TEST REPORT

Application No.:	HKEM2009000962AT
Applicant:	VTECH TELECOMMUNICATIONS LTD
Address of Applicant:	23/F.,BLOCK 1, TAI PING INDUSTRIAL CENTRE,NO. 57 TING KOK ROAD,TAI PO,N.T.,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
Equipment Under Test (EUT):	
EUT Name:	Video Baby Monitor
Model No.:	VM905HD PU, VM905-2HD PU, VM905-1WHD PU, VM905-abHD PU, VM915HD PU, VM915-2HD PU, VM915-1WHD PU, VM915-abHD PU
Additional model:	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
FCC ID:	EW780-2128-01
IC:	1135B-80212801
HVIN:	35-201271PUA
Trade mark:	VTech
Standard(s) :	CFR 47 FCC Part 15, Subpart C, 2019 RSS-247 Issue 2: May 2017 RSS-Gen: Issue 5 Amdt 2019
Date of Receipt:	2020-09-09
Date of Test:	2020-05-14 to 2020-05-29 (for original report HKEM200600039602) 2020-09-10 (for new report HKEM200900096202)
Date of Issue:	2020-06-05 (for original report HKEM200600039602) 2020-09-11 (for new report HKEM200900096202)
Test Result:	Pass*

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

Law Man Kit
EMC Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		*2020-09-11*		*Original*

Authorized for issue by:				
				
		Leo Xu /Project Engineer		Date: *2020-09-11*
				
		Law Man Kit /Reviewer		Date: *2020-09-11*

2 Test Summary

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(1)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Emissions at AC Power Line (150kHz-30MHz)	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 6.2	RSS-Gen Section 8.8	Pass
Conducted Peak Output Power	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 7.8.5	RSS-247 Section 5.4(b)	Pass
Radiated Emissions which fall in the restricted bands	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 6.10.5	Section 3.3 & RSS-Gen Section 8.10	Pass
Radiated Spurious Emissions	RSS-247 Issue 2, February 2017	ANSI C63.10 (2013) Section 6.4&6.5&6.6	Section 3.3 & RSS-Gen Section 8.9	Pass

Declaration of EUT Family Grouping:

Item no.: VM905HD PU, VM905-2HD PU, VM905-1WHD PU, VM905-abHD PU, VM915HD PU, VM915-2HD PU, VM915-1WHD PU, VM915-abHD PU

a = any alphanumeric character or blank is presenting number of baby unit.

b = any alphanumeric character or blank is presenting color option

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 functions. The differences are only the model/item No.

Therefore, only the model VM915HD PU was tested in this report.

Note: According to the cover letter for C2PC (Class II permissive changes) from the applicant, the change are as below based on previous test reports HKEM200500039602 issued on 2020-06-05.

Change is listed as below:

1 remove Ten Pao adaptor S005BNU0500100;
2. Add one alt. battery Tianmao BP1763

According to the changes above, the battery rating parameter was changed, Hence, Conducted Peak Output Power; Conducted Emissions at AC Mains and Radiated Emission were re-tested with new alternative battery (BP1763) in this report, all other test result were referred to previous report HKEM200500039602 issued on 2020-06-05.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	AC 100-240V ~ 50/60Hz 150mA to DC 5.0V 1000 mA Model no: VT05EUS05100 OR DC supply with internal rechargeable battery Battery 1 Model: 634169 Rated Capacity: 2000mAh, 7.4Wh Rated Voltage: 3.7V Manufacturer: Springpower Technology(Shenzhen) Co., Ltd. Alternative Battery 2 Model: BP1763 Rated Capacity:2100mAh, 7.98Wh Rated Voltage: 3.8V Manufacturer: Zhongshan Tianmao Battery Co., Ltd.
Test voltage:	AC 120V
Cable:	Power Cable: 175cm unshielded 2wires DC cable
Antenna Gain:	0dBi
Antenna Type:	PCB Antenna
Channel Spacing:	4MHz
Modulation Type:	GFSK
Number of Channels:	24
Operation Frequency:	2406MHz to 2475MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Series number:	A1
Hardware Version:	V001
Software Version:	V0101
	Remark: Power level setting was not adjustable and fixed default through SW Version.

Frequency List

Channel Number	TX Freq (MHz)	Channel Number	TX Freq (MHz)
1	**2406**	**13**	**2442**
2	2409	14	2445
3	2412	15	2448
4	2415	16	2451
5	2418	17	2454
6	2421	18	2457
7	2424	19	2460
8	2427	20	2463
9	2430	21	2466
10	2433	22	2469
11	2436	23	2472
12	2439	**24**	**2475**

Remark: 1. Operation channel is only 16 within total channel 24.
2. Testing Channels are highlighted in **bold**.

