


# FCC REPORT

For LTE Cat M

**Report No.** ..... : **CHEW22090074**      Report Verification: 

**Project No.**..... : **SHT2103098303EW**

**Applicant** ..... : **HARDWARIO a.s.**

**Address**..... : **U Jezu 525/4, 460 01 Liberec, CZECHIA**

**Product Name** ..... : **CHESTER**

**Trade Mark** ..... : **-**

**Model No.** ..... : **CHESTER**

**Listed Model(s)** ..... : **-**

**Standard** ..... : **FCC CFR Title 47 Part 2**  
**FCC CFR Title 47 Part 22**  
**FCC CFR Title 47 Part 24**  
**FCC CFR Title 47 Part 27**

**Date of receipt of test sample**..... : **Jun. 29, 2022**

**Date of testing**..... : **Jun. 30, 2022- Sep. 20, 2022**

**Date of issue**..... : **Sep. 21, 2022**

**Result**..... : **Pass**

Compiled by  
 ( position+printedname+signature).... : File administrators Silvia Li

*Silvia Li*

Supervised by  
 (position+printedname+signature)..... : Project Engineer David Chen

*David Chen*

Approved by  
 (position+printedname+signature)..... : Manager Hans Hu

*Hans Hu*

**Testing Laboratory Name** ..... : **Shenzhen Huatongwei International Inspection Co., Ltd.**

**Address**..... : **1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China**

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*The test report merely correspond to the test sample.*

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# **1. TEST STANDARDS AND REPORT VERSION**

## **1.1. Applicable Standards**

The tests were performed according to following standards:

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

[FCC Rules Part 22](#): PUBLIC MOBILE SERVICES

[FCC Rules Part 24](#): PERSONAL COMMUNICATIONS SERVICES

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

[ANSI C63.26: 2015](#): American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[KDB 971168 D01 Power Meas License Digital Systems v03](#): MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

## **1.2. Report version information**

Revision No.	Date of issue	Description
N/A	2022-09-21	Original

## 2. TEST DESCRIPTION

Section	Test Item	Section in CFR 47	Result #1	Test Engineer
	Conducted Output Power	Part 2.1046 Part 22.913(a) Part 24.232(c) Part 27.50	Pass*	N/A
	Peak-to-Average Ratio	Part 24.232 Part 27.50	Pass*	N/A
	99% Occupied Bandwidth & 26 dB Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b) Part 27.53	Pass*	N/A
	Band Edge	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass*	N/A
	Conducted Spurious Emissions	Part 2.1051 Part 22.917 Part 24.238 Part 27.53	Pass*	N/A
	Frequency stability vs temperature	Part 2.1055(a)(1)(b) Part 22.355 Part 24.235 Part 27.54	Pass*	N/A
	Frequency stability vs voltage	Part 2.1055(d)(1)(2) Part 22.355 Part 24.235 Part 27.54	Pass*	N/A
5.1	ERP and EIRP	Part 22.913(a) Part 24.232(b) Part 27.50	Pass	Tiancheng Huang
5.2	Radiated Spurious Emissions	Part 2.1053 Part 22.917 Part 24.238 Part 27.53	Pass	Pan Xie

Note:

- 1) #1: The test result does not include measurement uncertainty value
- 2) \*Refer to module FCC ID:2ANPO00NRF9160
- 3) In this device, Cat M only use B2,B4,B5,B12,B13,B25,B26,B66,other bands are shielded by software.

### 3. SUMMARY

#### 3.1. Client Information

Applicant:	HARDWARIO a.s.
Address:	U Jezu 525/4, 460 01 Liberec, CZECHIA
Manufacturer:	HARDWARIO a.s.
Address:	U Jezu 525/4, 460 01 Liberec, CZECHIA

#### 3.2. Product Description

Main unit information:	
Product Name:	CHESTER
Trade Mark:	-
Model No.:	CHESTER
Listed Model(s):	-
Power supply:	DC 3.6V from Primary lithium battery
Hardware version:	R3.2
Software version:	v1.0.0

#### 3.3. Radio Specification Description

Support LTE type:	<input checked="" type="checkbox"/> Cat M1	<input type="checkbox"/> Cat M2				
Support Operating Band:	<input checked="" type="checkbox"/> FDD Band 2	<input checked="" type="checkbox"/> FDD Band 4	<input checked="" type="checkbox"/> FDD Band 5			
	<input checked="" type="checkbox"/> FDD Band 12	<input checked="" type="checkbox"/> FDD Band 13	<input checked="" type="checkbox"/> FDD Band 25			
	<input checked="" type="checkbox"/> FDD Band 26	<input checked="" type="checkbox"/> FDD Band 66				
Operating Frequency Range:	Please refer to note #2					
Channel bandwidth:	Please refer to note #3					
Maximum RB:	Cat M1					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
	6	6	6	6	6	6
	Cat M2					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
	6	12	24	24	24	24
Uplink Modulation type:	<input checked="" type="checkbox"/> QPSK	<input checked="" type="checkbox"/> 16QAM	<input type="checkbox"/> 64QAM	<input type="checkbox"/> 256QAM		
Downlink Modulation type:	<input checked="" type="checkbox"/> QPSK	<input checked="" type="checkbox"/> 16QAM	<input type="checkbox"/> 64QAM	<input type="checkbox"/> 256QAM		
Antenna type:	PCB antenna					
Antenna gain #4:	3.5 dBi					

## Note:

- : means that this feature is supported; : means that this feature is not supported  
 ○ #2: Operating frequency range is as follow:

LTE Band	Uplink frequency	Downlink frequency
FDD Band 2	1850.7 – 1909.3 MHz	1930.7 – 1989.3 MHz
FDD Band 4	1710.7 – 1754.3 MHz	2110.7 – 2154.3 MHz
FDD Band 5	824.7 – 848.3 MHz	869.7 – 893.3 MHz
FDD Band 12	699.7 – 715.3 MHz	729.7 – 745.3 MHz
FDD Band 13	779.5 – 784.5 MHz	748.5 – 753.5 MHz
FDD Band 25	1850.7 - 1914.3 MHz	1930.7 - 1994.3 MHz
FDD Band 26	824.7 – 848.3 MHz	869.7 – 893.3 MHz
FDD Band 66	1710.7 – 1779.3 MHz	2110.7 – 2179.3 MHz

- #3: Supported channel bandwidth is as follow:

LTE Band	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
FDD Band 2	√	√	√	√	√	√
FDD Band 4	√	√	√	√	√	√
FDD Band 5	√	√	√	√	-	-
FDD Band 12	√	√	√	√	-	-
FDD Band 13	-	-	√	√	-	-
FDD Band 25	√	√	√	√	√	√
FDD Band 26	√	√	√	√	√	-
FDD Band 66	√	√	√	√	√	√

√: means that this feature is supported; -: means that this feature is not supported

- #4: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, HTW lab has not verified the authenticity of its information

### 3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Connect information:	Tel: 86-755-26715499 E-mail: <a href="mailto:cs@szhtw.com.cn">cs@szhtw.com.cn</a> <a href="http://www.szhtw.com.cn">http://www.szhtw.com.cn</a>	
Qualifications	Type	Accreditation Number
	FCC	762235

## 4. TEST CONFIGURATION

### 4.1. Test frequency list

FDD Band 2	<table border="1"> <thead> <tr> <th>Test Frequency ID</th> <th>Bandwidth [MHz]</th> <th>N<sub>UL</sub></th> <th>Frequency of Uplink [MHz]</th> <th>N<sub>DL</sub></th> <th>Frequency of Downlink [MHz]</th> </tr> </thead> <tbody> <tr> <td rowspan="6">Low Range</td> <td>1.4</td> <td>18607</td> <td>1850.7</td> <td>607</td> <td>1930.7</td> </tr> <tr> <td>3</td> <td>18615</td> <td>1851.5</td> <td>615</td> <td>1931.5</td> </tr> <tr> <td>5</td> <td>18625</td> <td>1852.5</td> <td>625</td> <td>1932.5</td> </tr> <tr> <td>10</td> <td>18650</td> <td>1855</td> <td>650</td> <td>1935</td> </tr> <tr> <td>15<sup>[1]</sup></td> <td>18675</td> <td>1857.5</td> <td>675</td> <td>1937.5</td> </tr> <tr> <td>20<sup>[1]</sup></td> <td>18700</td> <td>1860</td> <td>700</td> <td>1940</td> </tr> <tr> <td>Mid Range</td> <td>1.4/3/5/10/15<sup>[1]</sup>/20<sup>[1]</sup></td> <td>18900</td> <td>1880</td> <td>900</td> <td>1960</td> </tr> <tr> <td rowspan="6">High Range</td> <td>1.4</td> <td>19193</td> <td>1909.3</td> <td>1193</td> <td>1989.3</td> </tr> <tr> <td>3</td> <td>19185</td> <td>1908.5</td> <td>1185</td> <td>1988.5</td> </tr> <tr> <td>5</td> <td>19175</td> <td>1907.5</td> <td>1175</td> <td>1987.5</td> </tr> <tr> <td>10</td> <td>19150</td> <td>1905</td> <td>1150</td> <td>1985</td> </tr> <tr> <td>15<sup>[1]</sup></td> <td>19125</td> <td>1902.5</td> <td>1125</td> <td>1982.5</td> </tr> <tr> <td>20<sup>[1]</sup></td> <td>19100</td> <td>1900</td> <td>1100</td> <td>1980</td> </tr> </tbody> </table> <p>NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.</p>	Test Frequency ID	Bandwidth [MHz]	N <sub>UL</sub>	Frequency of Uplink [MHz]	N <sub>DL</sub>	Frequency of Downlink [MHz]	Low Range	1.4	18607	1850.7	607	1930.7	3	18615	1851.5	615	1931.5	5	18625	1852.5	625	1932.5	10	18650	1855	650	1935	15 <sup>[1]</sup>	18675	1857.5	675	1937.5	20 <sup>[1]</sup>	18700	1860	700	1940	Mid Range	1.4/3/5/10/15 <sup>[1]</sup> /20 <sup>[1]</sup>	18900	1880	900	1960	High Range	1.4	19193	1909.3	1193	1989.3	3	19185	1908.5	1185	1988.5	5	19175	1907.5	1175	1987.5	10	19150	1905	1150	1985	15 <sup>[1]</sup>	19125	1902.5	1125	1982.5	20 <sup>[1]</sup>	19100	1900	1100	1980
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FDD Band 12	<p><b>Table 4.3.1.1.12-1: Test frequencies for E-UTRA channel bandwidth for operating band 12</b></p> <table border="1"> <thead> <tr> <th>Test Frequency ID</th> <th>Bandwidth [MHz]</th> <th>N<sub>UL</sub></th> <th>Frequency of Uplink [MHz]</th> <th>N<sub>DL</sub></th> <th>Frequency of Downlink [MHz]</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Low Range</td> <td>1.4</td> <td>23017</td> <td>699.7</td> <td>5017</td> <td>729.7</td> </tr> <tr> <td>3</td> <td>23025</td> <td>700.5</td> <td>5025</td> <td>730.5</td> </tr> <tr> <td>5<sup>[1]</sup></td> <td>23035</td> <td>701.5</td> <td>5035</td> <td>731.5</td> </tr> <tr> <td>10<sup>[1]</sup></td> <td>23060</td> <td>704</td> <td>5060</td> <td>734</td> </tr> <tr> <td>Mid Range</td> <td>1.4/3/5<sup>[1]</sup>/10<sup>[1]</sup></td> <td>23095</td> <td>707.5</td> <td>5095</td> <td>737.5</td> </tr> <tr> <td rowspan="4">High Range</td> <td>1.4</td> <td>23173</td> <td>715.3</td> <td>5173</td> <td>745.3</td> </tr> <tr> <td>3</td> <td>23165</td> <td>714.5</td> <td>5165</td> <td>744.5</td> </tr> <tr> <td>5<sup>[1]</sup></td> <td>23155</td> <td>713.5</td> <td>5155</td> <td>743.5</td> </tr> <tr> <td>10<sup>[1]</sup></td> <td>23130</td> <td>711</td> <td>5130</td> <td>741</td> </tr> </tbody> </table> <p>NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.</p>	Test Frequency ID	Bandwidth [MHz]	N <sub>UL</sub>	Frequency of Uplink [MHz]	N <sub>DL</sub>	Frequency of Downlink [MHz]	Low Range	1.4	23017	699.7	5017	729.7	3	23025	700.5	5025	730.5	5 <sup>[1]</sup>	23035	701.5	5035	731.5	10 <sup>[1]</sup>	23060	704	5060	734	Mid Range	1.4/3/5 <sup>[1]</sup> /10 <sup>[1]</sup>	23095	707.5	5095	737.5	High Range	1.4	23173	715.3	5173	745.3	3	23165	714.5	5165	744.5	5 <sup>[1]</sup>	23155	713.5	5155	743.5	10 <sup>[1]</sup>	23130	711	5130	741																				
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## 4.2. Descriptions of Test mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems and ANSI C63.26 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Test configuration is as follow:

Test Items	Bandwidth	Modulation	RB #		
			1	Half	Full
Radiated Spurious Emission	#5	#6	○	-	-

Note:

- #5: Test all kind of bandwidth in section 3.3
- #6: Test all kind of uplink modulation in section 3.3
- ○: means that this configuration is chosen for testing
- -: means that this configuration is not test.
- The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different bandwidth, modulations and RB size/offset in exploratory test. Subsequently, only the worst case emissions (highest bandwidth, QPSK, and 1RB0) are reported.

