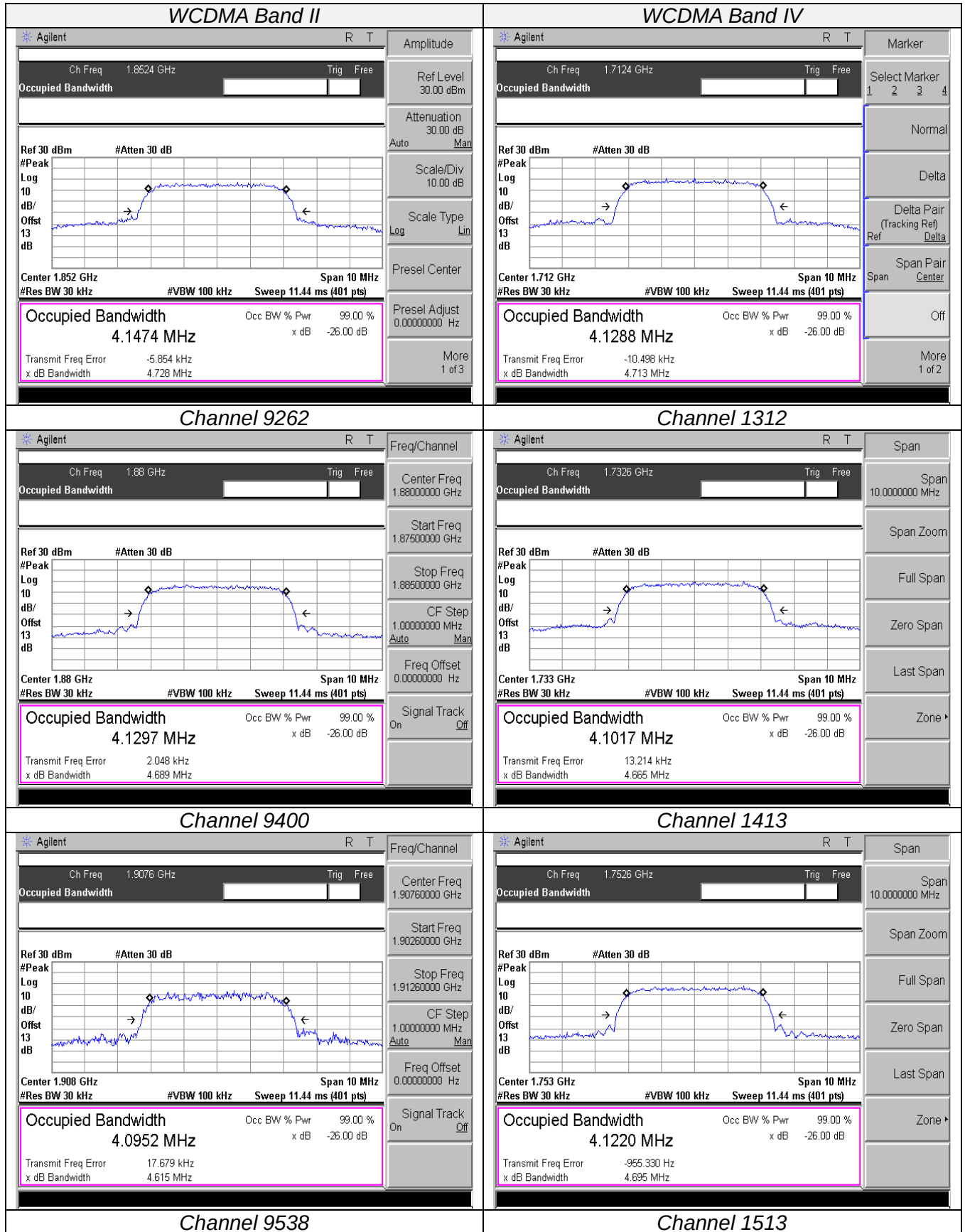
TEST PROCEDURE

1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer
2. RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW.
3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
WCDMA Band II (QPSK)	9262	1852.4	4.1474	4.728
	9400	1880.0	4.1297	4.689
	9538	1907.6	4.0952	4.615
WCDMA Band VI (QPSK)	1312	1712.4	4.1288	4.713
	1413	1732.6	4.1017	4.665
	1513	1752.6	4.1220	4.695
WCDMA Band V (QPSK)	4132	826.4	4.1180	4.718
	4183	836.6	4.1210	4.721
	4233	846.6	4.1251	4.687

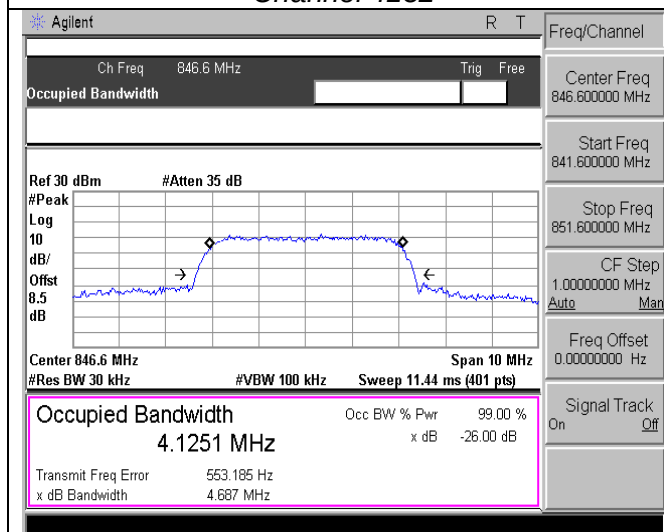
Test plots as follow:



WCDMA Band V

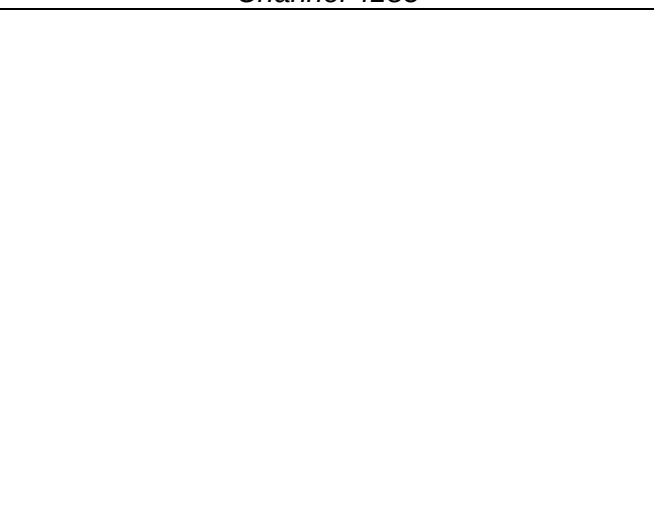


Channel 4132



Channel 4233

Channel 4183

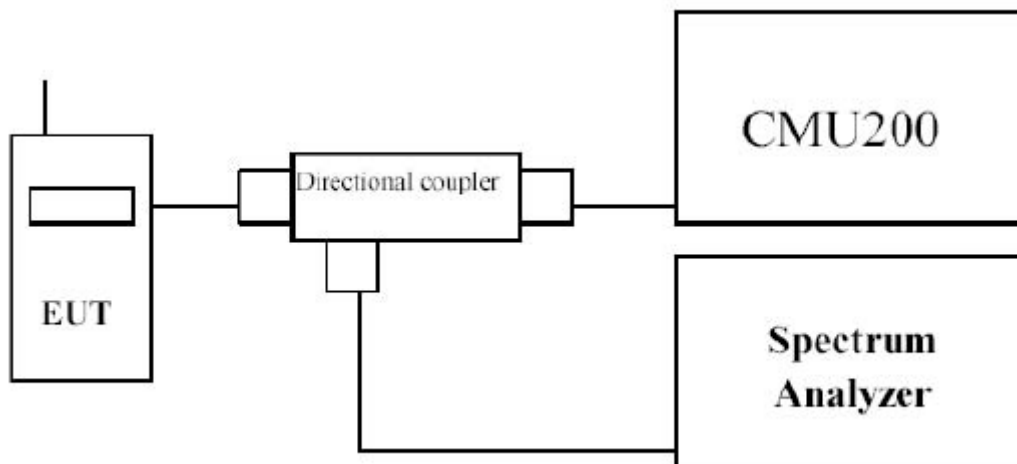


3.3 Band Edge compliance

LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

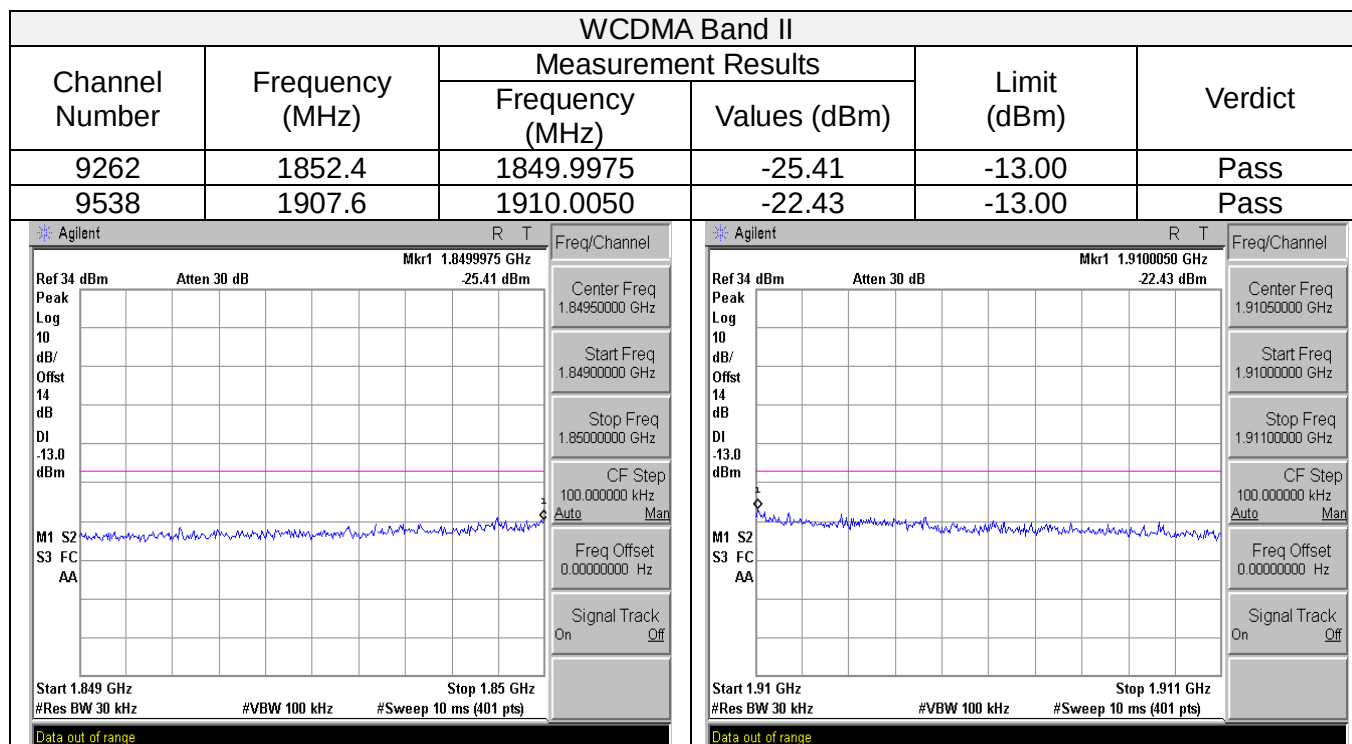
TEST CONFIGURATION

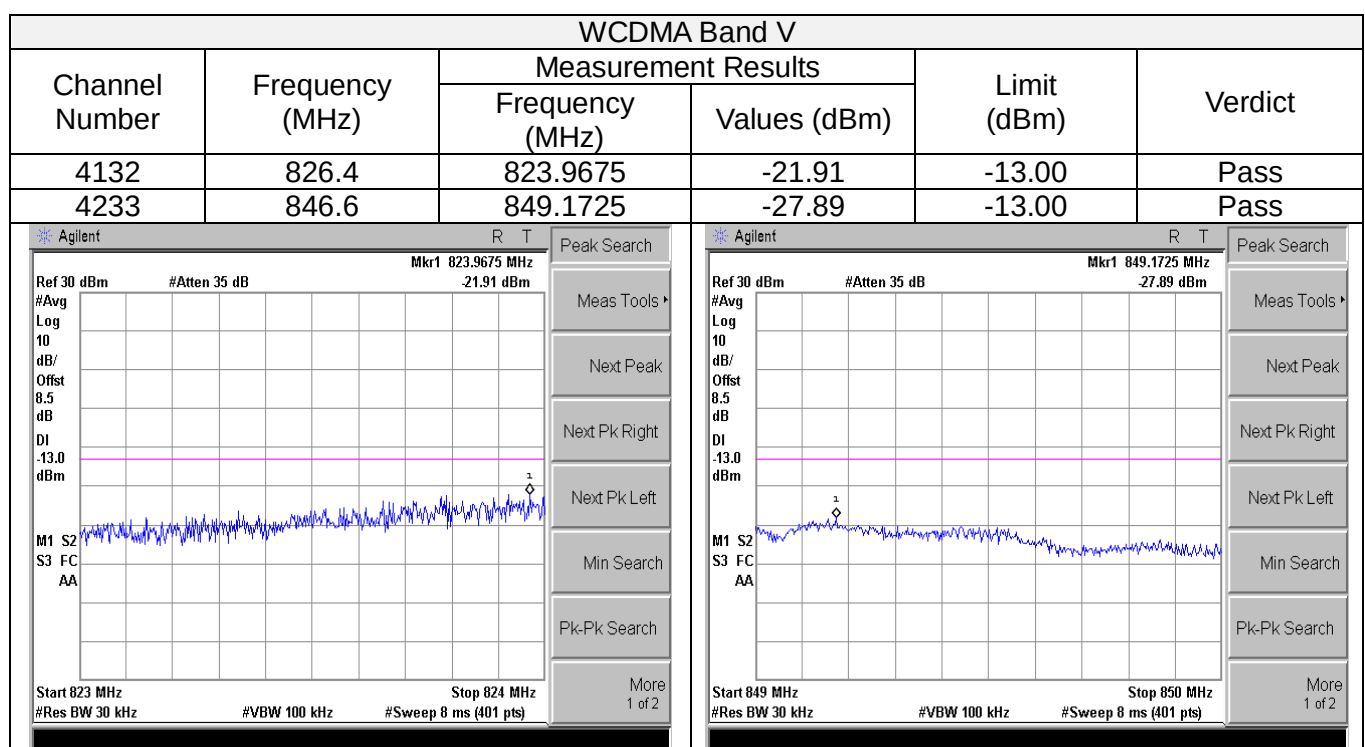
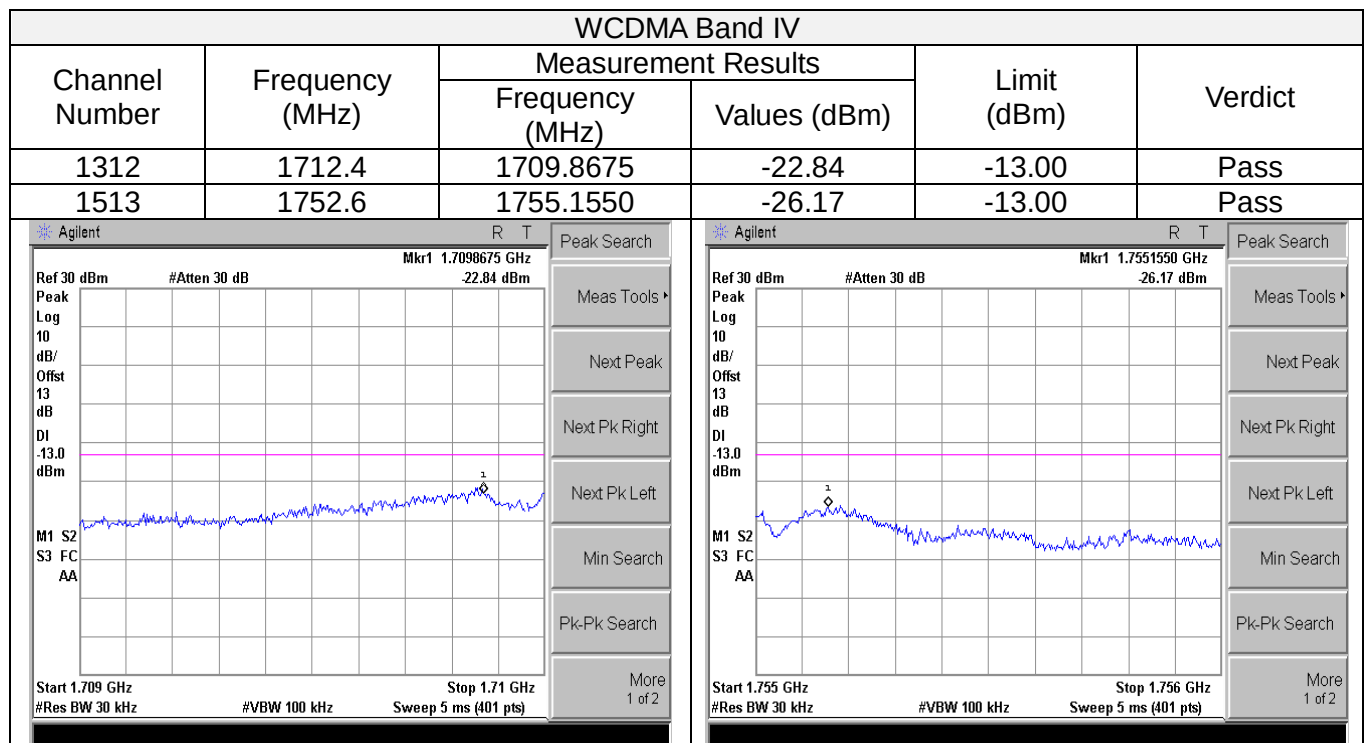


TEST PROCEDURE

In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.