4.2 Description of Support Units

The EUT has been tested with corresponding accessories as below:

Supplied by client

Description	Manufacturer	Model No.	SN/Certificate NO
UART Test board	N/A	MX3232	N/A
Test Software	MicroRidge System	Version 3.0.0.108	N/A

Supplied by SGS:

Description	Manufacturer	Model No.	SN/Certificate NO
NoteBook (EMC4)	Dell	P75F	N/A

4.3 Measurement Uncertainty

RF

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power (30MHz-40GHz)	1.5dB
5	RF power density	1.5dB
6	Conducted Spurious emissions	1.5dB
7	RF Radiated power	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
8	Radiated Spurious emission test	5.1dB (below 1GHz)
		5.3dB (above 1GHz)
9	Temperature test	± 1℃
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%

Remark:

The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

According to decision rule based on Clause 4.2 of CISPR 16-4-2, the EUT complied with the standards specified above.

4.4 Test Location

All tests were performed at:

SGS Hong Kong Limited

Unit 2 and 3, G/F, Block A, Po Lung Centre,

11 Wang Chiu Road, Kowloon Bay, Kowloon, Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

4.5 Test Facility

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

- **HOKLAS (Lab Code: 009)**

SGS Hong Kong 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 17025:2017 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.

- **IAS Accreditation (Lab Code: TL-187)**

SGS Hong Kong Limited has met the requirements of AC89, IAS Accreditation Criteria for Testing Laboratories, and has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

The report must not be used by the client to claim product certification, approval, or endorsement by IAS, NIST, or any agency of the Federal Government.

- **FCC Recognized Accredited Test Firm(CAB Registration No.: 514599)**

SGS Hong Kong 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: HK0015, Test Firm Registration Number: 514599.

- **Industry Canada (Site Registration No.: 26103; CAB Identifier No.: HK0015)**

SGS Hong Kong Limited has been recognized by Department of Innovation, Science and Economic Development (ISED) Canada as a wireless testing laboratory. The acceptance letter from the ISED is maintained in our files. CAB Identifier No: HK0015, Site Registration Number: 26103.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

RF Conducted Test					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
SMBV100A VECTOR SIGNAL GENERATOR	Rohde & Schwarz	SMBV100A	E234	2019/8/21	2020/9/20
FSV40 SIGNAL ANALYZER 40GHz	Rohde & Schwarz	FSV40	E235	2019/8/21	2020/9/20
Wireless Conn. Tester (CMW)	Rohde & Schwarz	CMW270	E240	2019/8/21	2020/9/20
OSP	Rohde & Schwarz	OSP-B157W8	E242	2019/8/21	2020/9/20
Cable	Rohde & Schwarz	J12J103539-00-2	E239	2019/9/23	2020/9/22
WMS32 Test Software	R&S	Version 10	N/A	--	--

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Test Receiver	Rohde & Schwarz	ESHS 30 / 839667/002	TE279D	2020/9/1	2021/8/31
Signal Generator	Rohde & Schwarz	SMT03	E177	2020/5/11	2021/5/10
Artificial Mains Network (LISN)	Schwarzbeck	NSLK 8127 / 8127312	TE10	2020/5/11	2021/5/10
Impulse Limiter	Rohde & Schwarz	ESH-3-Z2 / 357881052	TE36	2020/5/11	2021/5/10
EMC32 Test Software	R&S	Version 10	N/A	--	--

Radiated Spurious Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ChamPro	N/A	E229	2020/8/9	2021/8/8
Coaxial Cable	SGS	N/A	E167	2020/7/20	2021/7/19
EMI Test Receiver 9kHz to 3.6GHz	Rohde & Schwarz	ESR3 / 102326	E231	2020/9/1	2021/8/31
TRILOG Super Broadb. Test Antenna, (25) 30-1000 (2	Schwarzbeck	VULB 9168	E264	2018/10/20	2020/10/19
Boresight Mast Controller	ChamPro	AM-BS-4500-E	E237	--	--
Turntable with Controller	ChamPro	EM1000	E238	--	--
EMC32 Test Software	R&S	Version 10	N/A	--	--

Radiated Spurious Emissions (above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ChamPro	N/A	E229	2020/8/9	2021/8/8

Coaxial Cable	SGS	N/A	E167	2020/7/20	2021/7/19
EMI Test Receiver 9kHz to 3.6GHz	Rohde & Schwarz	ESR3 / 102326	E231	2019/10/2	2020/10/1
Signal and Spectrum Analyzer 2Hz - 26.5GHz	Rohde & Schwarz	FSW26	E296	2019/10/29	2020/10/28
Spectrum Analyzer 9kHz - 30GHz	Rohde & Schwarz	FSP30	E204	2020/5/11	2021/5/10
Horn Antenna 1 - 18GHz	Schwarzbeck	BBHA9120D	E211	2020/1/29	2022/1/29
Horn Antenna 15 - 40GHz	Schwarzbeck	BBHA9170	E212	2017/10/17	2020/10/16
Preamplifier 33dB, 1 - 18GHz	Schwarzbeck	BBV9718	E214	2020/4/14	2021/4/12
Preamplifier 33dB, 18 - 26.5GHz	Schwarzbeck	BBV9719	E215	2019/4/24	2021/4/23
Highpass Filter 3.5-26.5GHz	Wainwright	WHNX3.5/26.5G-6SS	E205	2019/4/24	2021/4/23
Band Reject Filter 2.4-2.5GHz	Wainwright	WRCJV 2400/2500-2100	E206	2019/4/24	2021/4/23
RF cable SMA to SMA 10000mm	HUBER+SUHNER	SF104-26.5/2*11SMA 45	E207-1	2019/9/26	2020/9/25
Boresight Mast Controller	ChamPro	AM-BS-4500-E	E237	--	--
Turntable with Controller	ChamPro	EM1000	E238	--	--
EMC32 Test Software	R&S	Version 10	N/A	--	--