## 4.3. Test sample information

Test item	HTW sample no.
Radiated test items	YPHT21030983005

Note:

Radiated test items: Radiated Spurious Emission

## 4.4. Support unit used in test configuration and system

The following peripheral devices and interface cables were connected during the measurement:

Whether support unit is used?				
✓ No				
Item	Equipment	Trade Name	Model No.	Other
1				
2				

## 4.5. Testing environmental condition

Voltage	VN=Nominal Voltage	DC 3.6V
	VL=Lower Voltage	DC 3.24V
	VH=Higher Voltage	DC 3.96V
Temperature	TN=Normal Temperature	25 °C
	Extreme Temperature	From -30°C to + 50°C
Humidity	30~60 %	
Air Pressure	950-1050 hPa	

#### 4.6. Statement of the measurement uncertainty

Test Items	Measurement Uncertainty
Radiated spurious emission	<1GHz: 2.85dB >1GHz: 3.66dB

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

#### 4.7. Equipments Used during the Test

● Radiated Spurious Emission							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2018/09/27	2023/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2022/08/25	2023/08/24
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/04/06	2024/04/05
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2020/04/27	2023/04/26
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/04/06	2024/04/05
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2021/11/05	2022/11/04
●	Broadband Preamplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2022/02/28	2023/02/27
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0119-05	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	EMI Test Software	Audix	N/A	E3	N/A	N/A	N/A

## **5. TEST CONDITIONS AND RESULTS**

### **5.1. ERP and EIRP**

#### **LIMIT**

LTE Band 2/25: 2W(33dBm) EIRP

LTE Band 4/66: 1W(30dBm) EIRP

LTE Band 5/26: 7W(38.50dBm) ERP

LTE Band 12/13: 3W(34.77dBm) ERP

#### **TEST PROCEDURE**

Use the following formula to calculate the corresponding ERP/EIRP:

ERP = Conducted power + Gain(dBd)

EIRP = Conducted power + Gain(dBi)

ERP = EIRP - 2.15

#### **TEST RESULTS**

**Passed**       **Not Applicable**

Band	Conducted power(dBm) <sup>#7</sup>	Antenna gain(dBi)	EIRP		Limit (W)	Verdict
			dBm	W		
Band 4	22.27	3.50	25.77	0.3776	1	PASS
	22.32	3.50	25.82	0.3819	1	PASS
	22.23	3.50	25.73	0.3741	1	PASS
Band 25	22.86	3.50	26.36	0.4325	2	PASS
	22.99	3.50	26.49	0.4457	2	PASS
	22.98	3.50	26.48	0.4446	2	PASS
Band 66	22.77	3.50	26.27	0.4236	1	PASS
	22.88	3.50	26.38	0.4345	1	PASS
	22.88	3.50	26.38	0.4345	1	PASS

Band	Conducted power(dBm) <sup>#7</sup>	Antenna gain(dBi)	ERP		Limit (W)	Verdict
			dBm	W		
Band 5	22.97	3.50	24.32	0.2704	7	PASS
	22.99	3.50	24.34	0.2716	7	PASS
	22.99	3.50	24.34	0.2716	7	PASS
Band 12	22.65	3.50	24.00	0.2512	3	PASS
	22.74	3.50	24.09	0.2564	3	PASS
	22.70	3.50	24.05	0.2541	3	PASS
Band 13	22.61	3.50	23.96	0.2489	3	PASS
	22.62	3.50	23.97	0.2495	3	PASS
	22.60	3.50	23.95	0.2483	3	PASS

## Note:

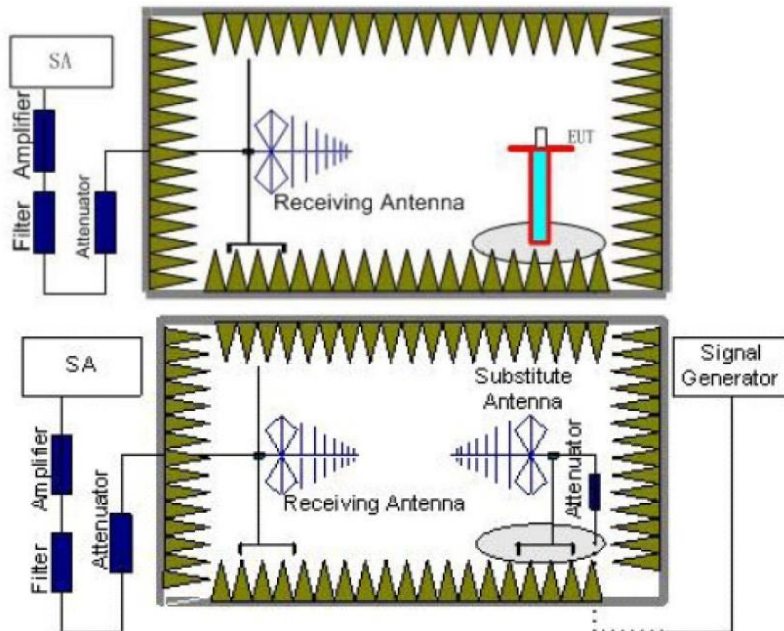
- 1) #7: Refer to module FCC ID:2ANPO00NRF9160
- 2) Band 2 is completely included in band 25, so the channels of band 25 were tested to give conformity to the assigned block.
- 3) Band 26 is completely included in band 5, so the channels of band 5 were tested to give conformity to the assigned block.

## 5.2. Radiated Spurious Emission

### LIMIT

LTE Band 2/4/5/12/13/25/26/66: -13dBm;

### TEST CONFIGURATION



### TEST PROCEDURE

- Place the EUT in the center of the turntable.
  - For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference ground plane
  - For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.
- Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.
- The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.
- Receiver or Spectrum set as follow:  
Below 1GHz, RBW=100kHz, VBW=300kHz, Detector=Peak, Sweep time=Auto  
Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peck, Sweep time=Auto
- Each emission under consideration shall be evaluated:
  - Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
  - Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
  - Return the turntable to the azimuth where the highest emission amplitude level was observed.
  - Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
  - Record the measured emission amplitude level and frequency
- Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal

and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

7. Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
8. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
9. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
10. For each emission that was detected and measured in the initial test
  - a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
  - b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.
  - c) Record the output power level of the signal generator when equivalence is achieved in step b).
11. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.
12. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:  
$$P_e = P_s(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
where  
 $P_e$  = equivalent emission power in dBm  
 $P_s$  = source (signal generator) power in dBm  
*NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.*
13. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:  
$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB.}$$
If necessary, the antenna gain can be calculated from calibrated antenna factor information
14. Provide the complete measurement results as a part of the test report.

#### **TEST MODE:**

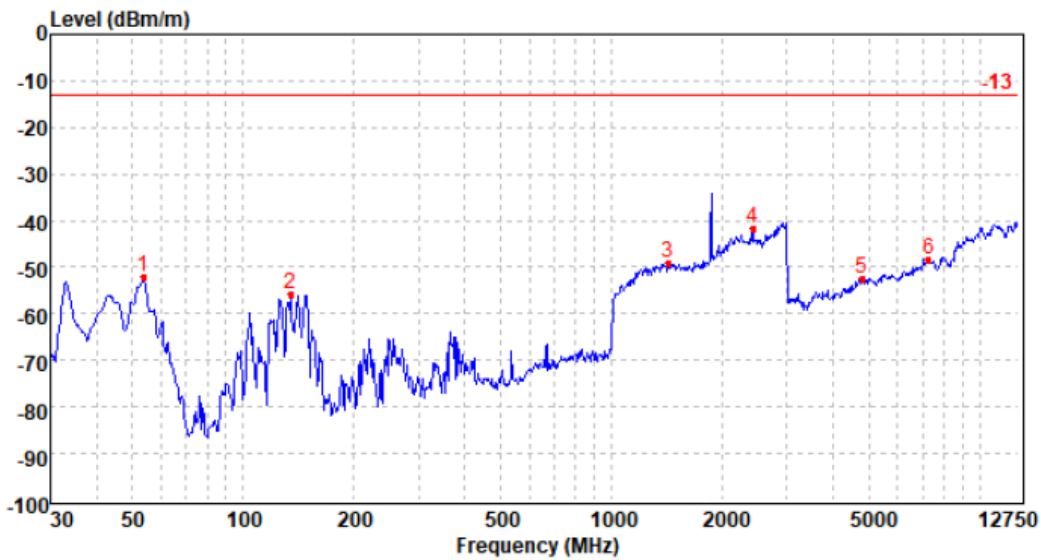
Please refer to the clause 4.2

#### **TEST RESULTS**

**Passed**       **Not Applicable**

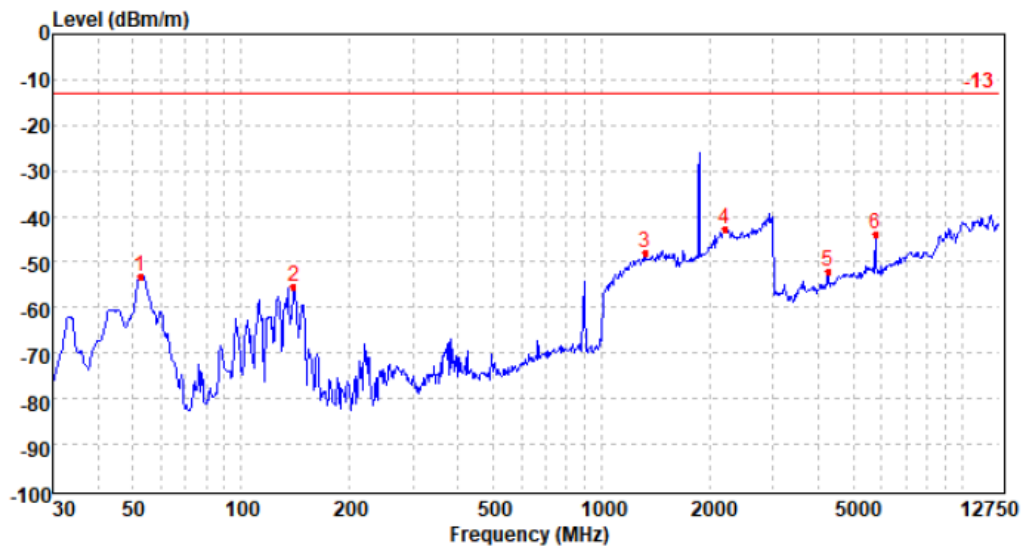
**LTE Band 2**

Test channel: Low Polarization: Horizontal

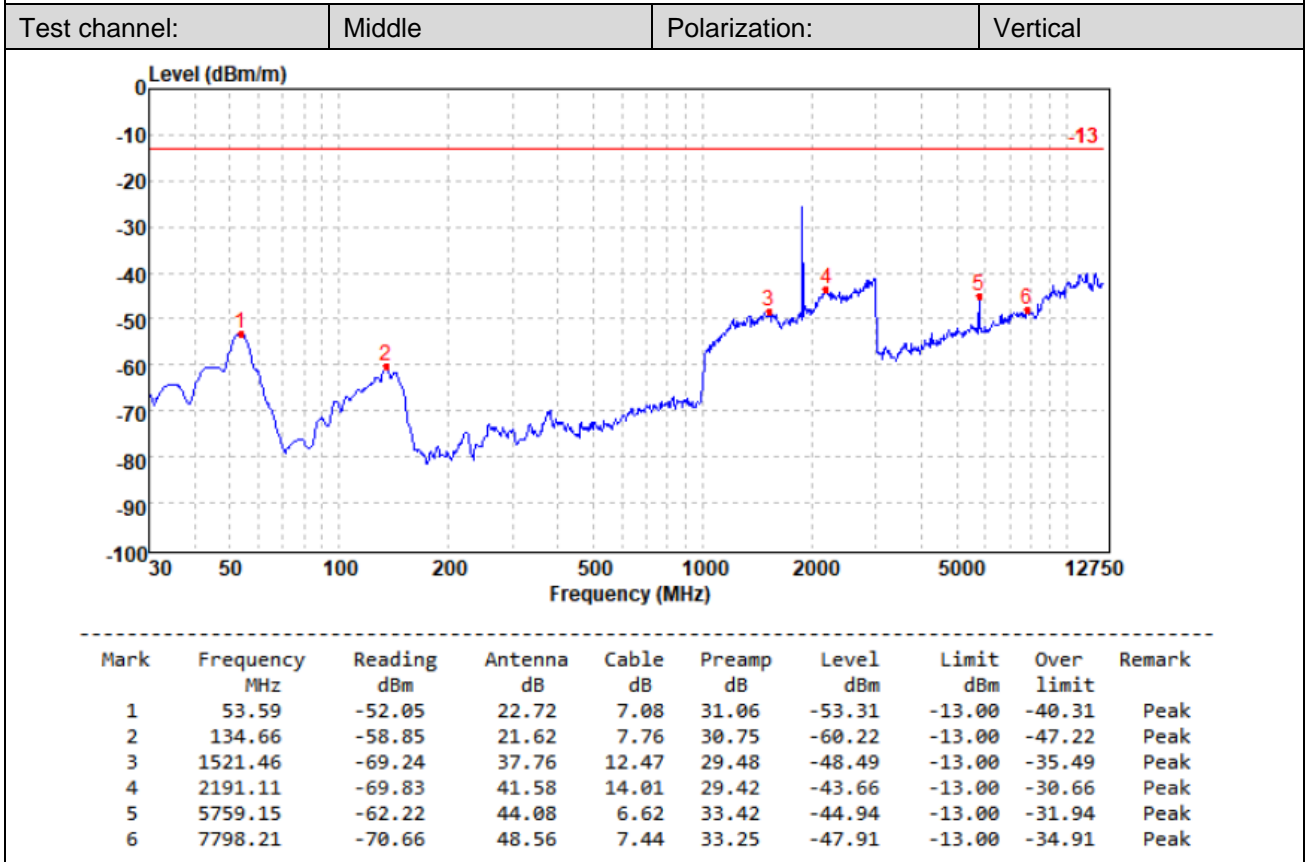
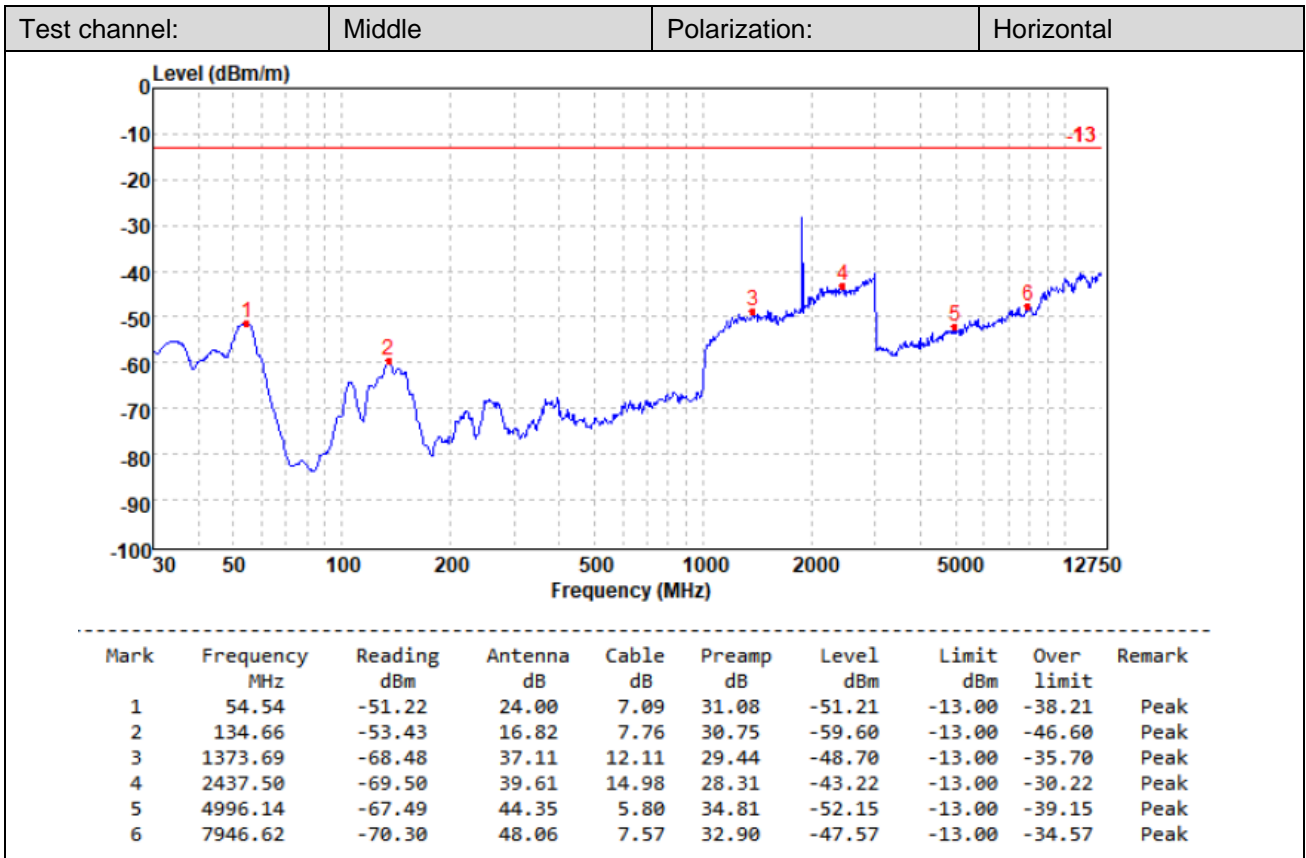


Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamplifier dB	Level dBm	Limit dBm	Over limit	Remark
1	53.59	-51.80	23.91	7.08	31.06	-51.87	-13.00	-38.87	Peak
2	134.66	-49.64	16.82	7.76	30.75	-55.81	-13.00	-42.81	Peak
3	1427.54	-69.09	36.98	12.24	29.36	-49.23	-13.00	-36.23	Peak
4	2426.82	-67.77	39.67	14.93	28.43	-41.60	-13.00	-28.60	Peak
5	4804.28	-67.56	43.67	5.72	34.12	-52.29	-13.00	-39.29	Peak
6	7263.28	-70.16	48.08	7.27	33.41	-48.22	-13.00	-35.22	Peak

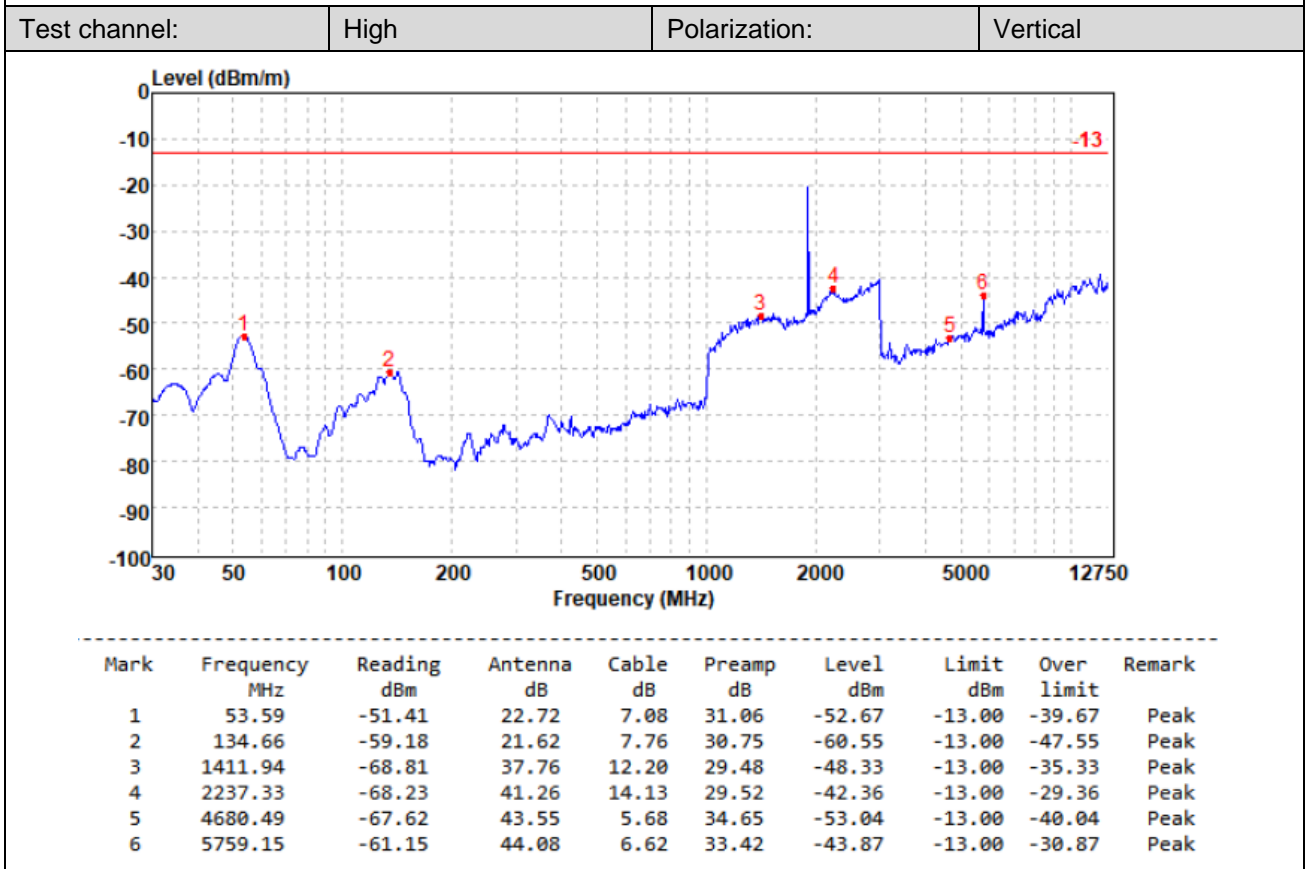
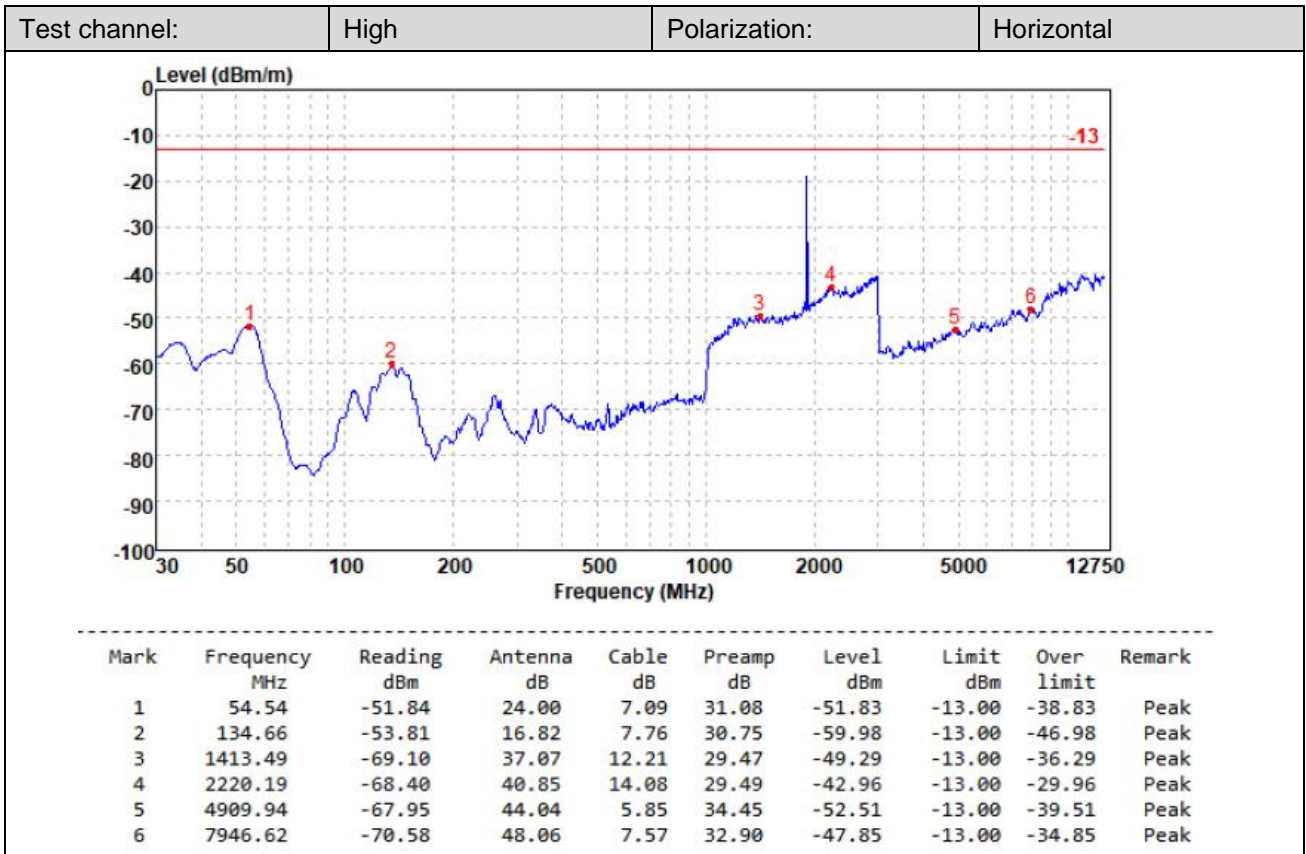
Test channel: Low Polarization: Vertical



Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamplifier dB	Level dBm	Limit dBm	Over limit	Remark
1	52.47	-51.72	22.52	7.07	31.04	-53.17	-13.00	-40.17	Peak
2	139.97	-54.27	21.94	7.80	30.71	-55.24	-13.00	-42.24	Peak
3	1326.23	-67.98	37.44	12.00	29.52	-48.06	-13.00	-35.06	Peak
4	2205.60	-68.92	41.66	14.05	29.45	-42.66	-13.00	-29.66	Peak
5	4265.62	-64.36	42.69	5.46	35.81	-52.02	-13.00	-39.02	Peak
6	5759.15	-61.05	44.08	6.62	33.42	-43.77	-13.00	-30.77	Peak