TEST RESULTS





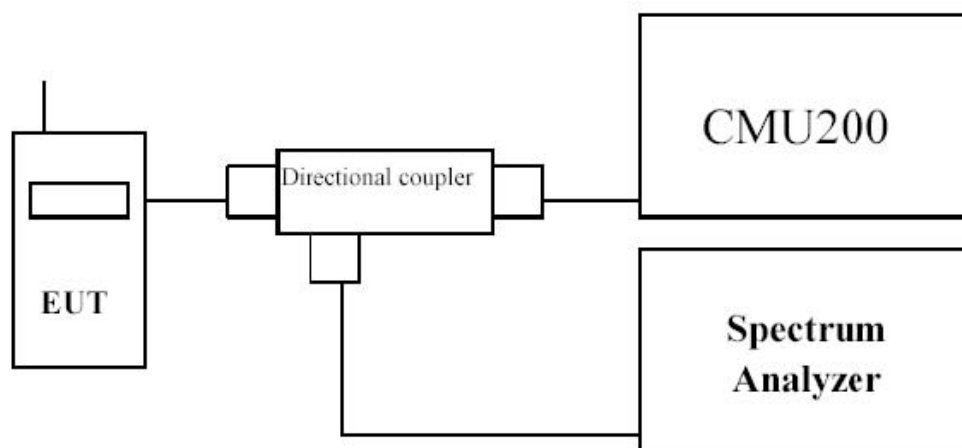
3.4 Spurious Emission

LIMIT

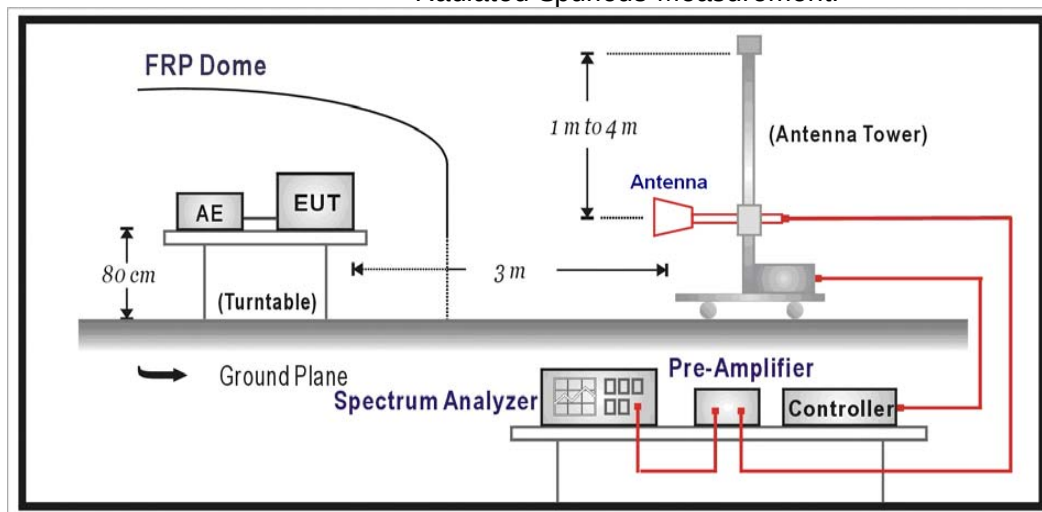
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

TEST CONFIGURATION

Conducted Spurious Measurement:



Radiated Spurious Measurement:



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

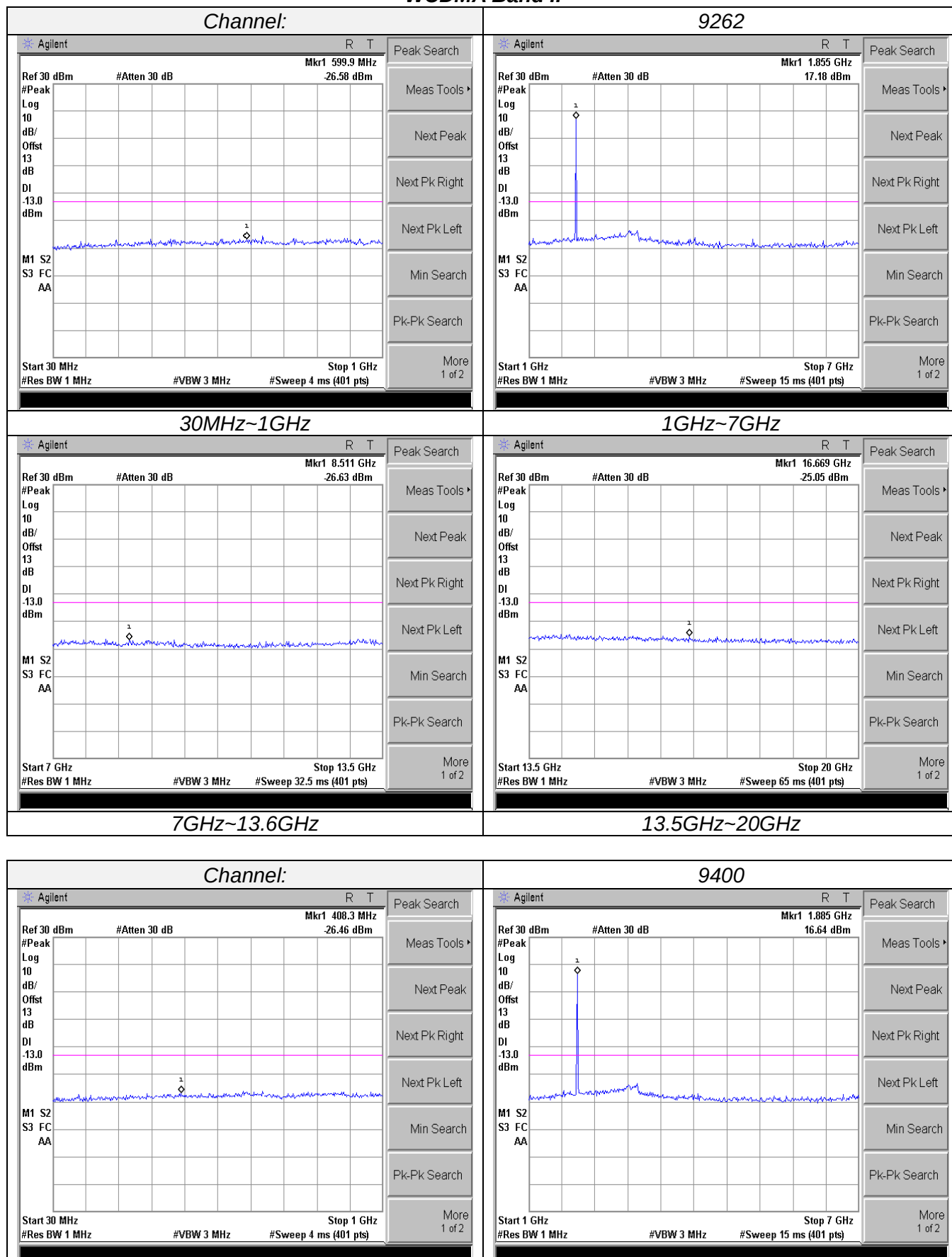
Conducted Spurious Measurement:

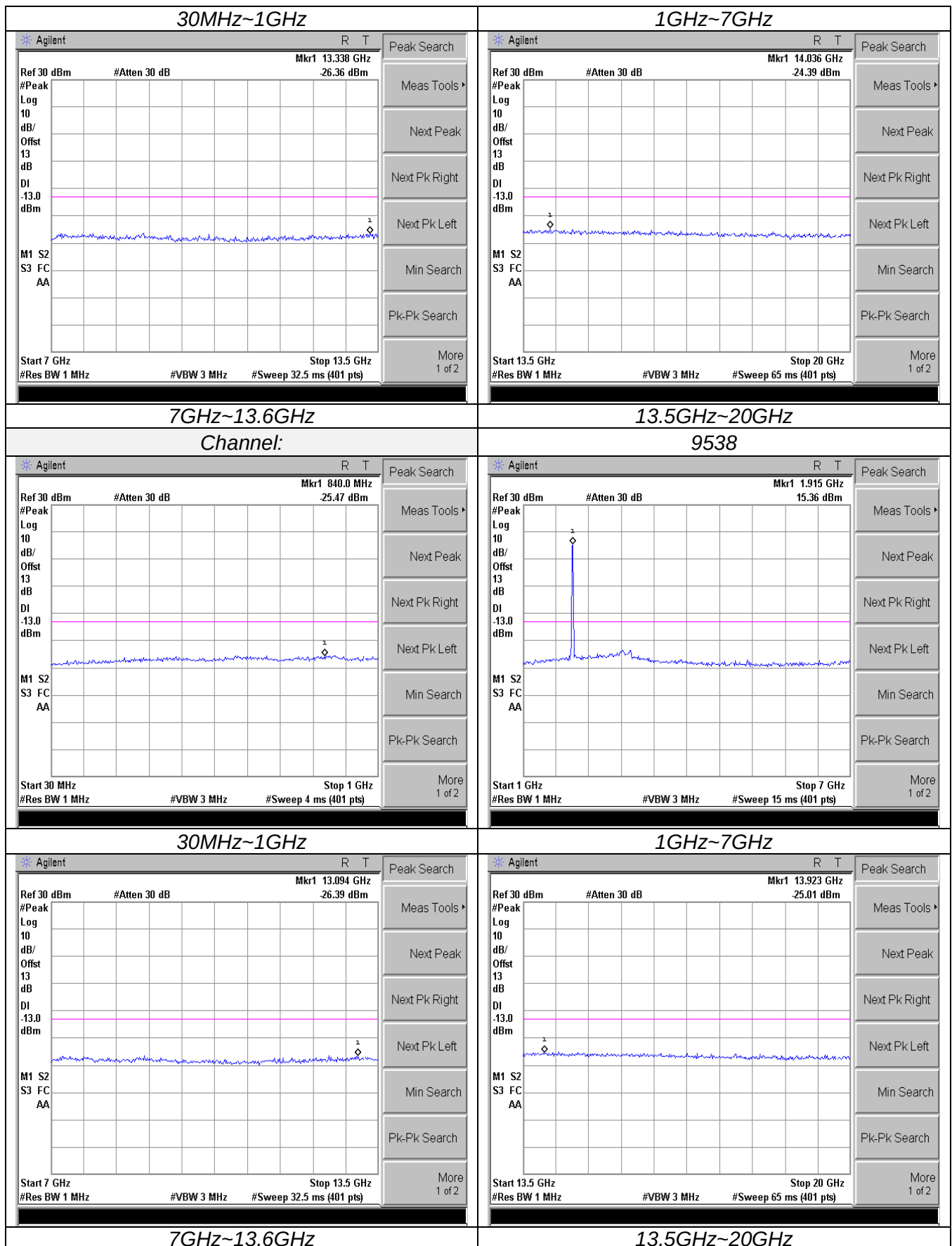
- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMU200 by a Directional Couple.
- EUT Communicate with CMU200 then selects a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