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Digital temperature & humidity data logger	SATO	SK-L200TH II	E232	2019/10/28	2020/10/27
Electronic Digital Thermometer with Hygrometer	nil	2074/2075	E159	2019/10/28	2020/10/27
Barometer with digital thermometer	SATO	7612-00	E218	2020/4/23	2021/4/22
Conditional Chamber	Zhong Zhi Testing Instruments	CZ-E-608D	E216	2020/8/21	2021/8/20

6 Radio Spectrum Matter Test Results

6.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207, RSS-Gen Section 8.8

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		

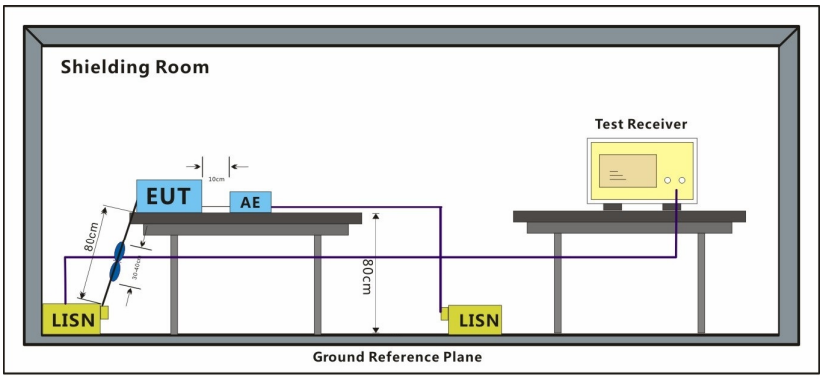
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

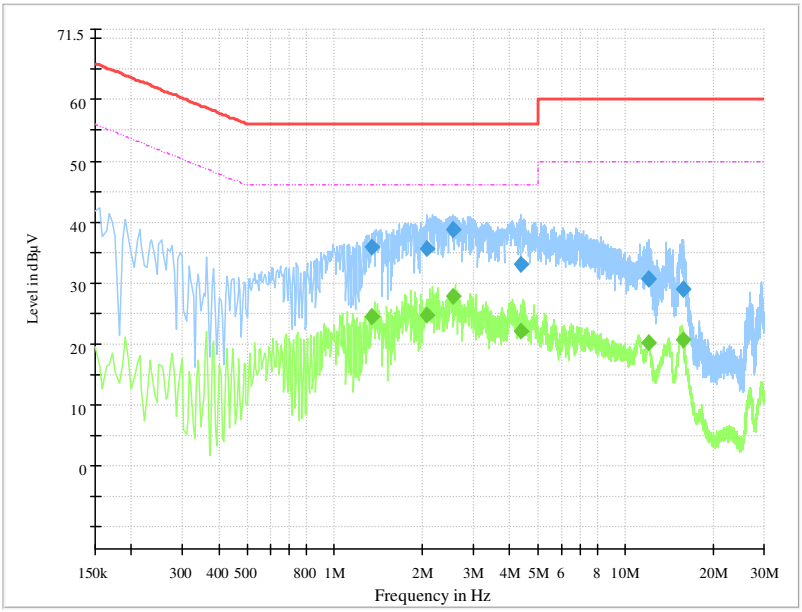
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor

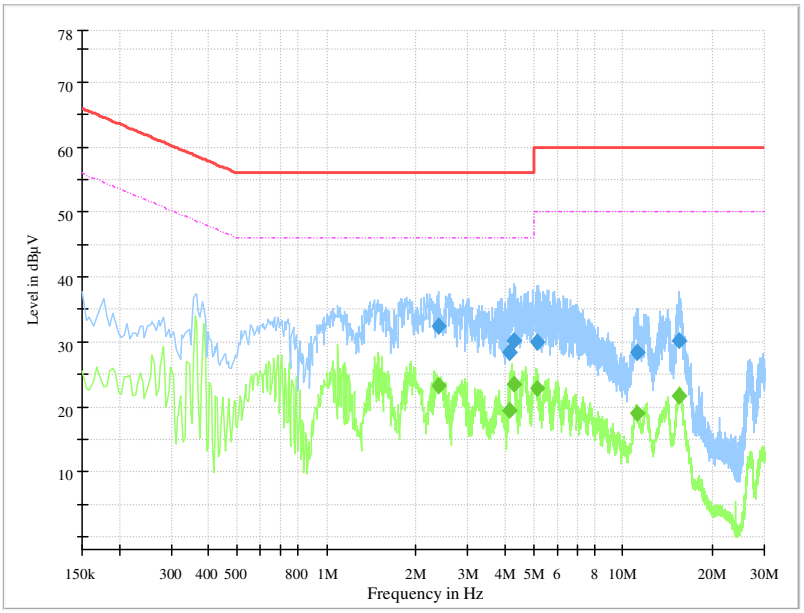
For adaptor modal: VT05EUS05100

Mode:a; Line:Live Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)	Result
1.342500	---	24.4	46.0	21.6	10.2	Pass
1.342500	36.0	---	56.0	20.0	10.2	Pass
2.085000	---	24.6	46.0	21.4	10.2	Pass
2.085000	35.7	---	56.0	20.3	10.2	Pass
2.562000	---	27.9	46.0	18.1	10.2	Pass
2.562000	38.7	---	56.0	17.3	10.2	Pass
4.380000	---	22.1	46.0	23.9	10.3	Pass
4.380000	33.1	---	56.0	22.9	10.3	Pass
12.012000	---	20.1	50.0	29.9	10.5	Pass
12.012000	30.6	---	60.0	29.4	10.5	Pass
15.724500	---	20.8	50.0	29.2	10.6	Pass
15.724500	28.9	---	60.0	31.1	10.6	Pass

Mode:a; Line: Neutral Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)	Result
2.391000	---	23.3	46.0	22.7	10.2	Pass
2.391000	32.5	---	56.0	23.5	10.2	Pass
4.128000	---	19.5	46.0	26.5	10.3	Pass
4.128000	28.4	---	56.0	27.6	10.3	Pass
4.303500	---	23.5	46.0	22.5	10.3	Pass
4.303500	30.1	---	56.0	25.9	10.3	Pass
5.136000	---	22.7	50.0	27.3	10.3	Pass
5.136000	29.9	---	60.0	30.1	10.3	Pass
11.193000	---	19.1	50.0	30.9	10.5	Pass
11.193000	28.4	---	60.0	31.6	10.5	Pass
15.459000	---	21.6	50.0	28.4	10.6	Pass
15.459000	30.2	---	60.0	29.8	10.6	Pass

6.2 Conducted Peak Output Power

Test Requirement: 47 CFR Part 15, Subpart C 15.247:2019(b)(1) & 15.247(b)(3), RSS-247 Section 5.4(b)

Test Method: ANSI C63.10 (2013) Section 7.8.5

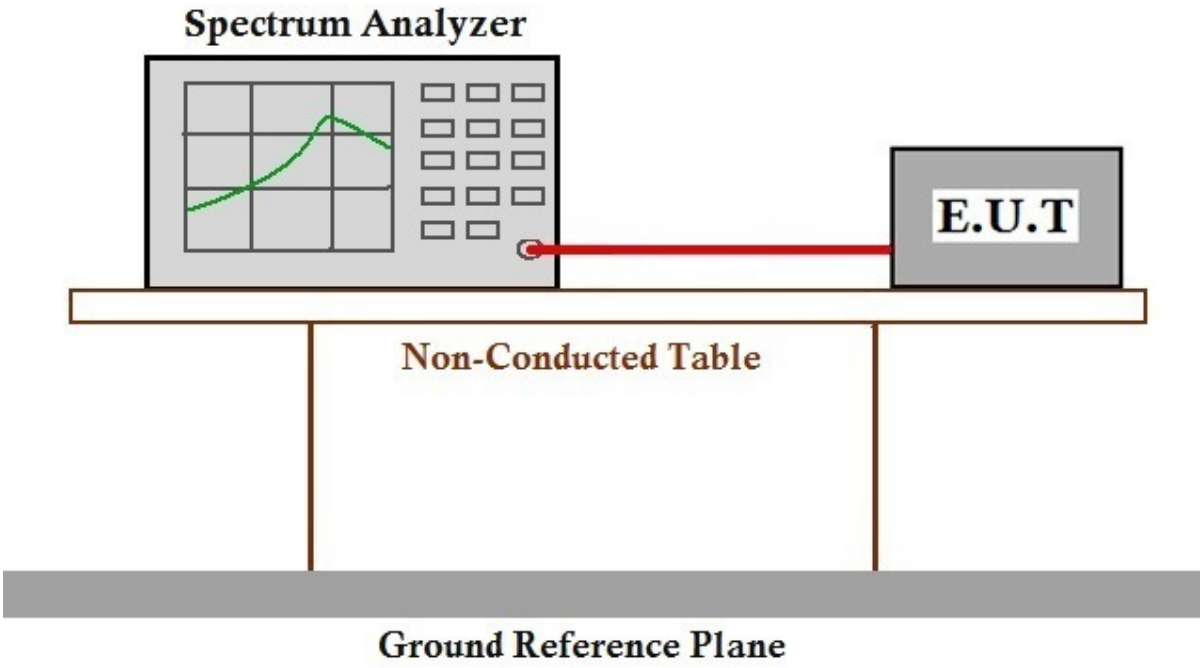
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 51.2 % RH :