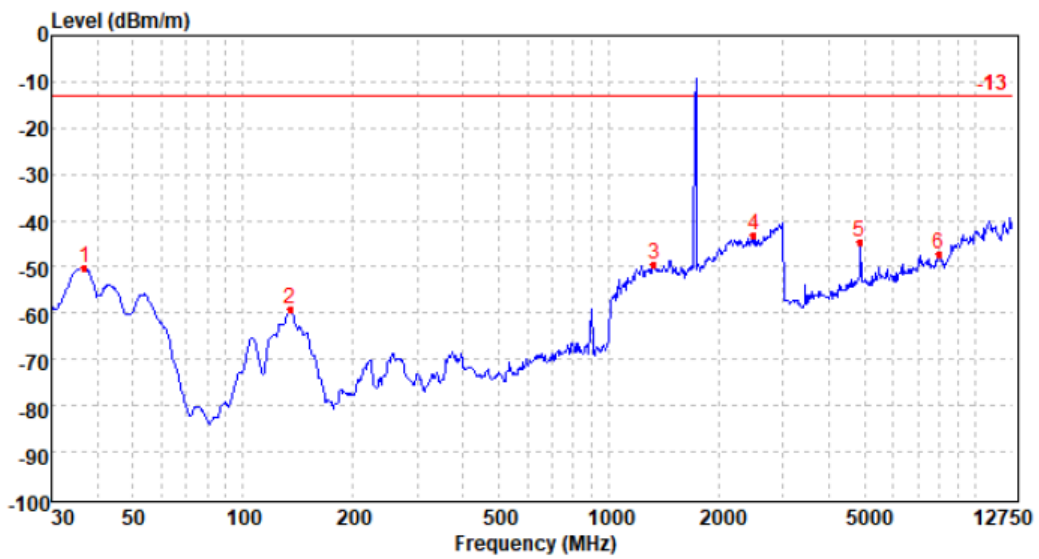






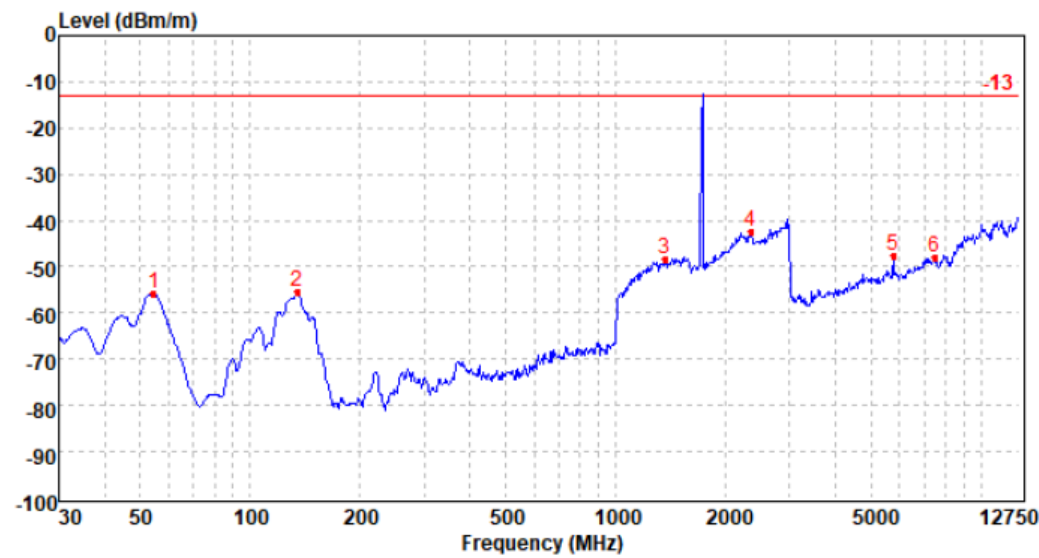
**LTE Band 4**

Test channel: Low Polarization: Horizontal

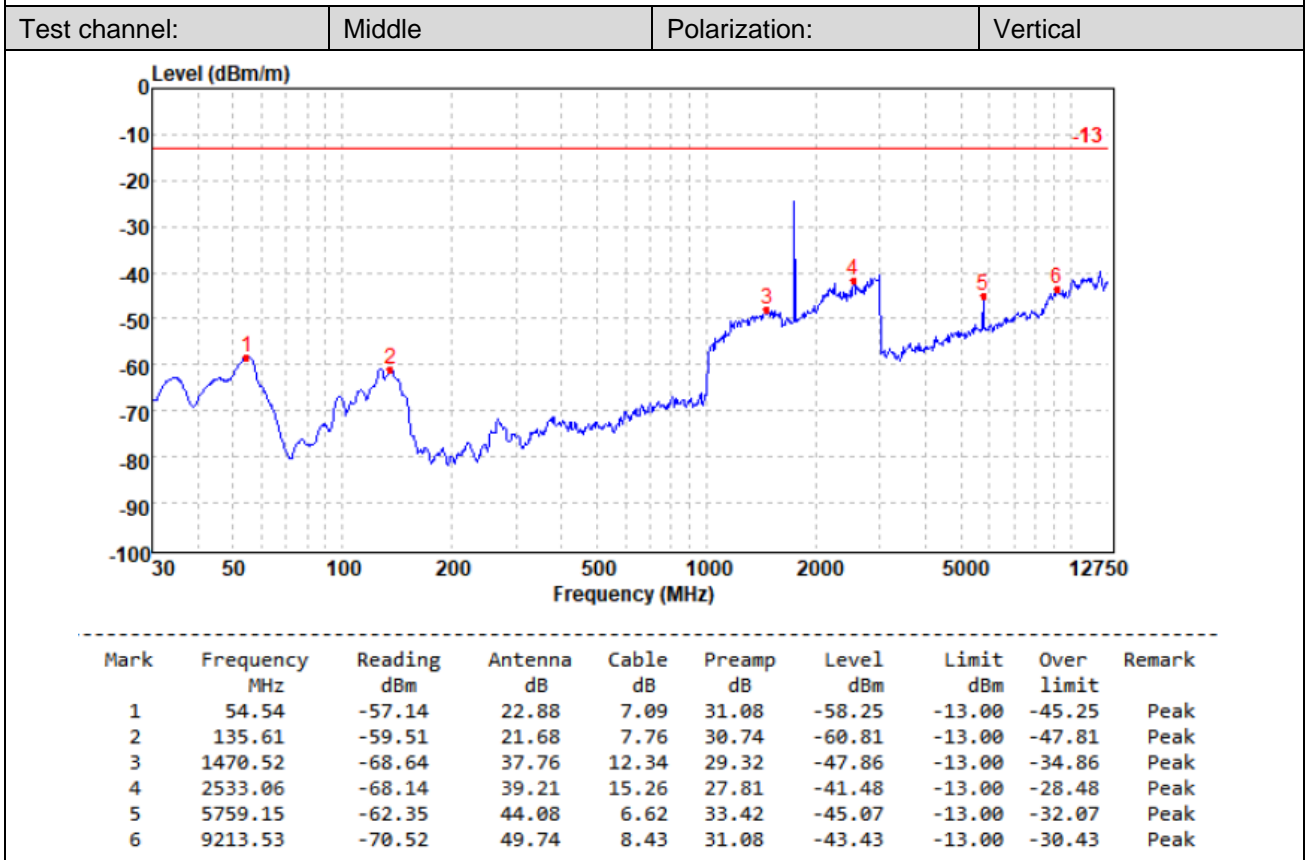
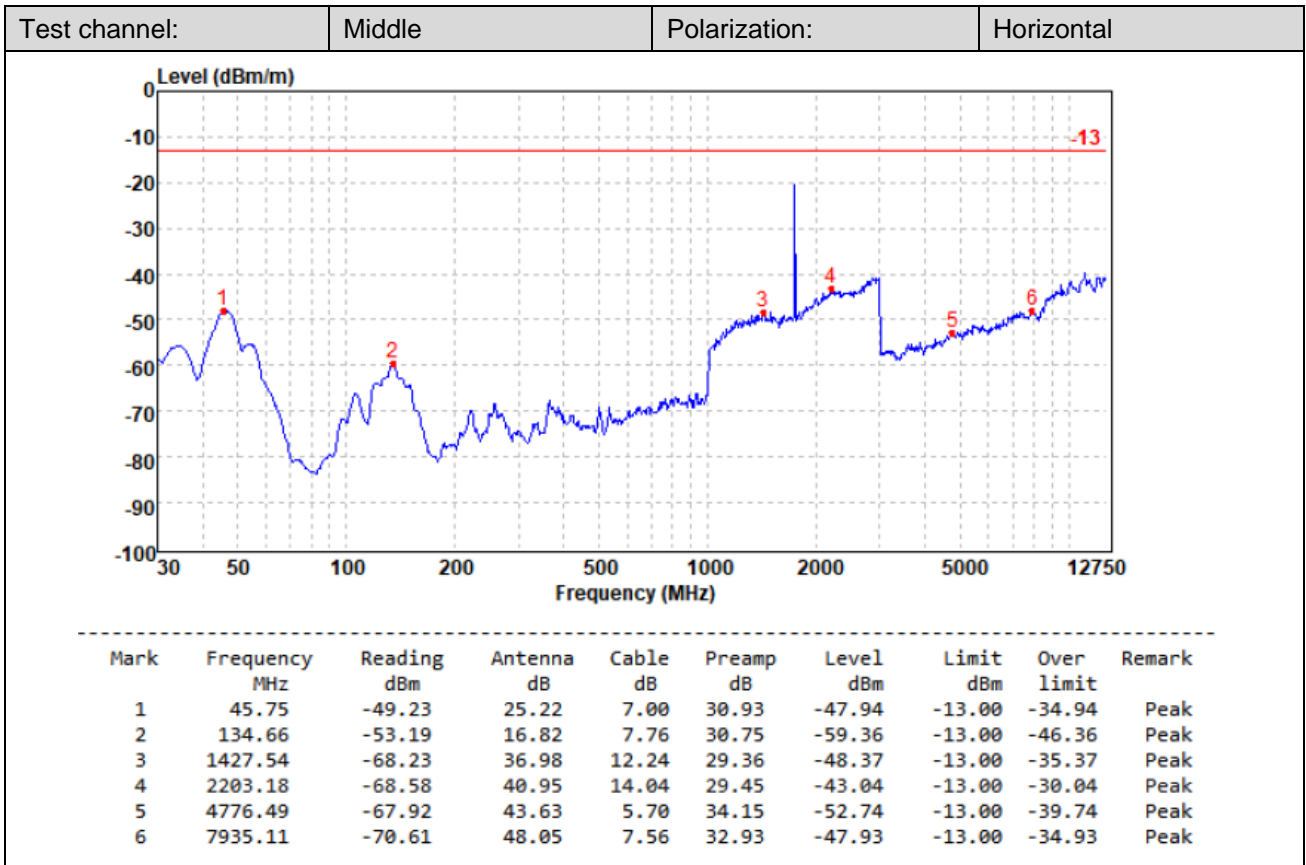


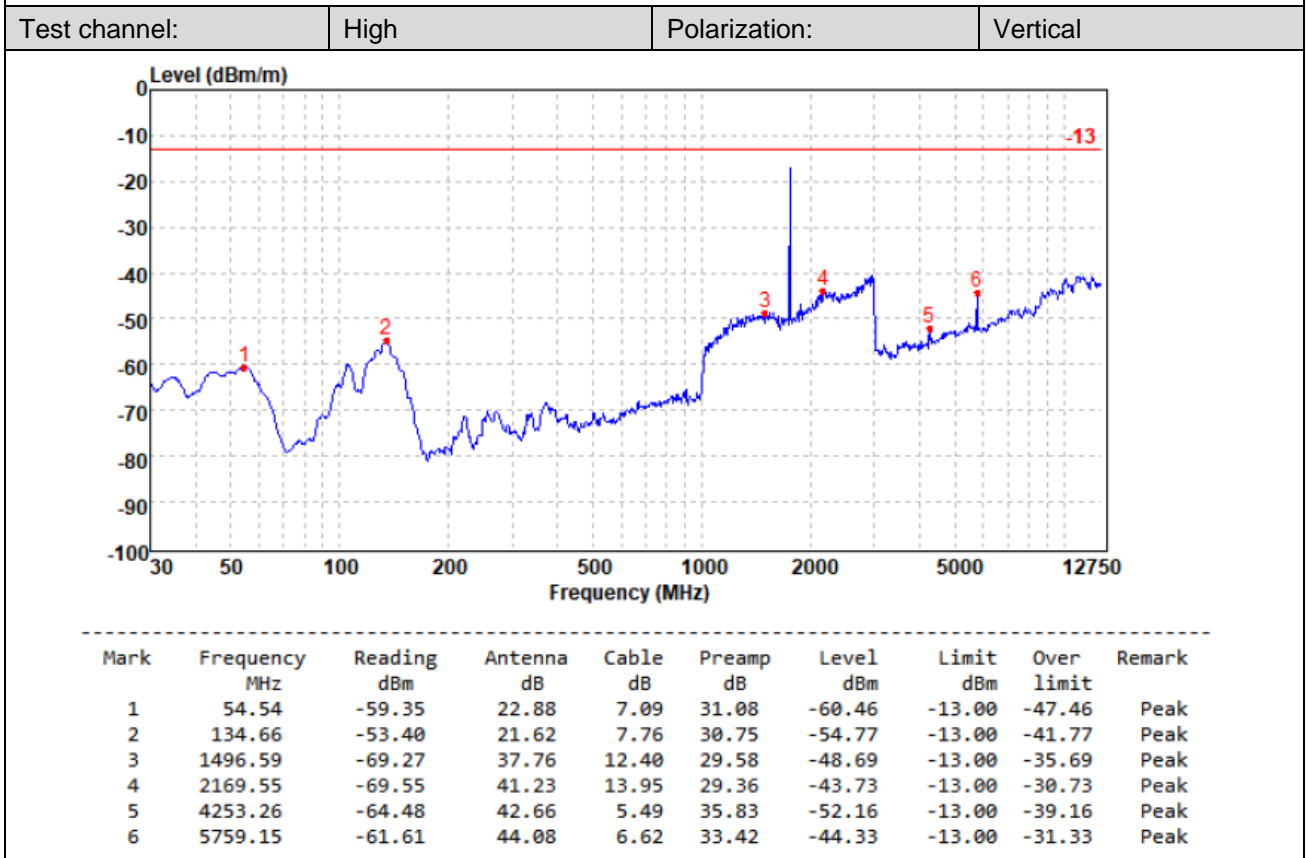
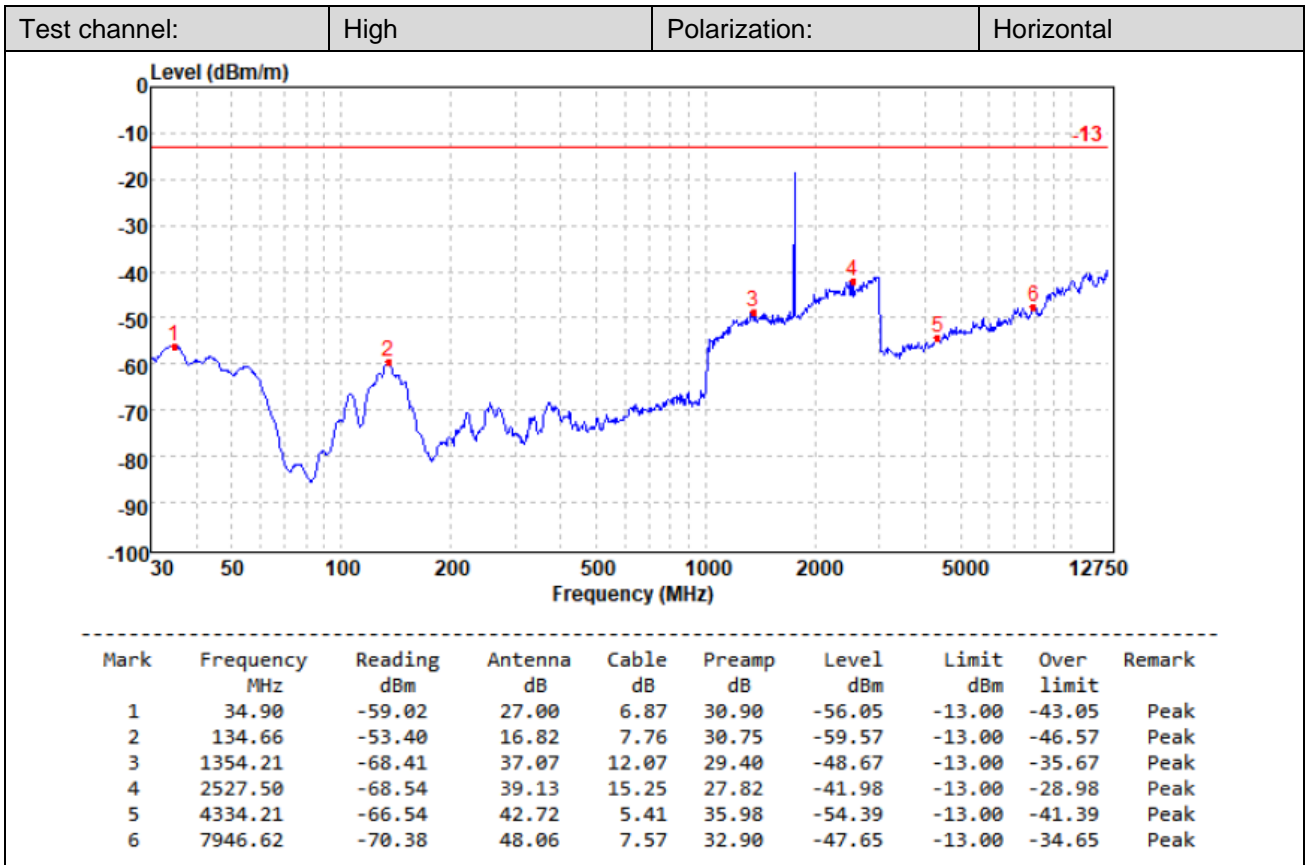
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	36.92	-53.54	27.32	6.89	30.87	-50.20	-13.00	-37.20	Peak
2	134.66	-53.11	16.82	7.76	30.75	-59.28	-13.00	-46.28	Peak
3	1327.69	-69.00	37.01	12.01	29.51	-49.49	-13.00	-36.49	Peak
4	2491.65	-69.63	39.32	15.19	27.95	-43.07	-13.00	-30.07	Peak
5	4853.30	-59.87	43.84	5.79	34.31	-44.55	-13.00	-31.55	Peak
6	7992.86	-70.24	48.12	7.61	32.82	-47.33	-13.00	-34.33	Peak