- e) The resolution bandwidth of the spectrum analyzer was set at 1MHz for Part 22 and 1MHz for Part 24, sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

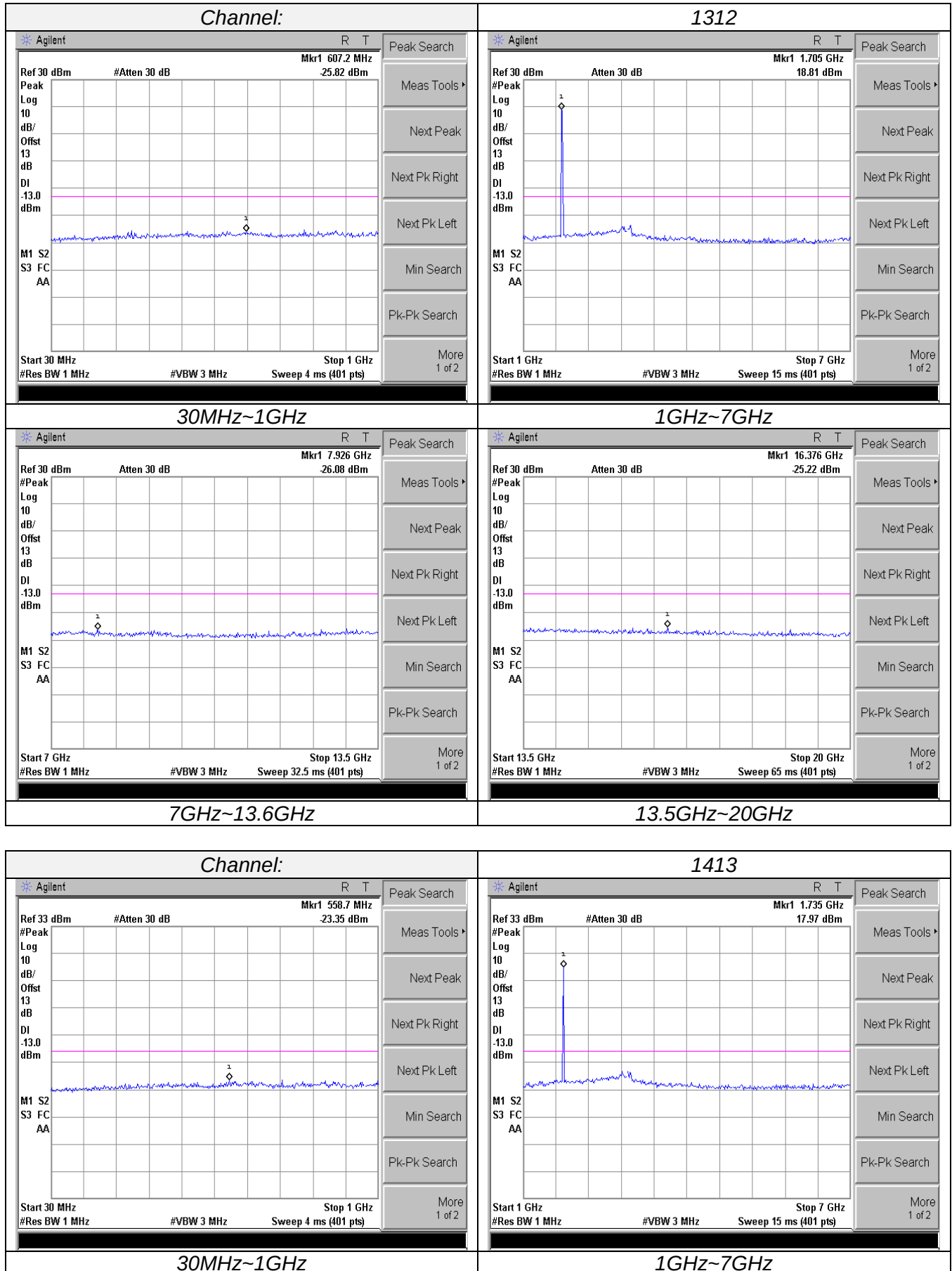
Radiated Spurious Measurement:

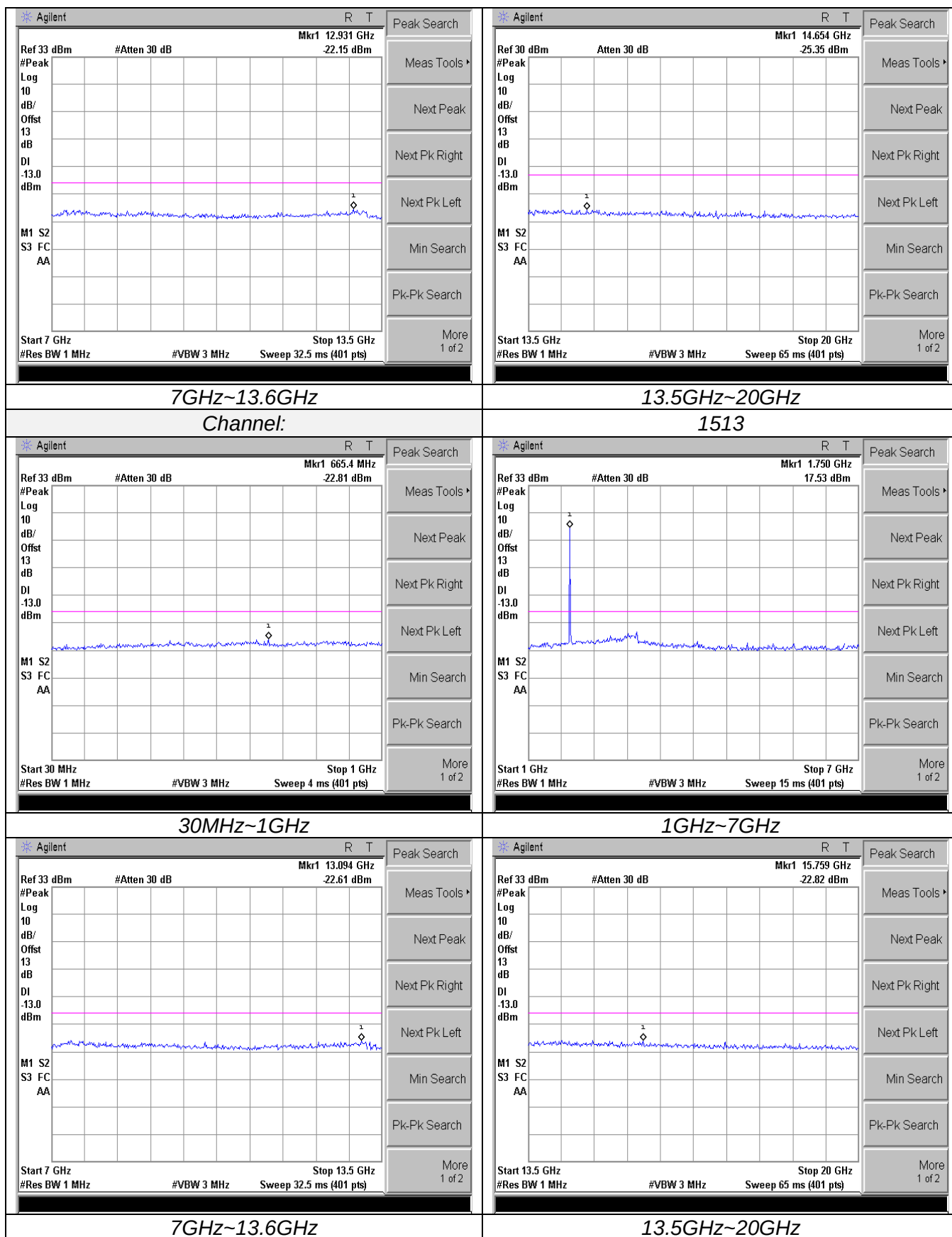
- a) The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b) The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c) The output of the test antenna shall be connected to the measuring receiver.
- d) The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e) The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h) The maximum signal level detected by the measuring receiver shall be noted.
- i) The transmitter shall be replaced by a substitution antenna.
- j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k) The substitution antenna shall be connected to a calibrated signal generator.
- l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q) The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24. The frequency range was checked up to 10th harmonic.