Test mode: a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.2.2 Test Setup Diagram



6.2.3 Measurement Procedure and Data

The detailed test data see section 8: Appendix

6.3 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.247(d), Section 3.3 & RSS-Gen Section 8.10

Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field strength (μ V/m at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) (μ A/m)	Measurement distance (m)
9 - 490 kHz 1	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

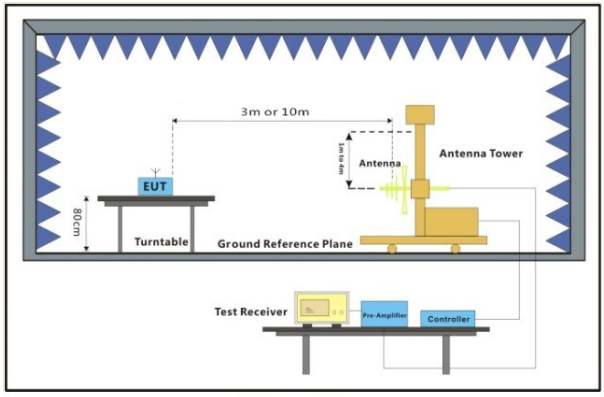
6.3.1 E.U.T. Operation

Operating Environment:

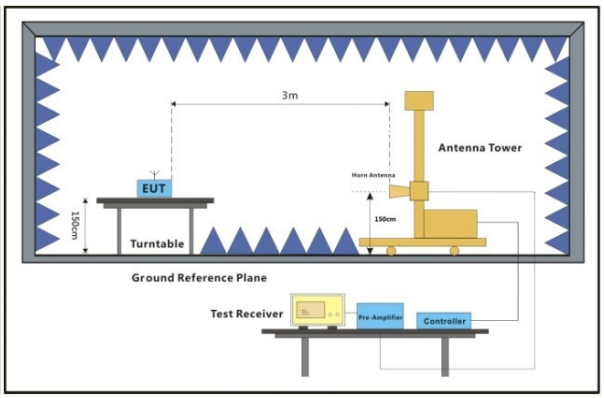
Temperature: 23.1 °C Humidity: 51.4 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

6.3.2 Test Setup Diagram



30MHz-1GHz



Above 1GHz

6.3.3 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

6.3.4 Measurement Procedure and data

Frequency (MHz)	Antenna Polarization	Emission Level (dBµV/m)		Limit (dBµV/m)		Remark
		Peak	Average	Peak	Average	
2390.000	H	50.3	/	74.0	54.0	Pass
2483.500	H	51.2	/	74.0	54.0	Pass
2390.000	V	48.7	/	74.0	54.0	Pass
2483.500	V	52.4	/	74.0	54.0	Pass

6.4 Radiated Spurious Emissions

Test Requirement Section 3.3 & RSS-Gen Section 8.9
Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
Limit:

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency (MHz)	Field strength (μ V/m at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) (μ A/m)	Measurement distance (m)
9 - 490 kHz 1	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

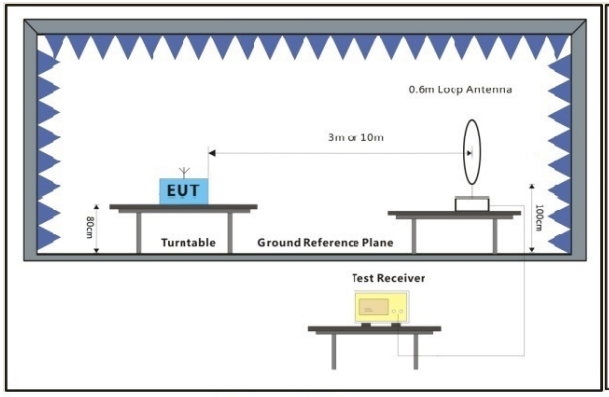
6.4.1 E.U.T. Operation

Operating Environment:

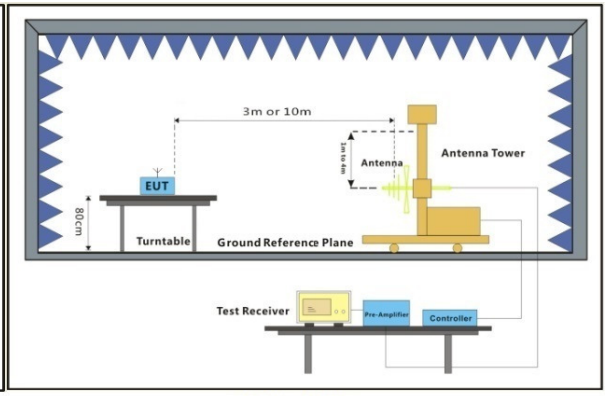
Temperature: 22.3 °C Humidity: 52.3 % RH :

Test mode a:TX_Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).