Test channel: Low Polarization: Vertical



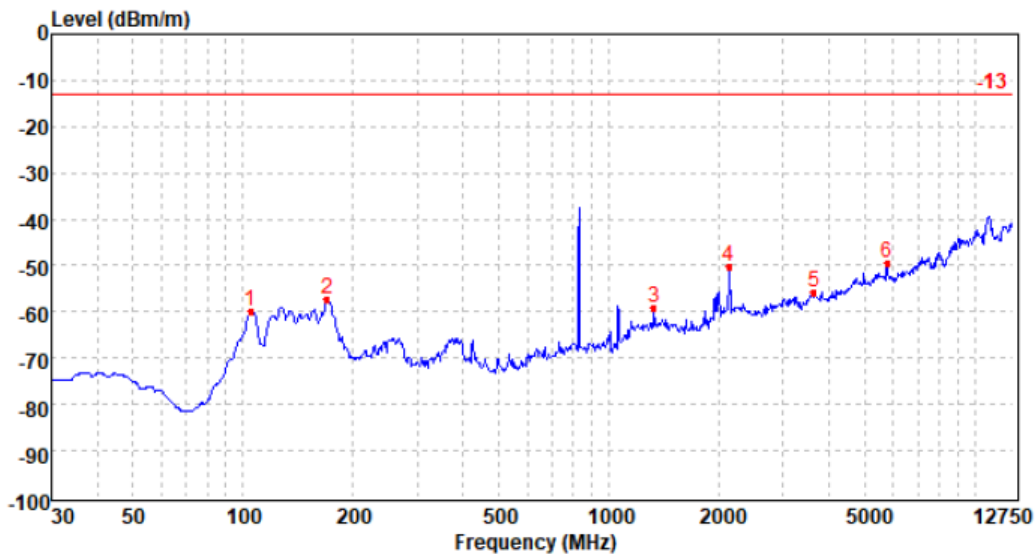
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	54.54	-54.75	22.88	7.09	31.08	-55.86	-13.00	-42.86	Peak
2	134.66	-53.92	21.62	7.76	30.75	-55.29	-13.00	-42.29	Peak
3	1367.66	-68.44	37.62	12.10	29.43	-48.15	-13.00	-35.15	Peak
4	2342.98	-68.12	39.99	14.50	28.93	-42.56	-13.00	-29.56	Peak
5	5759.15	-64.81	44.08	6.62	33.42	-47.53	-13.00	-34.53	Peak
6	7487.89	-70.24	48.44	7.37	33.67	-48.10	-13.00	-35.10	Peak





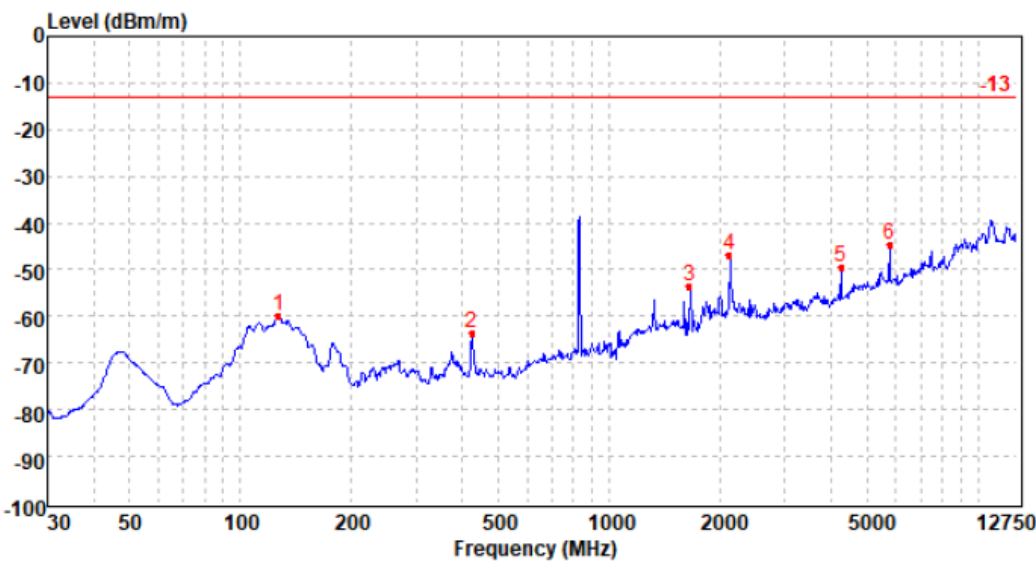
**LTE Band 5**

Test channel: Low Polarization: Horizontal

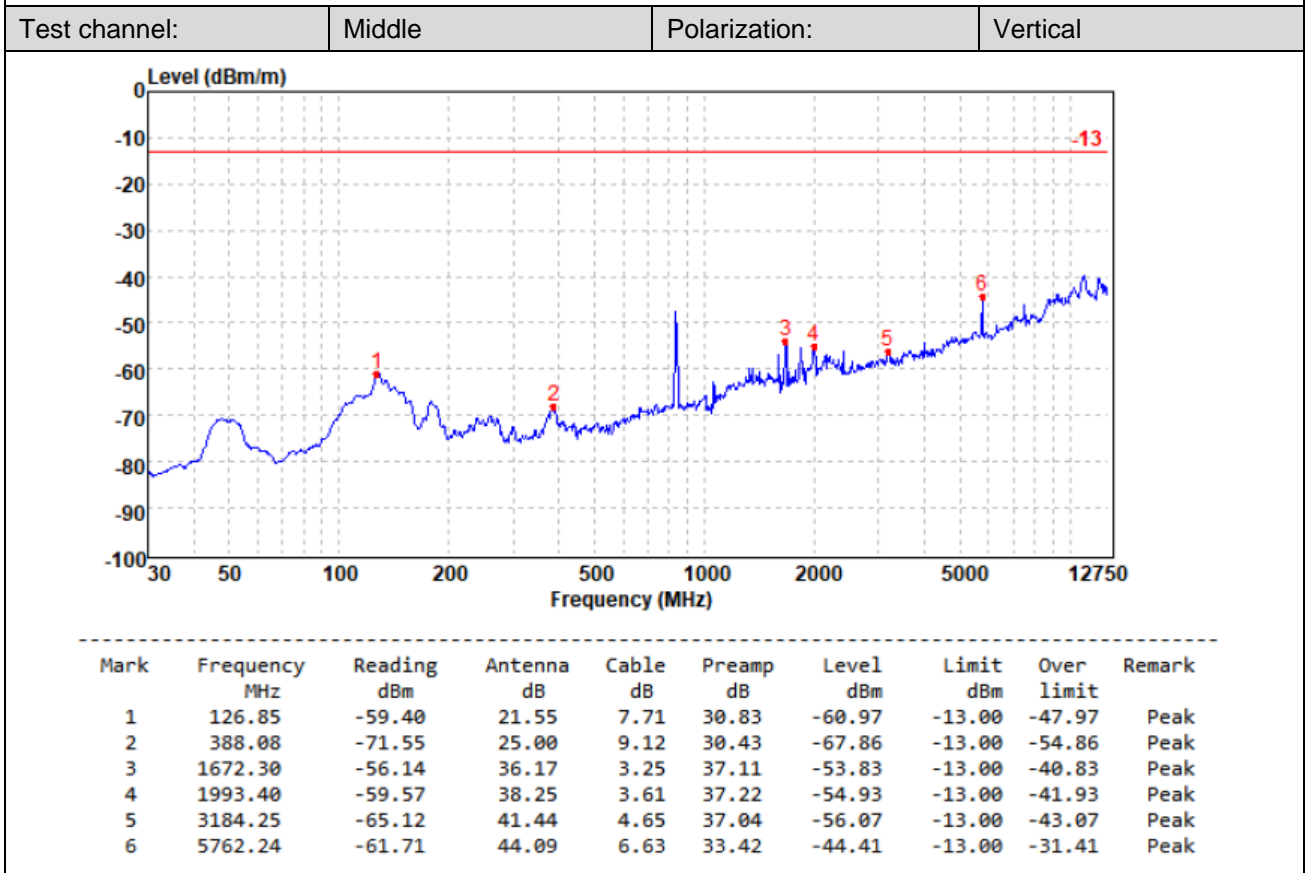
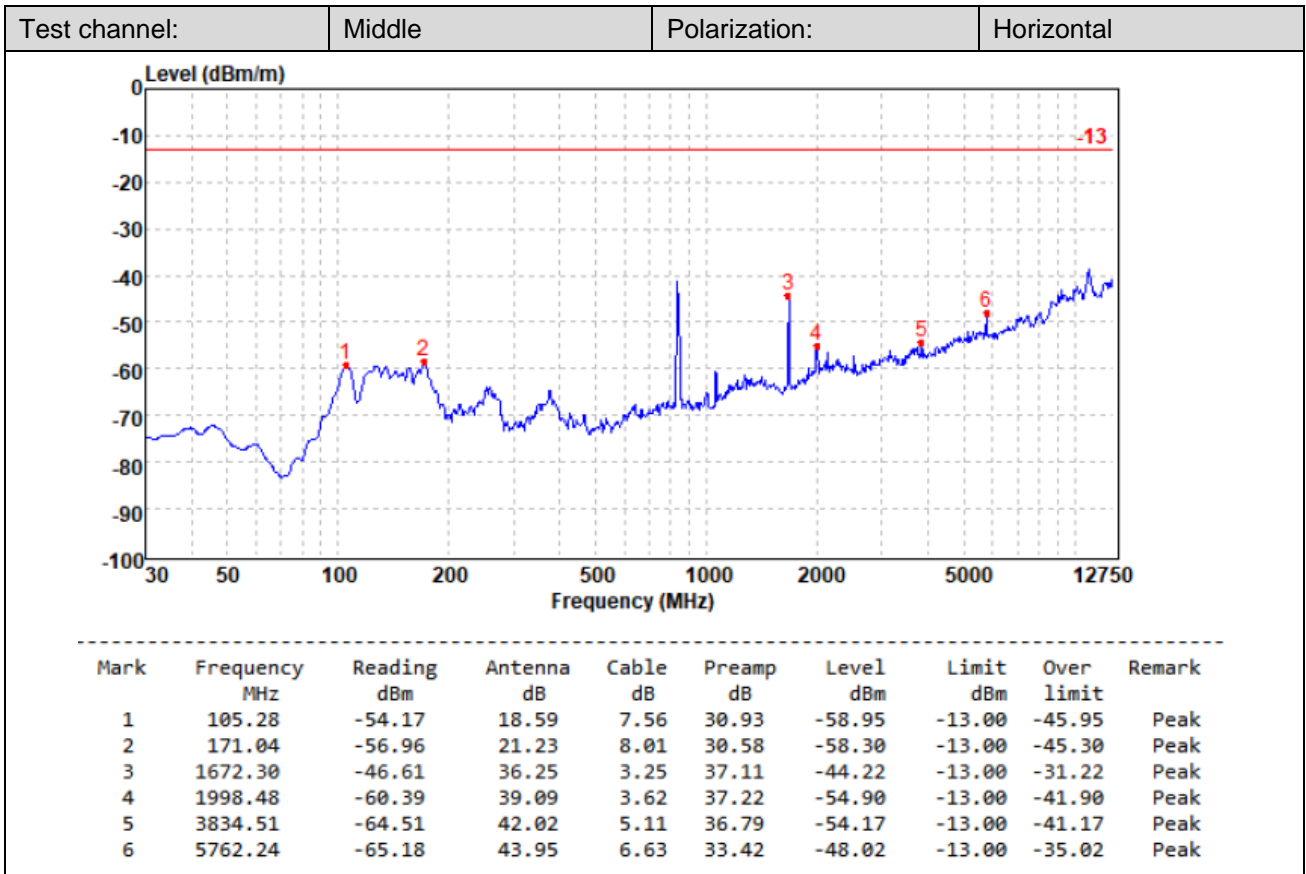