TEST RESULTS**Conducted Measurement:****WCDMA Band II**

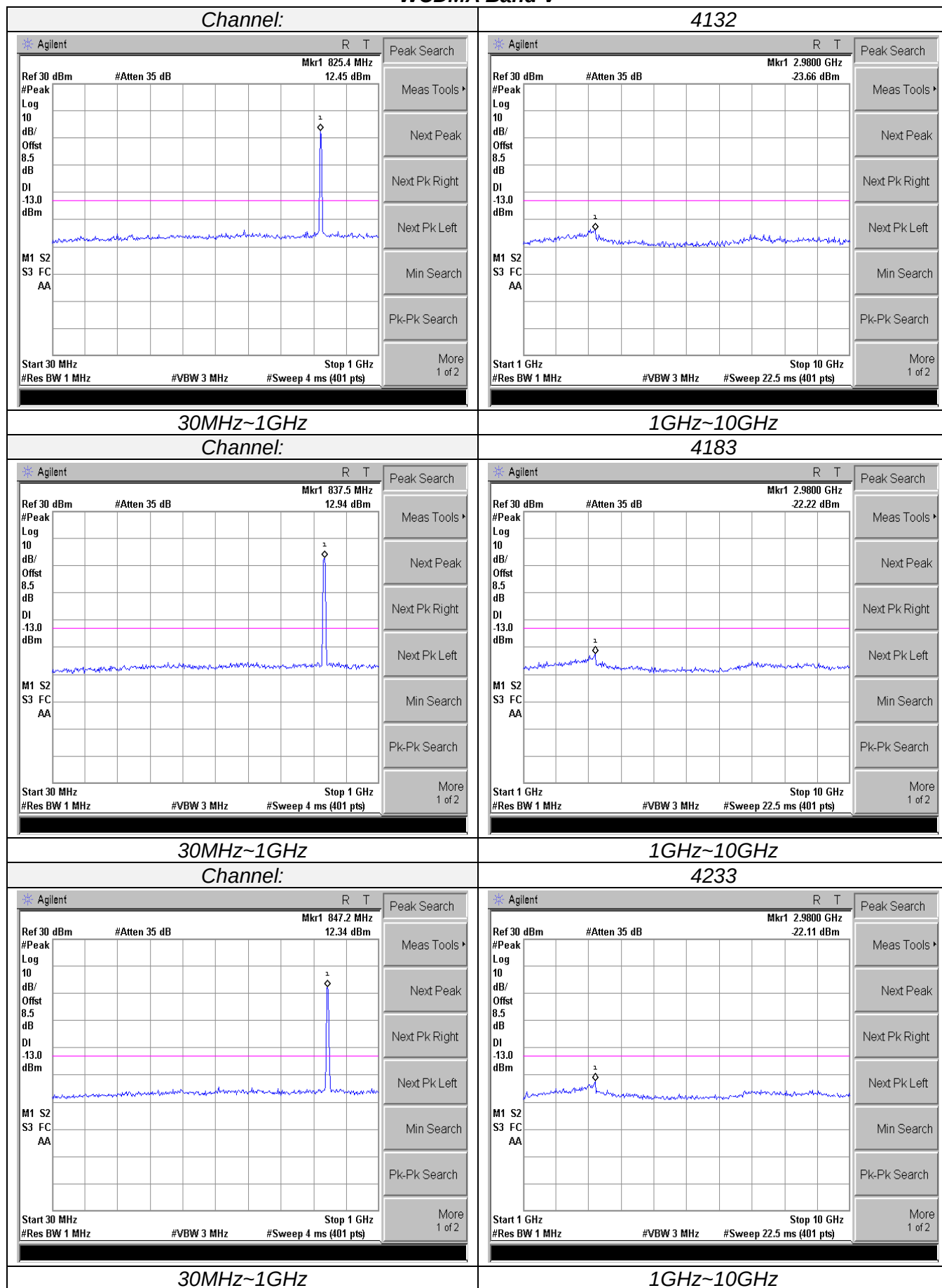


WCDMA Band IV





WCDMA Band V



Radiated Measurement:**WCDMA Band II**

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
9262	3704.80	-37.32	4.27	3.00	12.34	-29.25	-13.00	16.25	H
	5557.20	-41.81	4.99	3.00	13.52	-33.28	-13.00	20.28	H
	3704.80	-36.70	4.27	3.00	12.34	-28.63	-13.00	15.63	V
	5557.20	-40.10	4.99	3.00	13.52	-31.57	-13.00	18.57	V
9400	3760.00	-38.37	4.38	3.00	12.34	-30.41	-13.00	17.41	H
	5640.00	-43.22	5.01	3.00	13.58	-34.65	-13.00	21.65	H
	3760.00	-37.18	4.38	3.00	12.34	-29.22	-13.00	16.22	V
	5640.00	-41.31	5.01	3.00	13.58	-32.74	-13.00	19.74	V
9538	3815.20	-37.96	4.47	3.00	12.45	-29.98	-13.00	16.98	H
	5722.80	-42.17	5.23	3.00	13.66	-33.74	-13.00	20.74	H
	3815.20	-36.26	4.47	3.00	12.45	-28.28	-13.00	15.28	V
	5722.80	-40.06	5.23	3.00	13.66	-31.63	-13.00	18.63	V

WCDMA Band IV

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1312	3424.80	-37.54	3.98	3.00	10.98	-30.54	-13.00	17.54	H
	5137.20	-41.59	4.11	3.00	11.47	-34.23	-13.00	21.23	H
	3424.80	-36.98	3.98	3.00	10.98	-29.98	-13.00	16.98	V
	5137.20	-39.47	4.11	3.00	11.47	-32.11	-13.00	19.11	V
1413	3465.20	-36.56	4.01	3.00	11.25	-29.32	-13.00	16.32	H
	5197.80	-40.64	4.15	3.00	11.58	-33.21	-13.00	20.21	H
	3465.20	-34.39	4.01	3.00	11.25	-27.15	-13.00	14.15	V
	5197.80	-39.06	4.15	3.00	11.58	-31.63	-13.00	18.63	V
1513	3505.20	-37.51	4.07	3.00	11.33	-30.25	-13.00	17.25	H
	5275.80	-41.96	4.21	3.00	11.67	-34.5	-13.00	21.50	H
	3505.20	-37.04	4.07	3.00	11.33	-29.78	-13.00	16.78	V
	5275.80	-40.03	4.21	3.00	11.67	-32.57	-13.00	19.57	V

WCDMA Band V

Channel	Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	Distance	G _a Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
9262	1652.80	-35.81	3.02	3.00	9.58	-29.25	-13.00	16.25	H
	2479.20	-40.79	3.51	3.00	10.72	-33.58	-13.00	20.58	H
	1652.80	-35.55	3.02	3.00	9.68	-28.89	-13.00	15.89	V
	2479.20	-38.42	3.51	3.00	10.72	-31.21	-13.00	18.21	V
9400	1673.20	-35.10	3.14	3.00	9.61	-28.63	-13.00	15.63	H
	2509.80	-39.51	3.59	3.00	10.77	-32.33	-13.00	19.33	H
	1673.20	-33.68	3.14	3.00	9.61	-27.21	-13.00	14.21	V
	2509.80	-37.30	3.59	3.00	10.77	-30.12	-13.00	17.12	V
9538	1693.20	-37.07	3.24	3.00	9.77	-30.54	-13.00	17.54	H
	2539.80	-40.59	3.65	3.00	10.89	-33.35	-13.00	20.35	H
	1693.20	-36.03	3.24	3.00	9.77	-29.50	-13.00	16.50	V
	2539.80	-38.95	3.65	3.00	10.89	-31.71	-13.00	18.71	V

Remark:

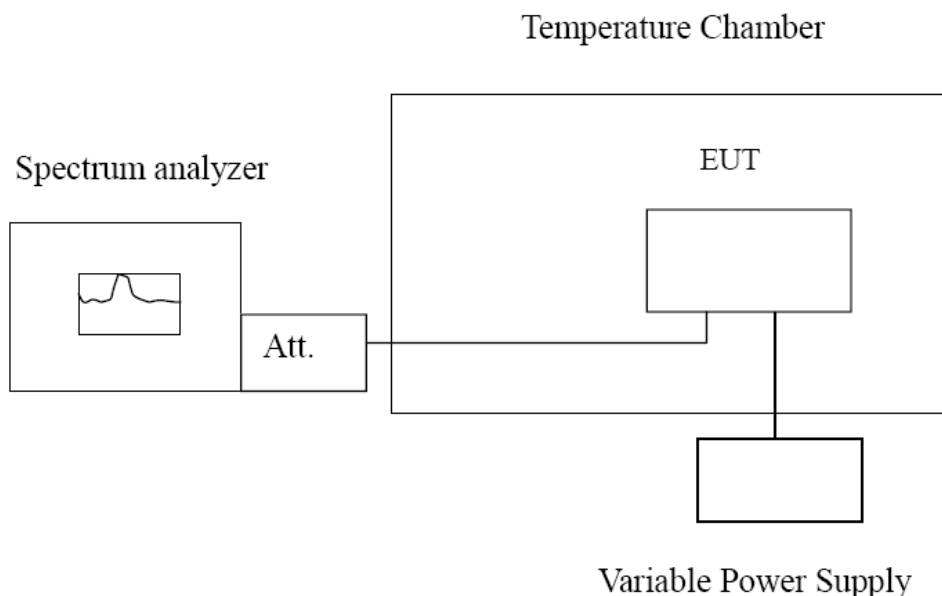
- 1. $EIRP = P_{Mea}(dBm) - P_{cl}(dB) + G_a(dBi)$*
- 2. We were not recorded other points as values lower than limits.*
- 3. $Margin = Limit - EIRP$*