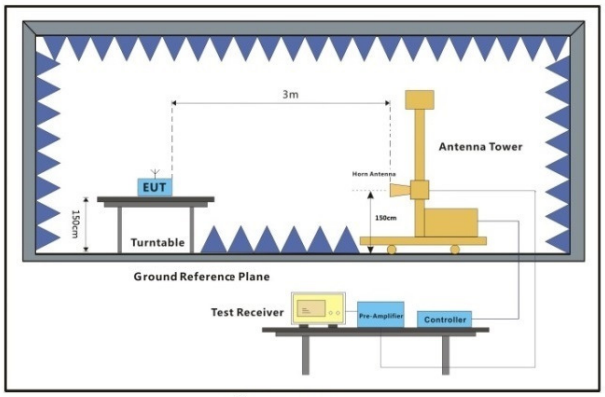
6.4.2 Test Setup Diagram



Below 30MHz



30MHz-1GHz



Above 1GHz

6.4.3 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Remark:

1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

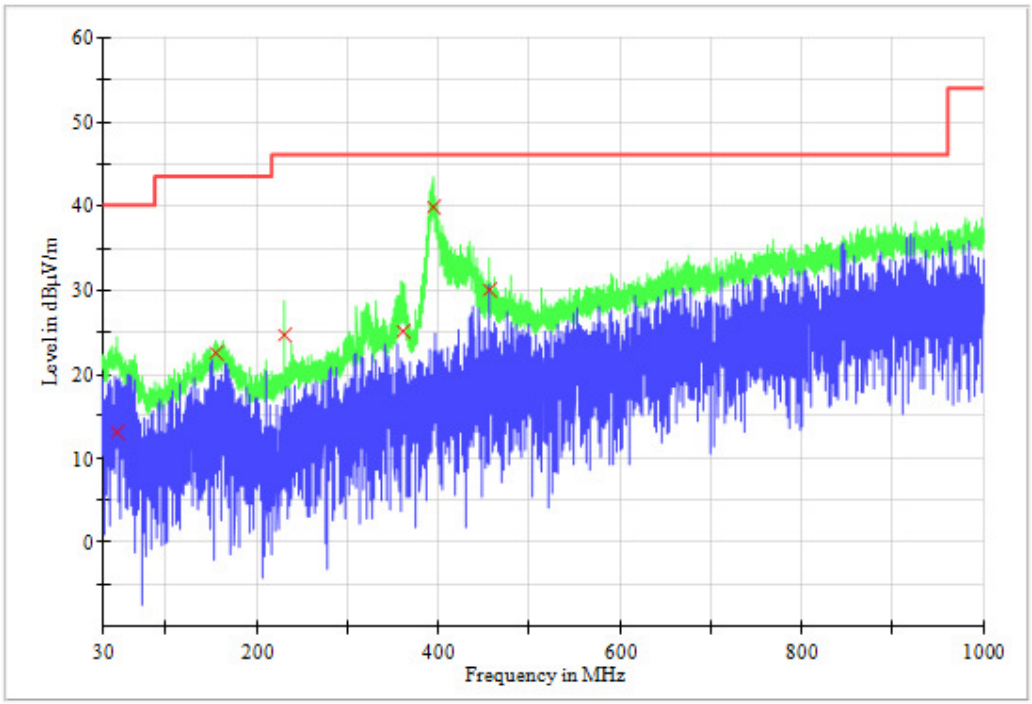
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Radiated emission below 1GHz

Horizontal (worse plots was shown as below)