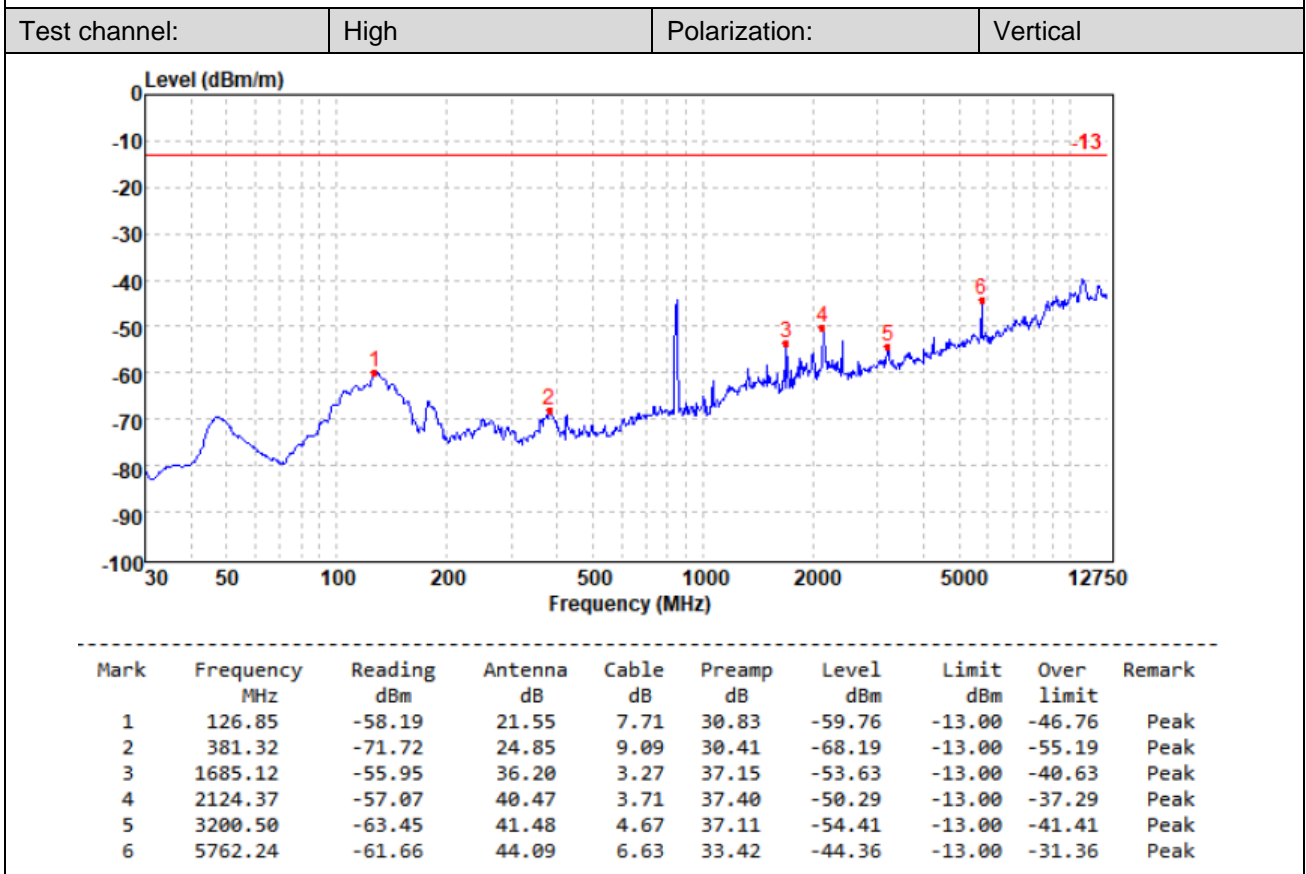
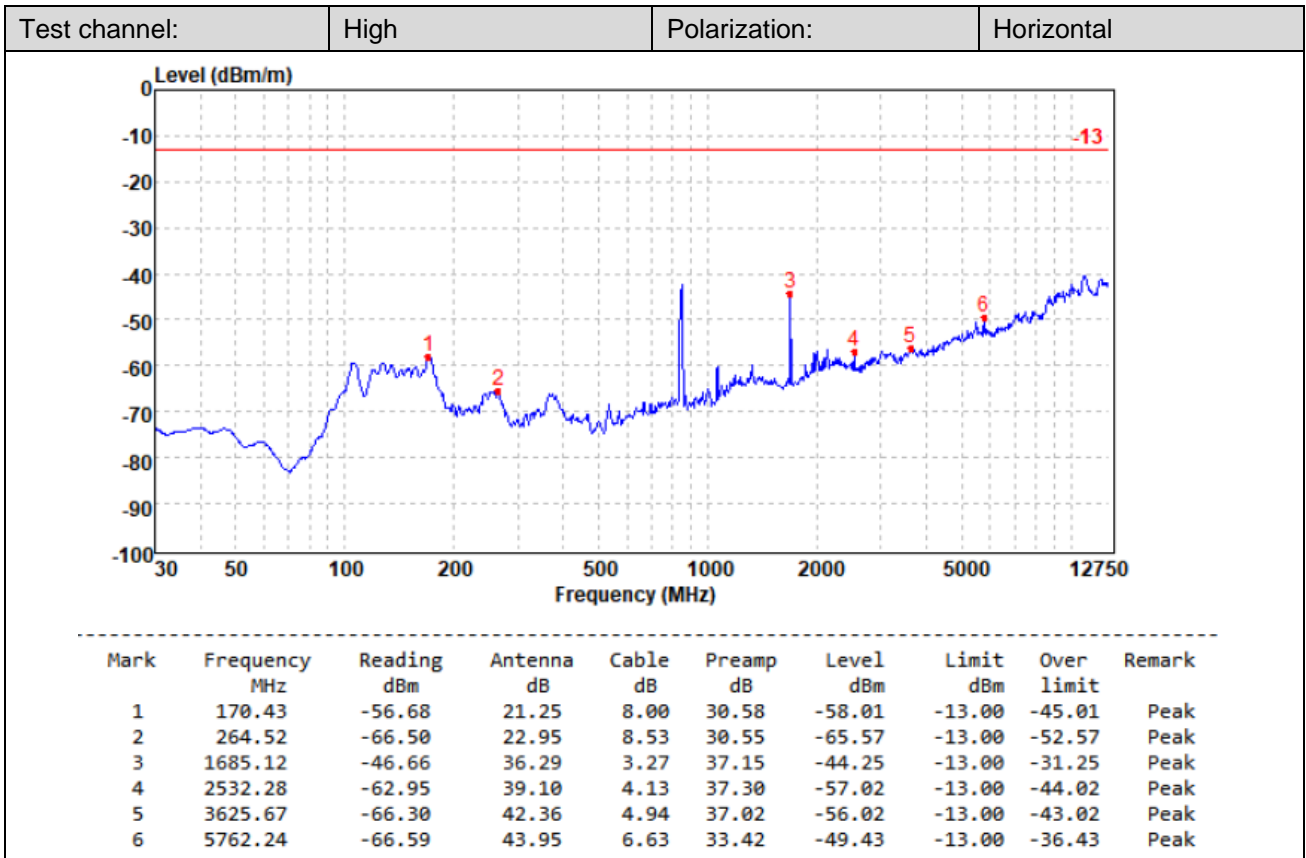
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	105.28	-54.92	18.59	7.56	30.93	-59.70	-13.00	-46.70	Peak
2	170.43	-55.90	21.25	8.00	30.58	-57.23	-13.00	-44.23	Peak
3	1329.89	-62.55	37.02	2.90	36.37	-59.00	-13.00	-46.00	Peak
4	2129.79	-56.84	40.34	3.71	37.41	-50.20	-13.00	-37.20	Peak
5	3634.91	-66.13	42.35	4.94	37.04	-55.88	-13.00	-42.88	Peak
6	5762.24	-66.44	43.95	6.63	33.42	-49.28	-13.00	-36.28	Peak

Test channel: Low Polarization: Vertical



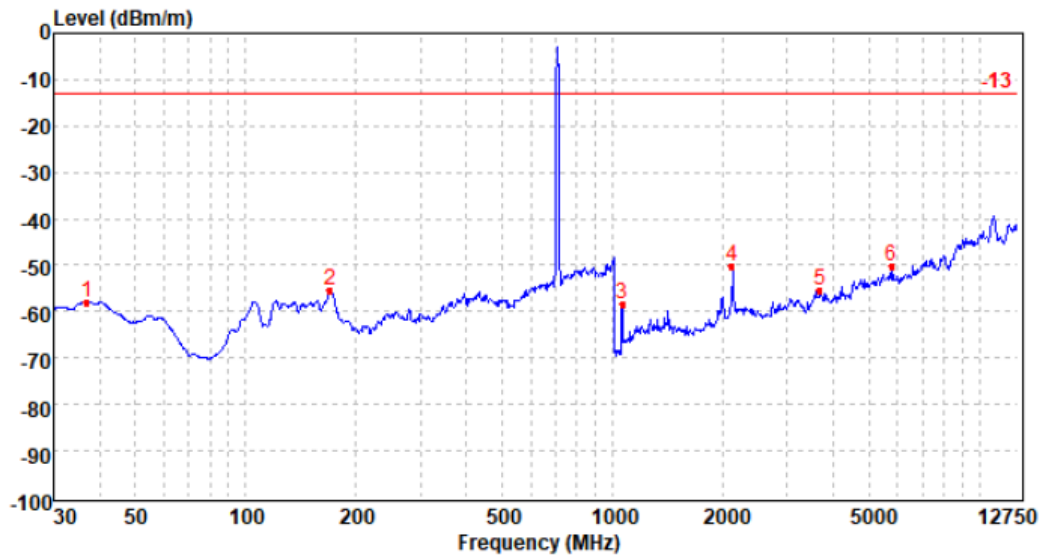
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	126.85	-58.18	21.55	7.71	30.83	-59.75	-13.00	-46.75	Peak
2	425.24	-67.97	25.43	9.26	30.44	-63.72	-13.00	-50.72	Peak
3	1655.35	-55.61	36.13	3.24	37.20	-53.44	-13.00	-40.44	Peak
4	2124.37	-53.78	40.47	3.71	37.40	-47.00	-13.00	-34.00	Peak
5	4267.18	-61.60	42.69	5.45	35.82	-49.28	-13.00	-36.28	Peak
6	5762.24	-61.84	44.09	6.63	33.42	-44.54	-13.00	-31.54	Peak





LTE Band 12									
Test channel:	Low	Polarization:	Horizontal						
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	57.50	-91.16	24.29	7.12	0.00	-59.75	-13.00	-46.75	Peak
2	171.04	-85.07	21.23	8.01	0.00	-55.83	-13.00	-42.83	Peak
3	1406.50	-63.23	37.12	3.06	36.61	-59.66	-13.00	-46.66	Peak
4	2108.21	-55.09	40.14	3.70	37.46	-48.71	-13.00	-35.71	Peak
5	4343.90	-67.16	42.75	5.43	35.97	-54.95	-13.00	-41.95	Peak
6	6974.36	-70.62	47.53	7.15	33.54	-49.48	-13.00	-36.48	Peak
Test channel:	Low	Polarization:	Vertical						
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	126.85	-87.28	21.55	7.71	0.00	-58.02	-13.00	-45.02	Peak
2	486.03	-91.62	25.90	9.51	0.00	-56.21	-13.00	-43.21	Peak
3	1593.34	-59.27	37.76	3.18	37.14	-55.47	-13.00	-42.47	Peak
4	2129.79	-54.82	40.57	3.71	37.41	-47.95	-13.00	-34.95	Peak
5	4034.78	-66.29	41.71	5.26	36.52	-55.84	-13.00	-42.84	Peak
6	5762.24	-61.62	44.09	6.63	33.42	-44.32	-13.00	-31.32	Peak
Test channel:	Middle	Polarization:	Horizontal						





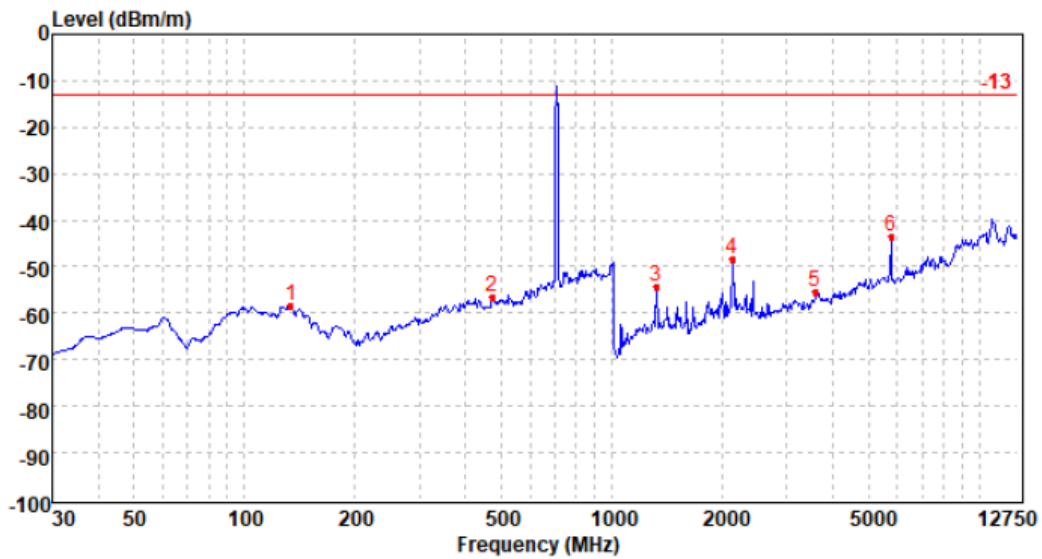
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamplifier dB	Level dBm	Limit dBm	Over limit	Remark
1	36.92	-92.07	27.32	6.89	0.00	-57.86	-13.00	-44.86	Peak
2	170.43	-84.79	21.25	8.00	0.00	-55.54	-13.00	-42.54	Peak
3	1063.00	-57.20	33.23	2.59	37.03	-58.41	-13.00	-45.41	Peak
4	2118.97	-56.58	40.24	3.70	37.42	-50.06	-13.00	-37.06	Peak
5	3672.11	-65.69	42.32	4.95	37.12	-55.54	-13.00	-42.54	Peak
6	5762.24	-67.24	43.95	6.63	33.42	-50.08	-13.00	-37.08	Peak