3.5 Frequency Stability under Temperature & Voltage Variations

LIMIT

Cellular Band: ± 2.5 ppm PCS Band: Within the authorized frequency block

TEST CONFIGURATION



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603C

Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

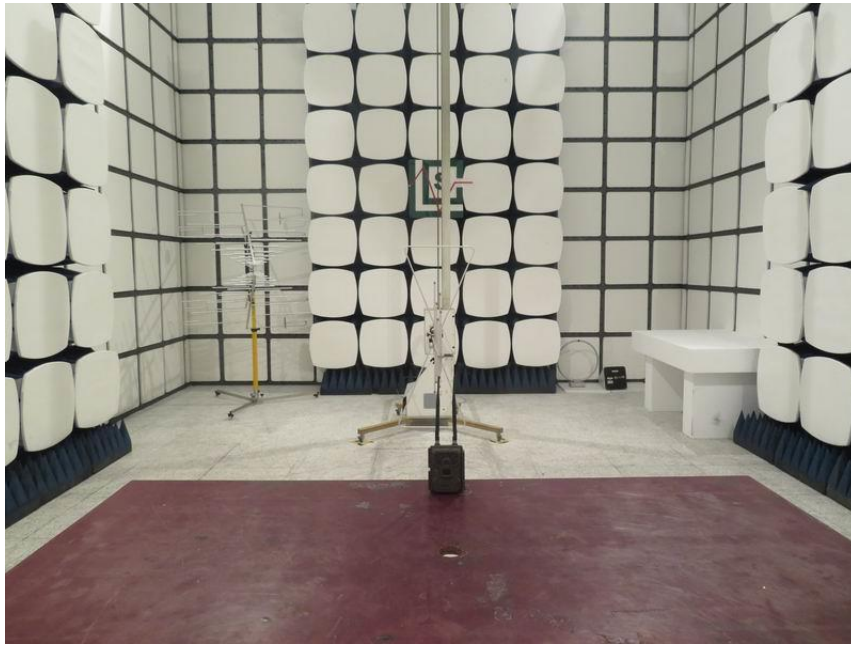
TEST RESULTS

Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
6.00	-30	51.40	0.027	Within the authorized frequency block	Pass
	-20	39.31	0.021		
	-10	83.49	0.044		
	0	53.32	0.028		
	10	47.56	0.025		
	20	60.45	0.032		
	30	38.91	0.021		
	40	36.88	0.020		
5.10	25	98.06	0.052	Within the authorized frequency block	Pass
End point 4.50	25	61.17	0.033		

Reference Frequency: WCDMA Band IV Middle channel=1413 channel=1732.6MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
6.00	-30	94.57	0.055	Within the authorized frequency block	Pass
	-20	41.36	0.024		
	-10	77.52	0.045		
	0	93.54	0.054		
	10	88.79	0.051		
	20	90.37	0.052		
	30	53.08	0.031		
	40	60.43	0.035		
5.10	25	39.33	0.023	Within the authorized frequency block	Pass
End point 4.50	25	83.76	0.048		

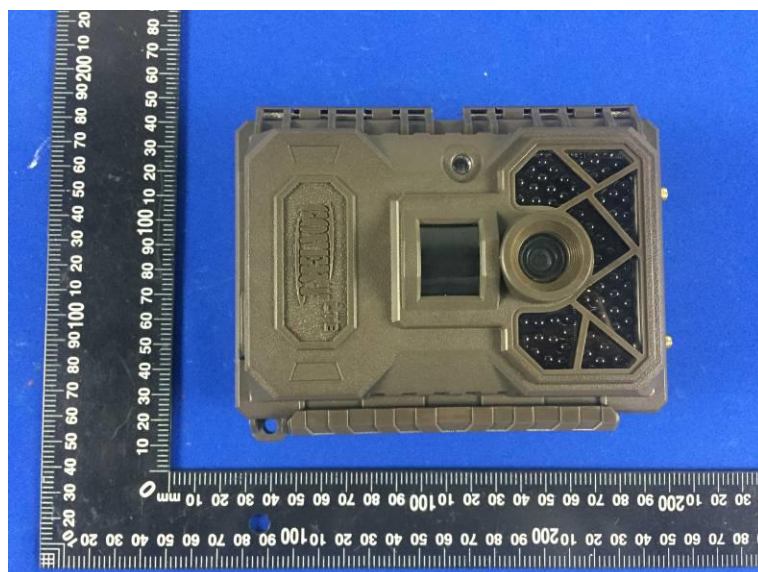
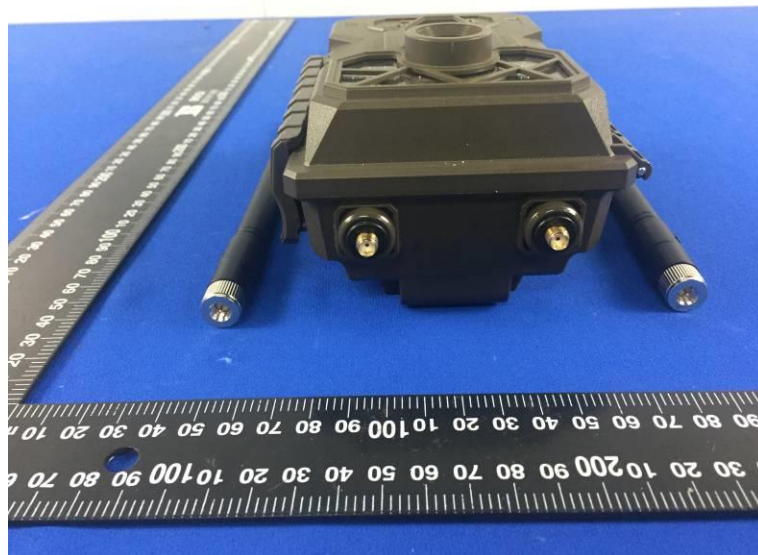
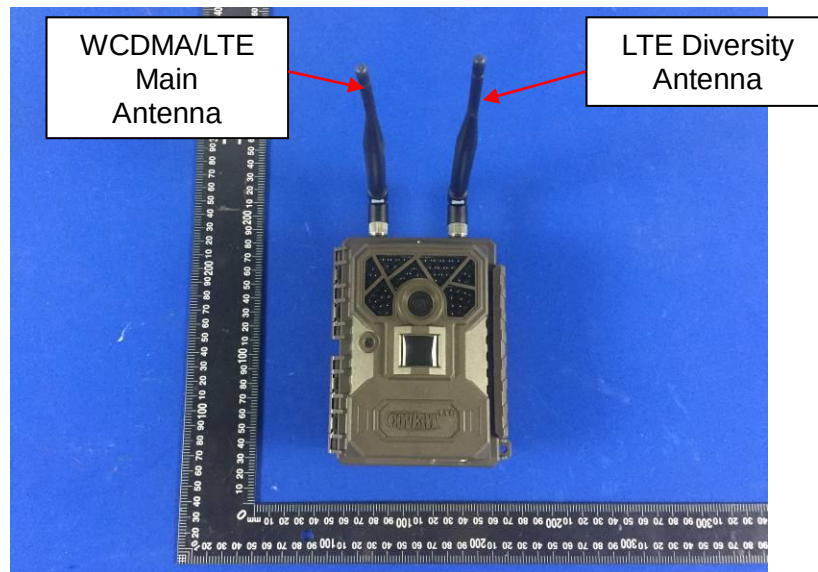
Reference Frequency: WCDMA Band V Middle channel=4182 channel=836.6MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
6.00	-30	94.25	0.113	2.5	Pass
	-20	70.74	0.085		
	-10	76.24	0.091		
	0	75.72	0.091		
	10	48.74	0.058		
	20	82.62	0.099		
	30	50.30	0.060		
	40	56.28	0.067		
5.10	25	95.53	0.114	2.5	Pass
End point 4.50	25	35.01	0.042		