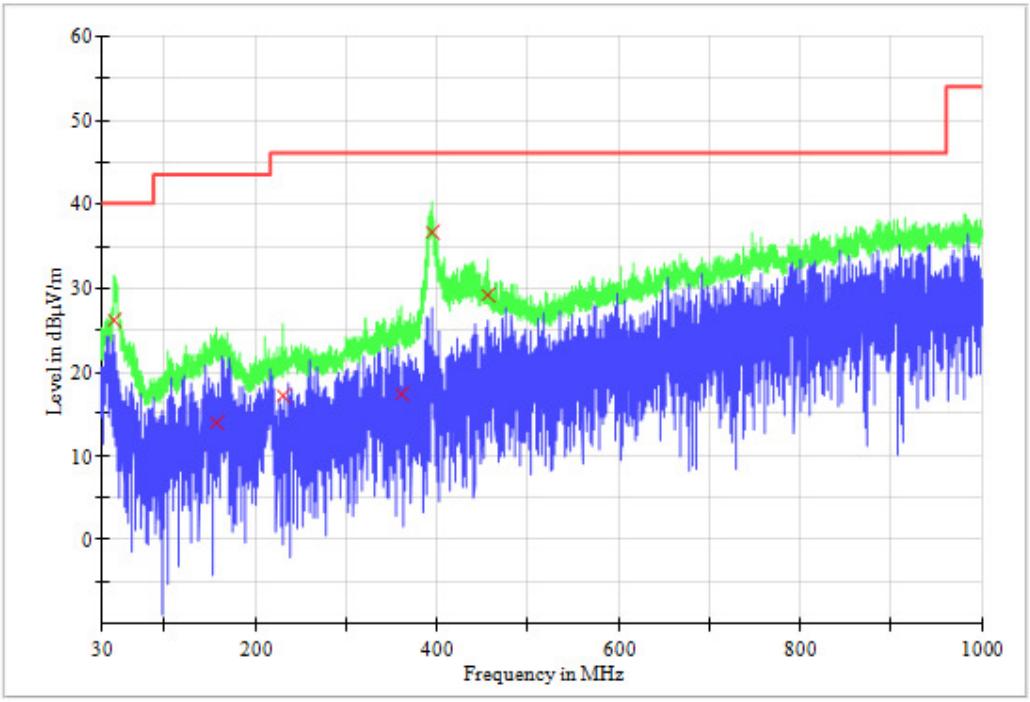


Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
45.670000	13.0	H	14.5	27.0	40.0	Pass
155.357500	22.6	H	14.8	20.9	43.5	Pass
229.847500	24.7	H	11.6	21.3	46.0	Pass
359.620000	25.1	H	15.8	20.9	46.0	Pass
393.355000	40.0	H	16.4	6.0	46.0	Pass
455.950000	29.9	H	18.4	16.1	46.0	Pass

Remark:

1. All readings are Quasi-Peak values.
2. Correction Factor = Antenna Factor + Cable Loss.
3. Pol. = antenna polarization

Vertical (worse plots was shown as below)



Frequency (MHz)	QuasiPeak (dBµV/m)	Pol.	Corr. (dB/m)	Margin (dB)	Limit (dBµV/m)	Result
44.792500	26.1	V	14.5	13.9	40.0	Pass
156.235000	14.0	V	14.7	29.5	43.5	Pass
229.847500	17.2	V	11.6	28.8	46.0	Pass
359.912500	17.4	V	15.8	28.6	46.0	Pass
394.915000	36.7	V	16.3	9.3	46.0	Pass
455.950000	29.2	V	18.4	16.8	46.0	Pass

Remark:

1. All readings are Quasi-Peak values.
2. Correction Factor = Antenna Factor + Cable Loss.
3. Pol. = antenna polarization

Above 1GHz

Channel:Low

Frequency (MHz)	Antenna Polarization	Emission Level (dBμV/m)		Limit (dBμV/m)		Remark
		Peak	Average	Peak	Average	
1957.667	H	36.8	/	74.0	54.0	Pass
2103.112	H	41.2	/	74.0	54.0	Pass
2277.834	H	41.3	/	74.0	54.0	Pass
2553.139	H	48.3	/	74.0	54.0	Pass
4809.889	V	50.6	/	74.0	54.0	Pass
7214.917	V	49.4	/	74.0	54.0	Pass

Channel:Middle

Frequency (MHz)	Antenna Polarization	Emission Level (dBμV/m)		Limit (dBμV/m)		Remark
		Peak	Average	Peak	Average	
2136.167	H	35.9	/	74.0	54.0	Pass
2657.500	H	37.3	/	74.0	54.0	Pass
3884.333	H	37.8	/	74.0	54.0	Pass
4881.667	H	49.1	/	74.0	54.0	Pass
6319.583	V	44.2	/	74.0	54.0	Pass
7325.889	V	49.1	/	74.0	54.0	Pass

Channel: High

Frequency (MHz)	Antenna Polarization	Emission Level (dBμV/m)		Limit (dBμV/m)		Remark
		Peak	Average	Peak	Average	
2282.556	V	39.9	/	74.0	54.0	Pass
2589.500	H	42.5	/	74.0	54.0	Pass
4947.778	V	47.1	/	74.0	54.0	Pass
4949.667	V	48.3	/	74.0	54.0	Pass
7421.750	V	49.9	/	74.0	54.0	Pass
7427.889	H	46.2	/	74.0	54.0	Pass