Test channel:

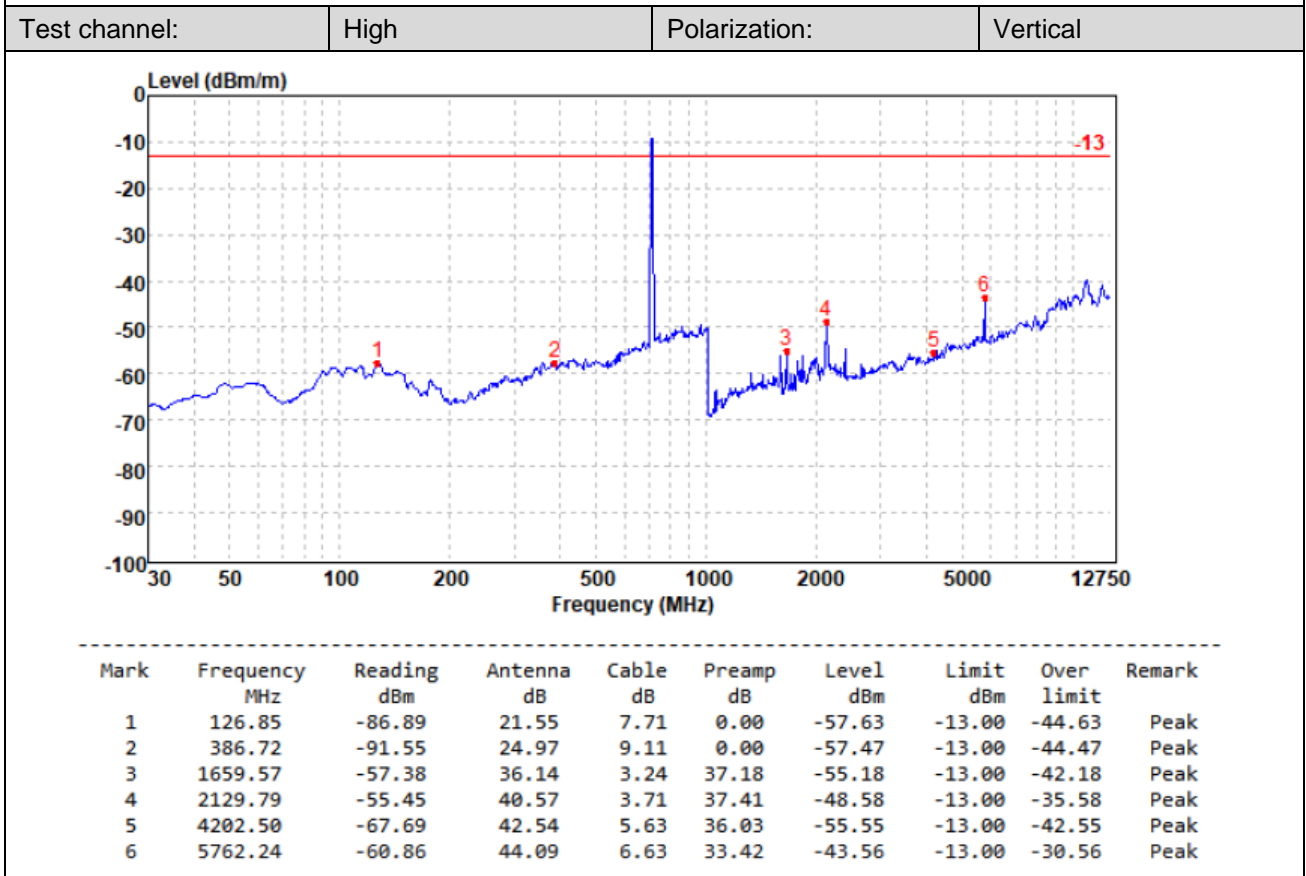
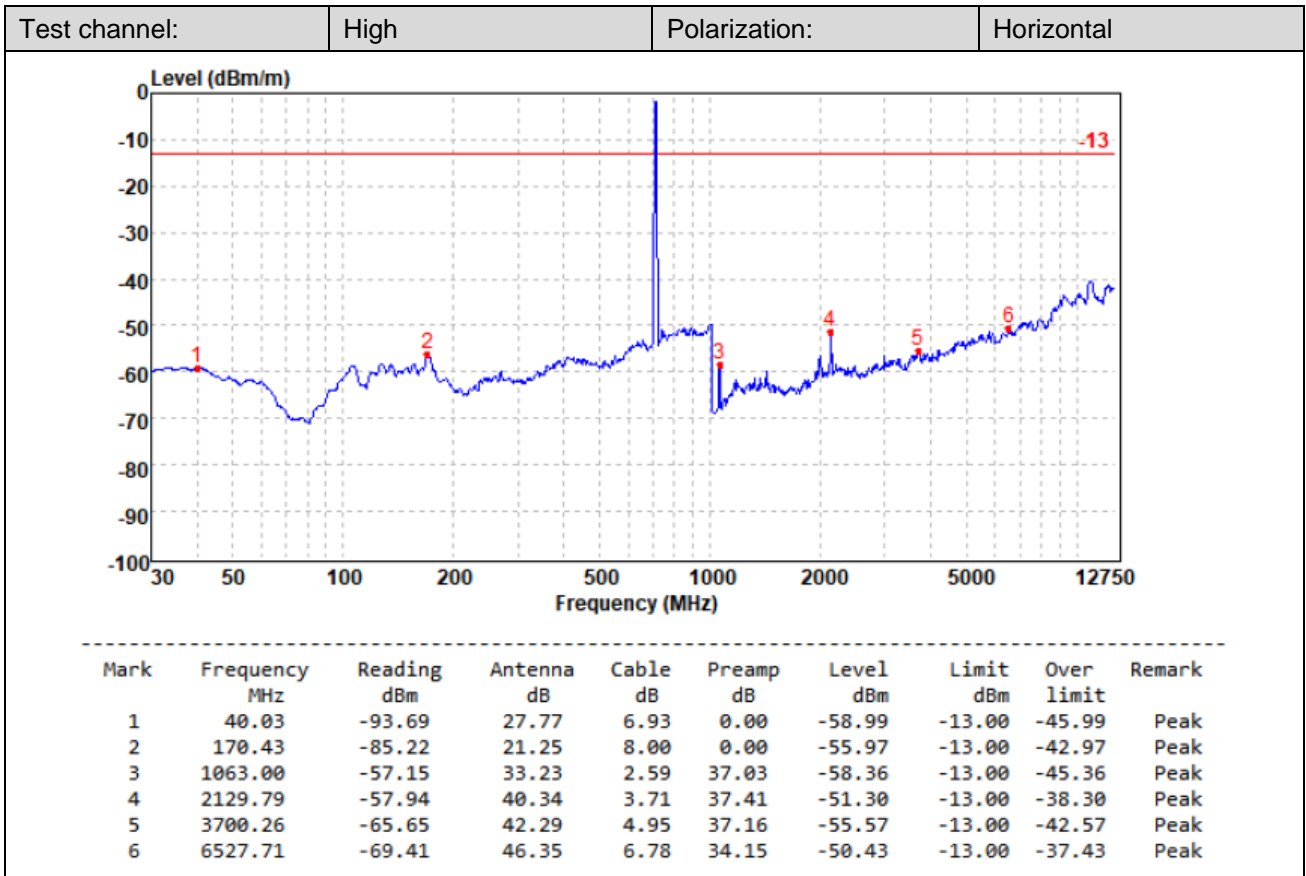
Middle

Polarization:

Vertical

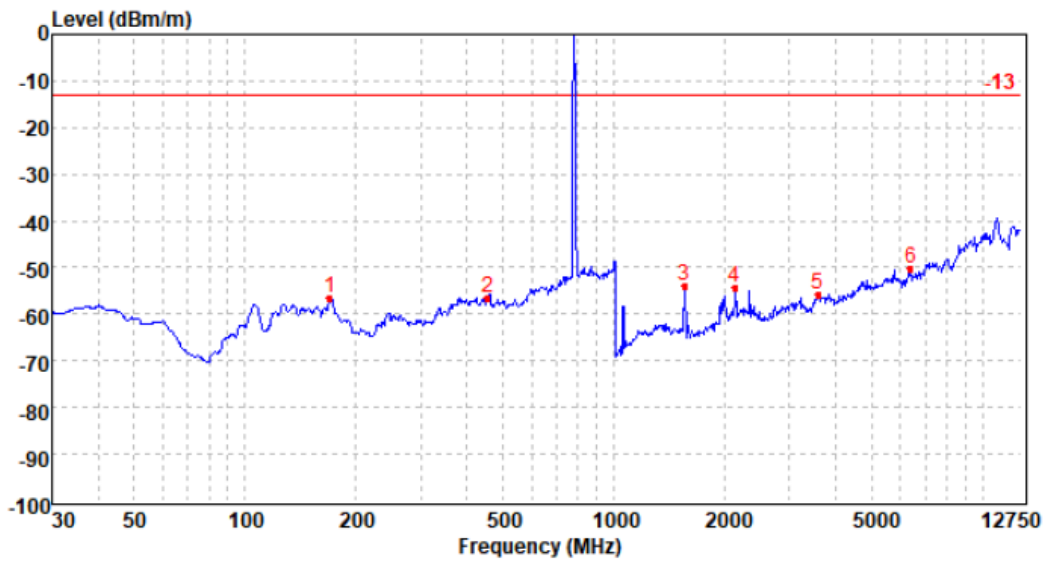


Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamplifier dB	Level dBm	Limit dBm	Over limit	Remark
1	133.72	-87.57	21.56	7.75	0.00	-58.26	-13.00	-45.26	Peak
2	472.55	-91.51	25.45	9.47	0.00	-56.59	-13.00	-43.59	Peak
3	1326.51	-58.28	37.44	2.90	36.42	-54.36	-13.00	-41.36	Peak
4	2129.79	-55.12	40.57	3.71	37.41	-48.25	-13.00	-35.25	Peak
5	3588.94	-65.93	42.46	4.92	37.00	-55.55	-13.00	-42.55	Peak
6	5762.24	-60.76	44.09	6.63	33.42	-43.46	-13.00	-30.46	Peak