4 Test Setup Photos of the EUT

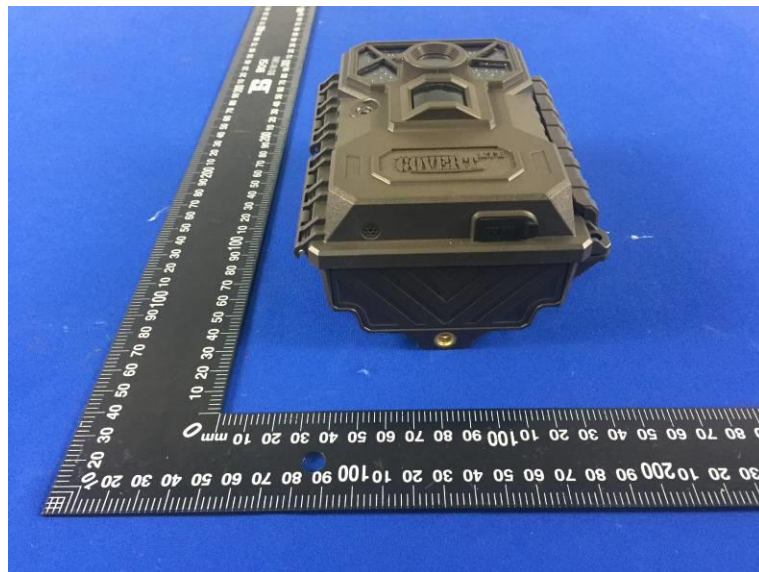


5 Photos of the EUT

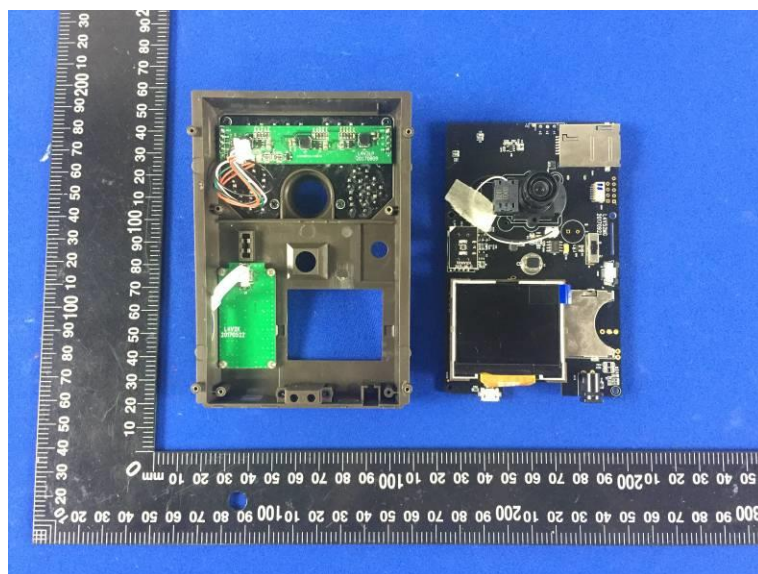
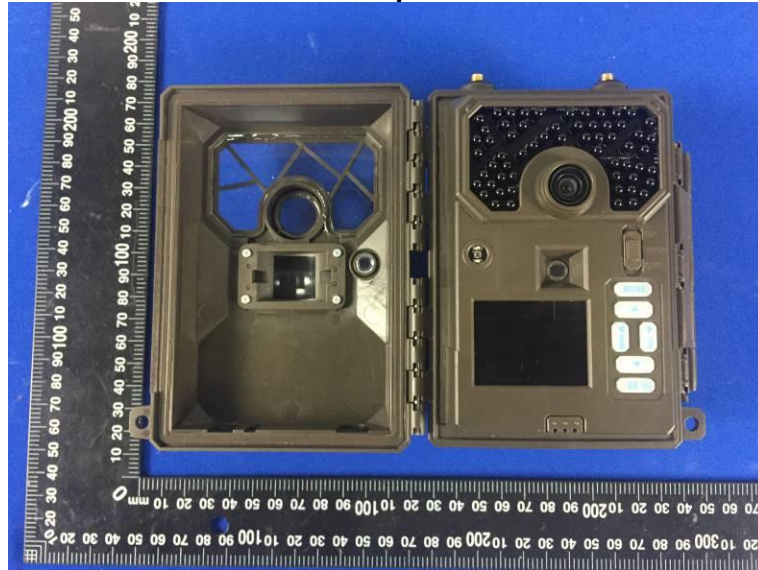
External photos

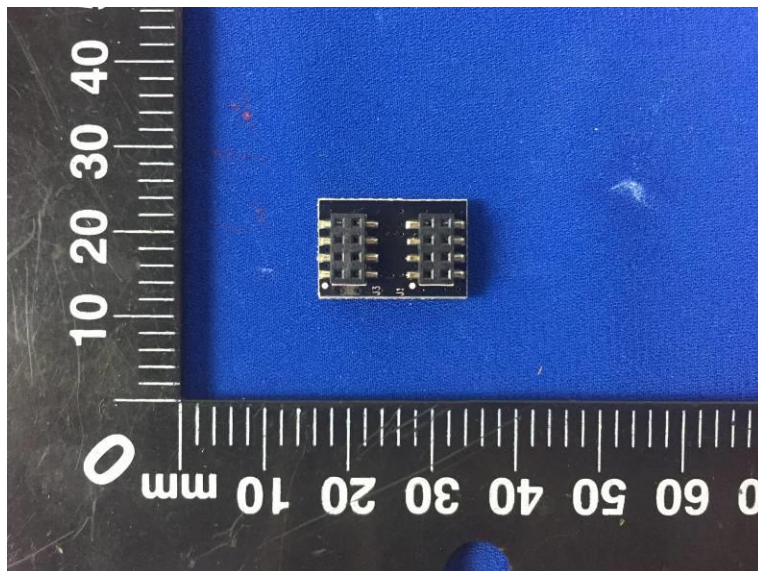
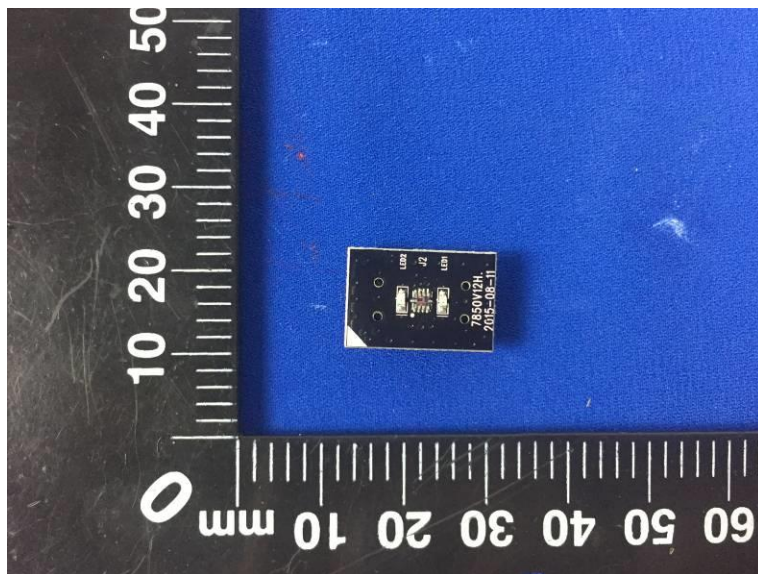
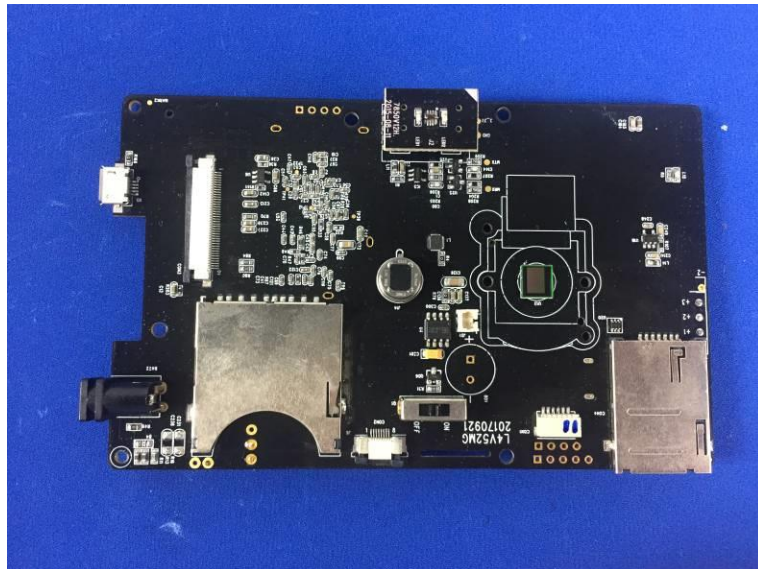


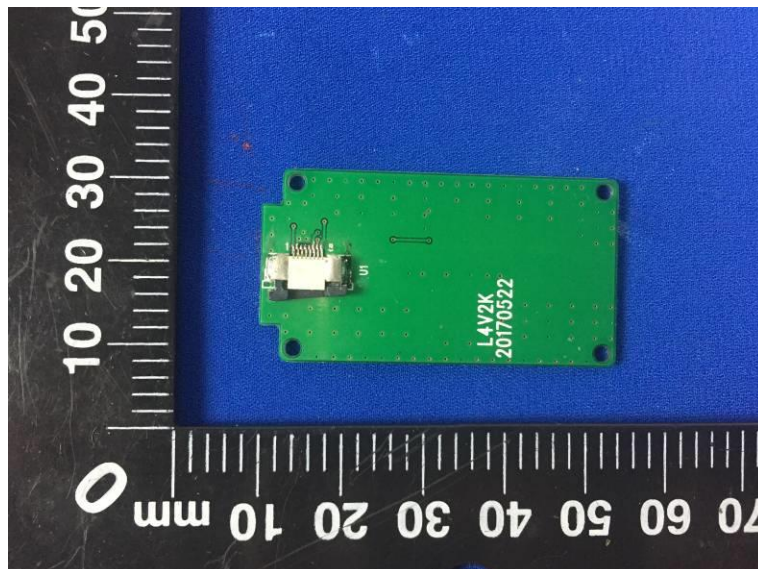
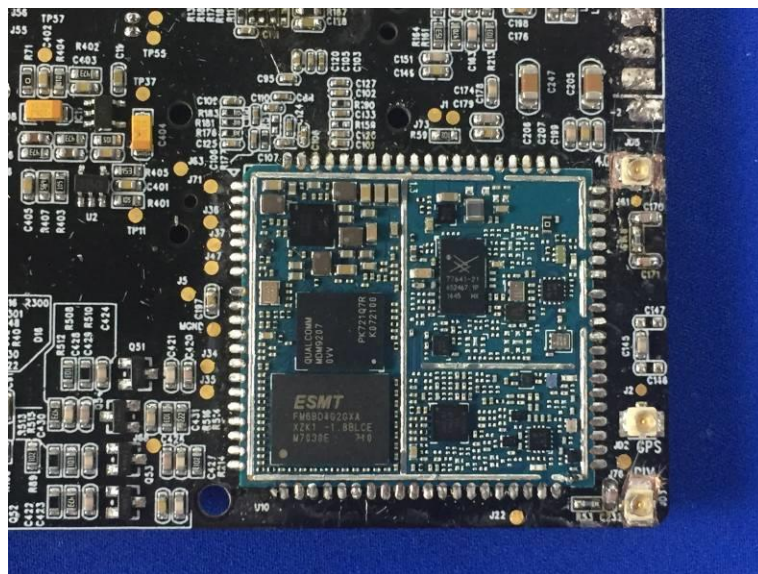
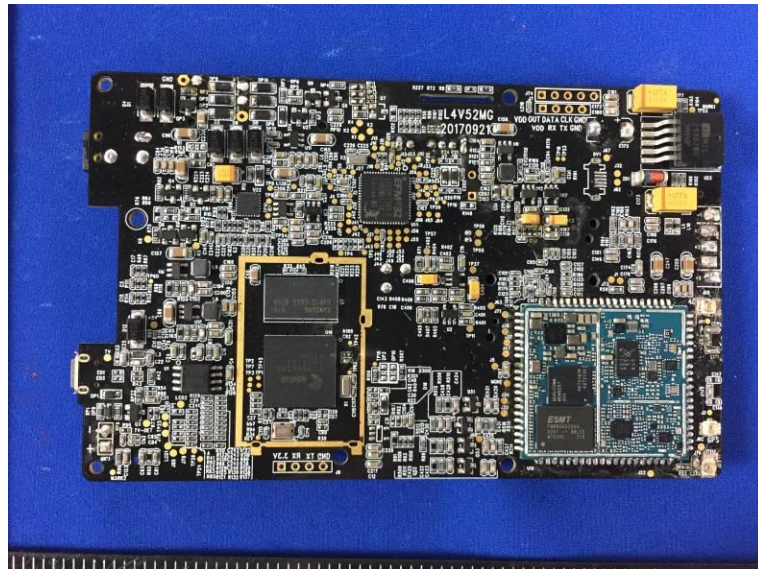