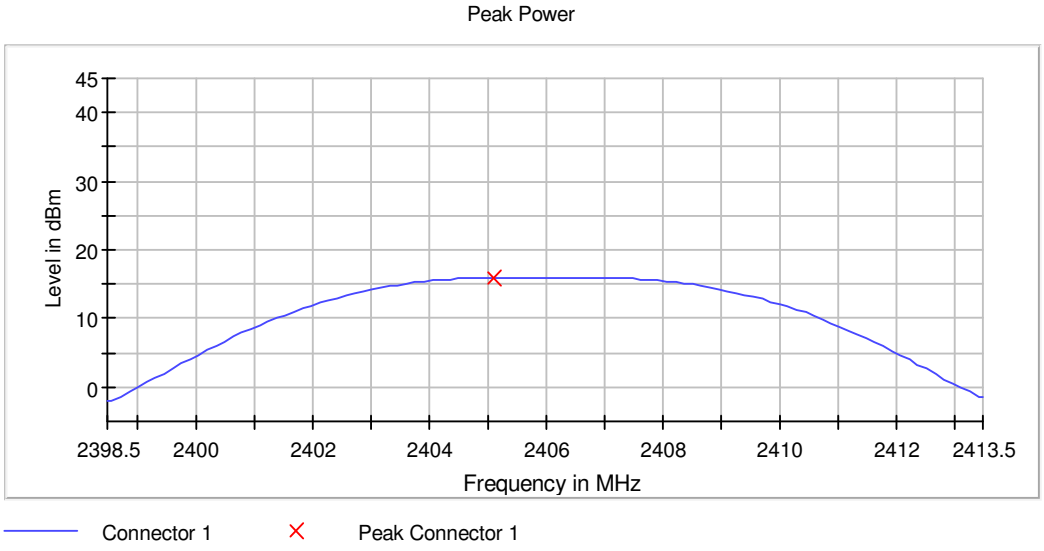
7 Photographs

Remark: Photos refer to Appendix: External Photo, Internal Phot, Setup Photo

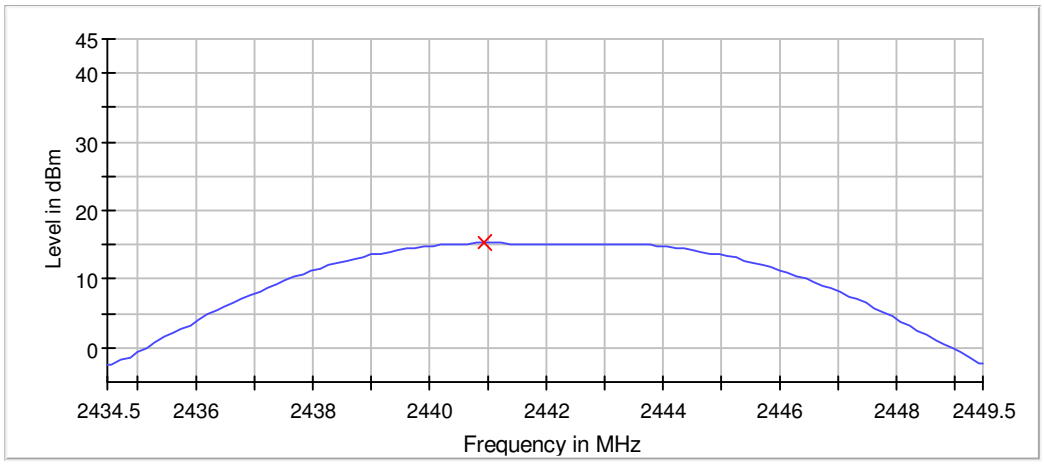
8 Appendix

8.1 Peak conducted output power (Sweep)

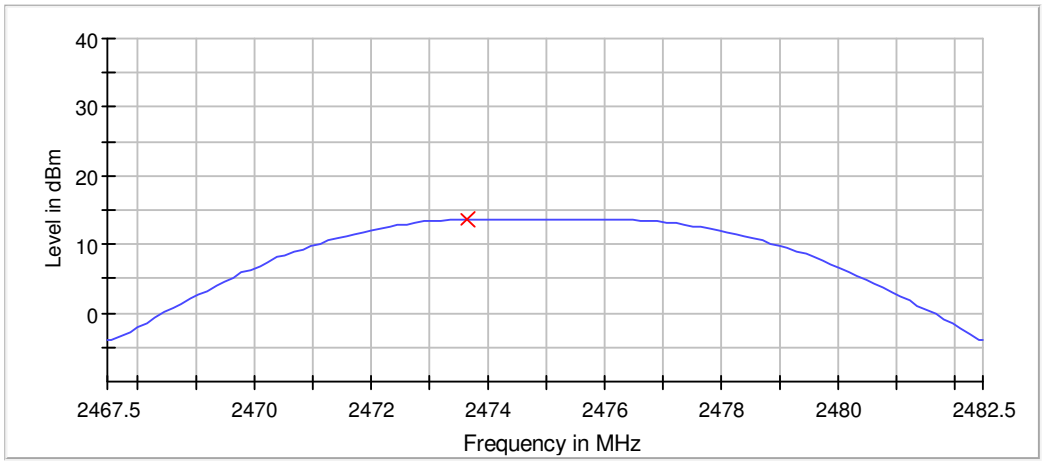
DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2406.000000	15.86	21.0	PASS
2439.000000	15.21	21.0	PASS
2475.000000	13.71	21.0	PASS



Peak Power



Peak Power



Measurement Setting

Setting	Instrument Value	Target Value
Span	15.000 MHz	15.000 MHz
RBW	5.000 MHz	>= 4.225 MHz
VBW	10.000 MHz	>= 15.000
SweepPoints	101	~ 101
Sweeptime	1.000 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.06 dB	0.50 dB

Remark: Cable loss 0.8dB was considered and set in system configuration.

- End of the Report -