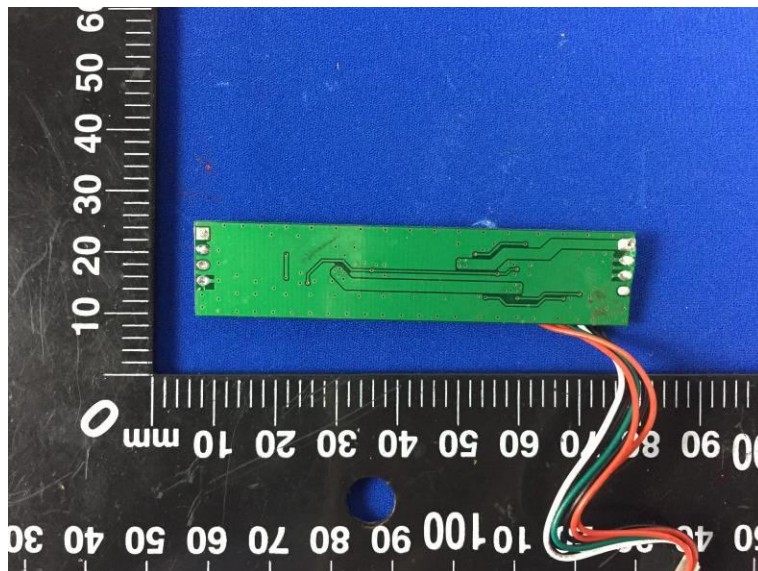
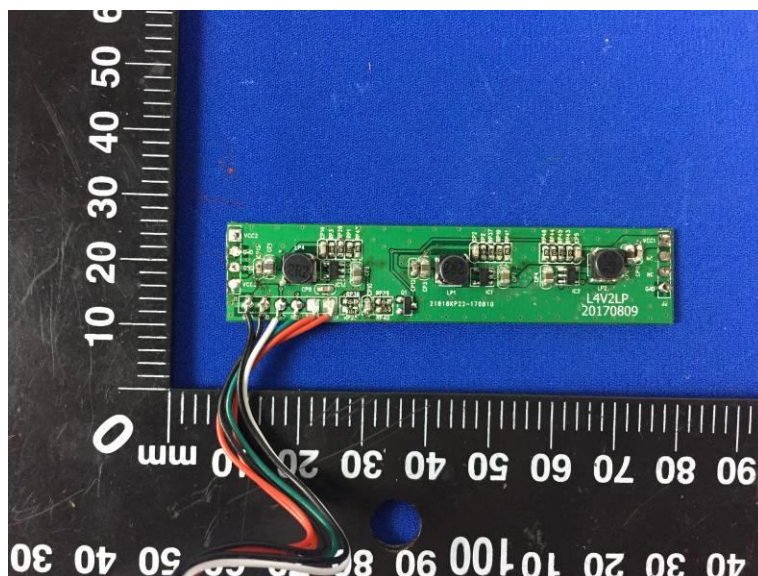
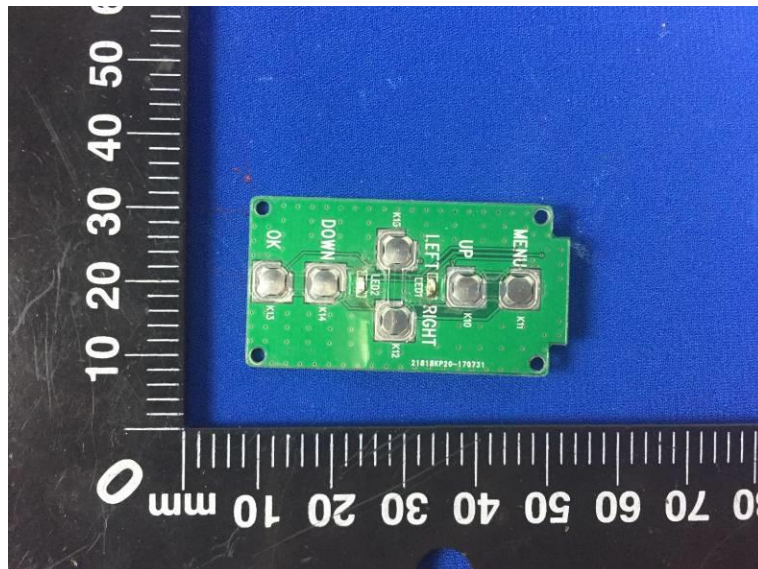


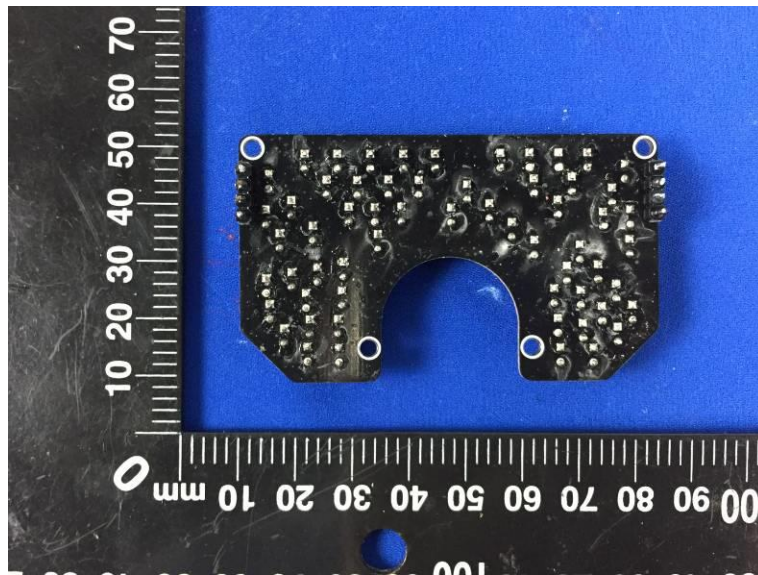
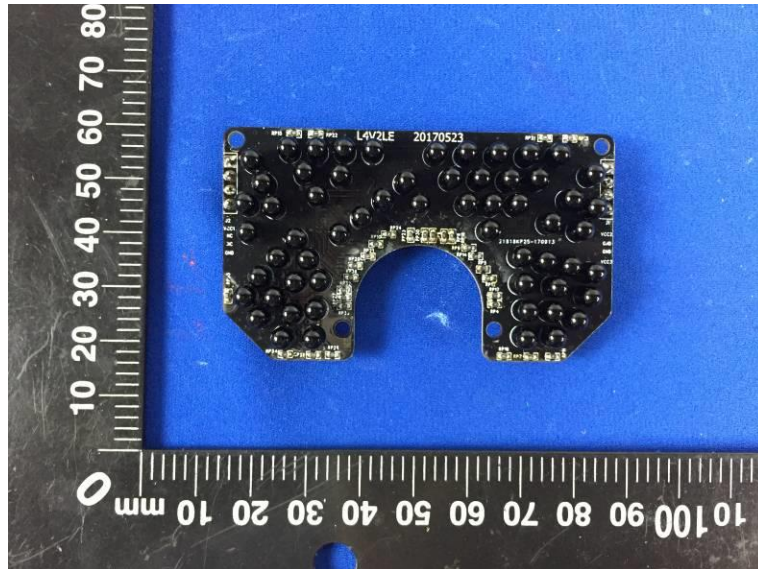
Internal photos











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