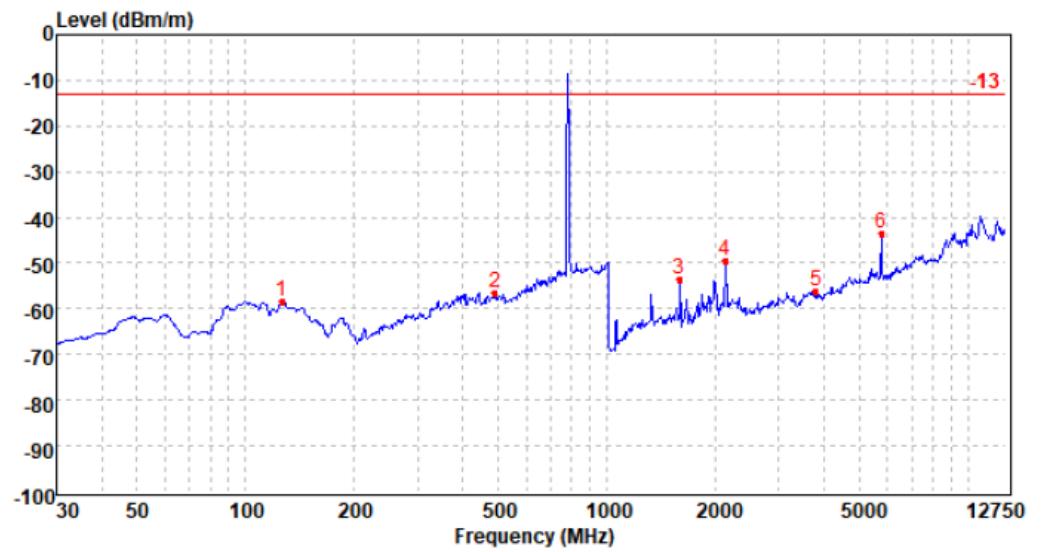
**LTE Band 13**

Test channel: Low Polarization: Horizontal

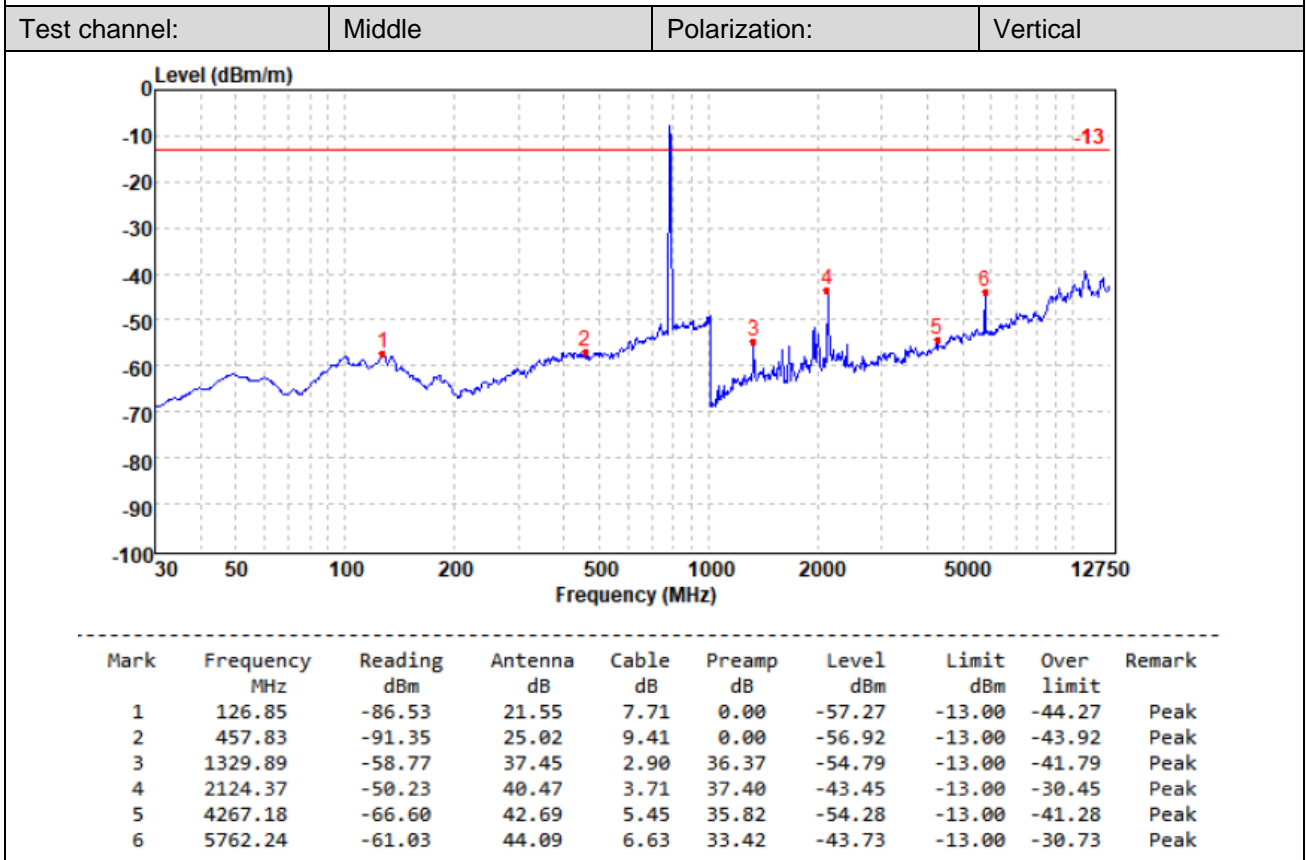
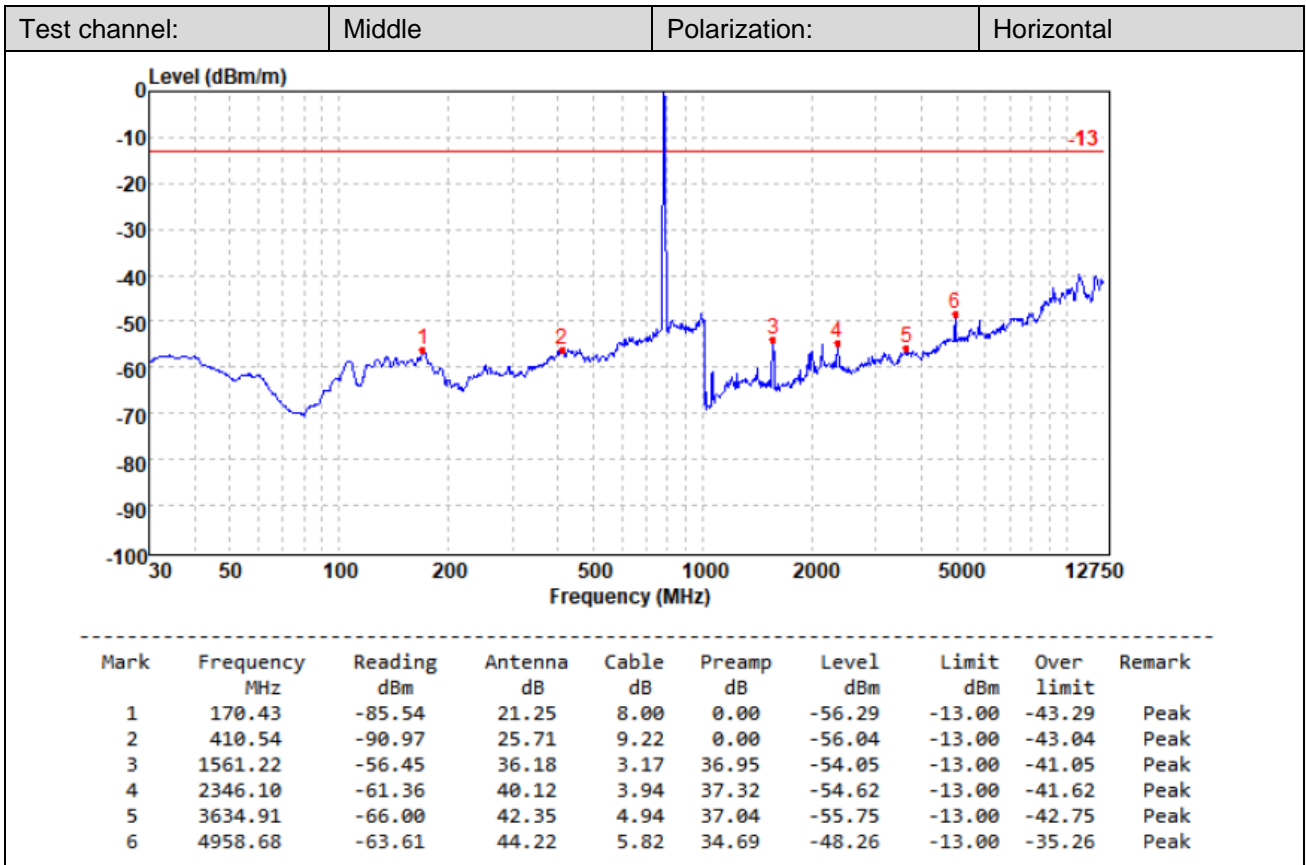


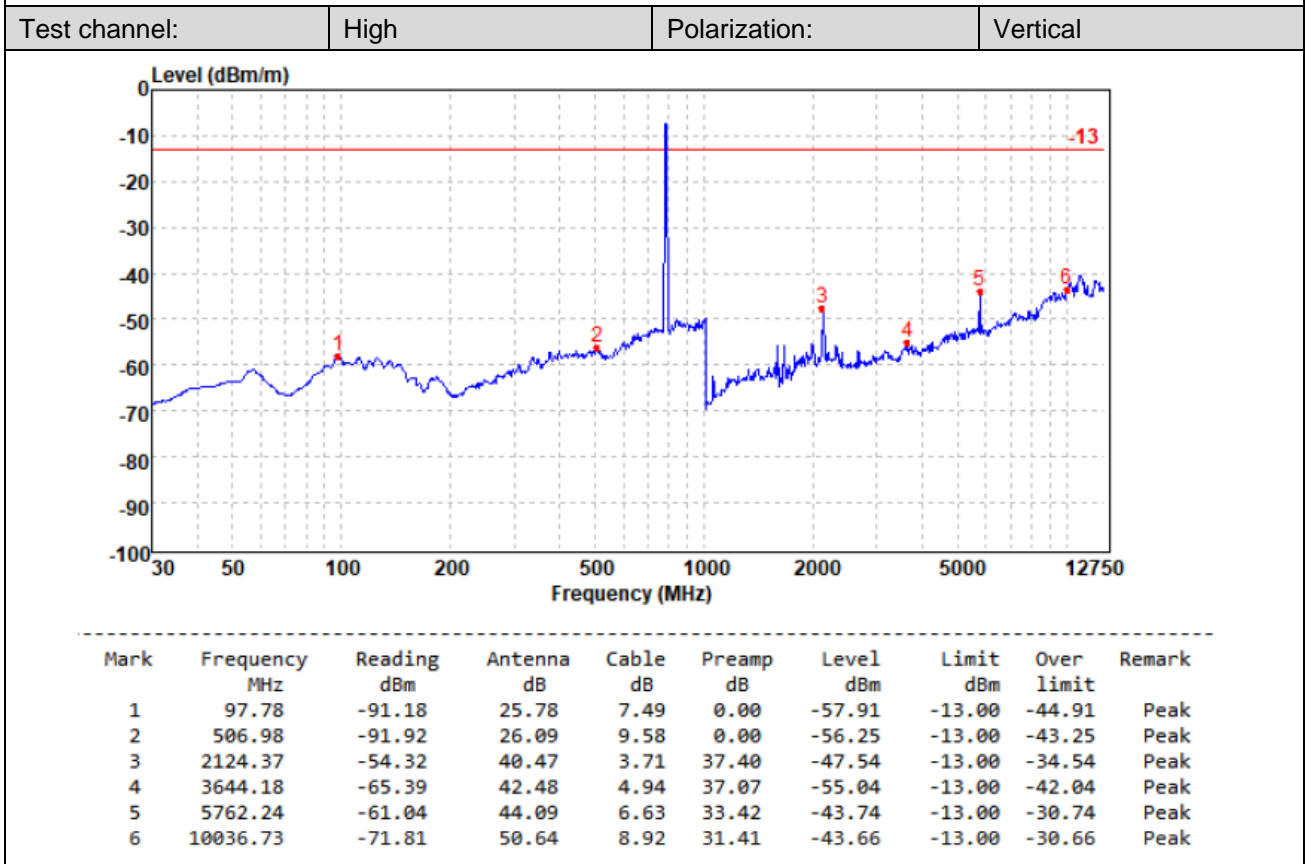
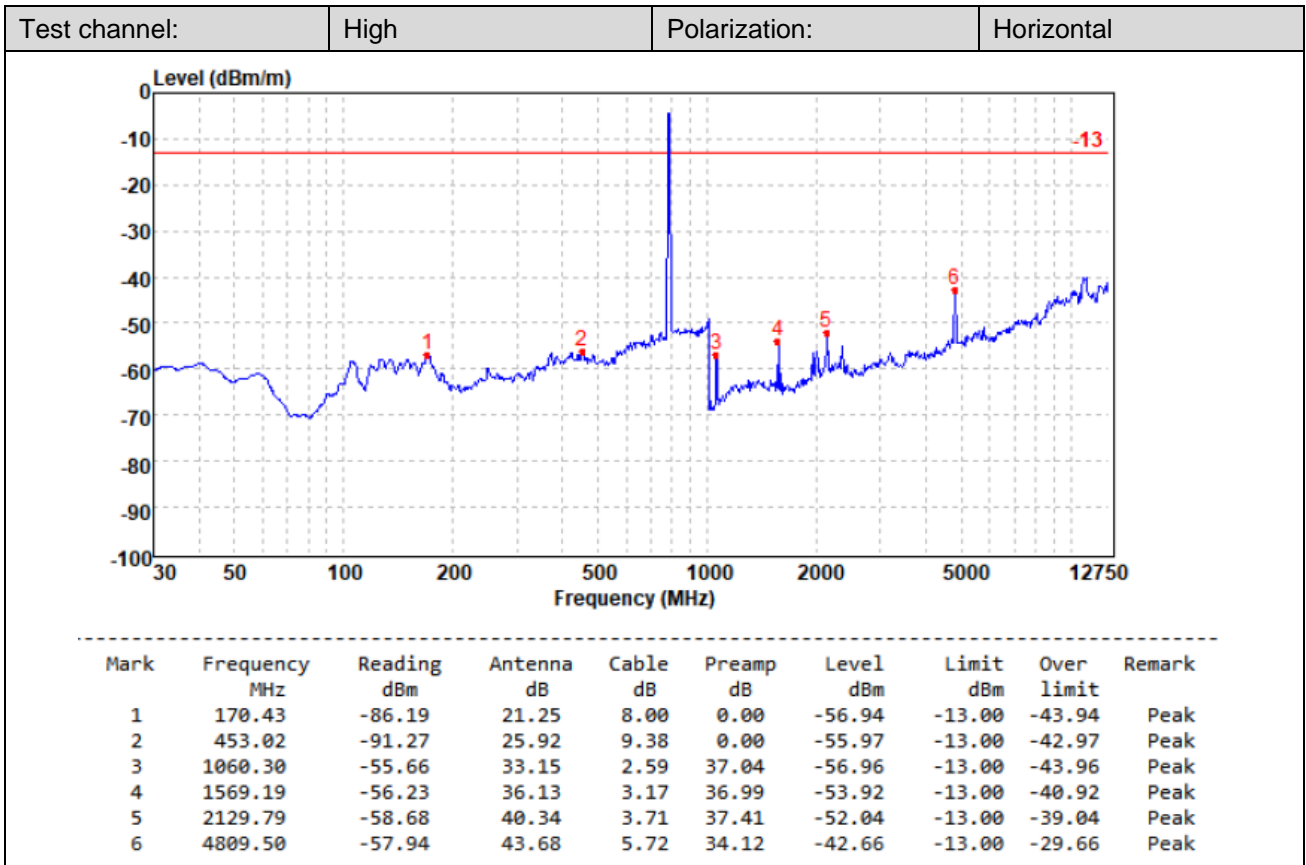
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	170.43	-85.80	21.25	8.00	0.00	-56.55	-13.00	-43.55	Peak
2	456.22	-91.75	25.89	9.40	0.00	-56.46	-13.00	-43.46	Peak
3	1557.25	-56.47	36.20	3.17	36.94	-54.04	-13.00	-41.04	Peak
4	2129.79	-61.02	40.34	3.71	37.41	-54.38	-13.00	-41.38	Peak
5	3588.94	-65.75	42.24	4.92	37.00	-55.59	-13.00	-42.59	Peak
6	6396.13	-69.19	46.10	6.88	34.01	-50.22	-13.00	-37.22	Peak

Test channel: Low Polarization: Vertical



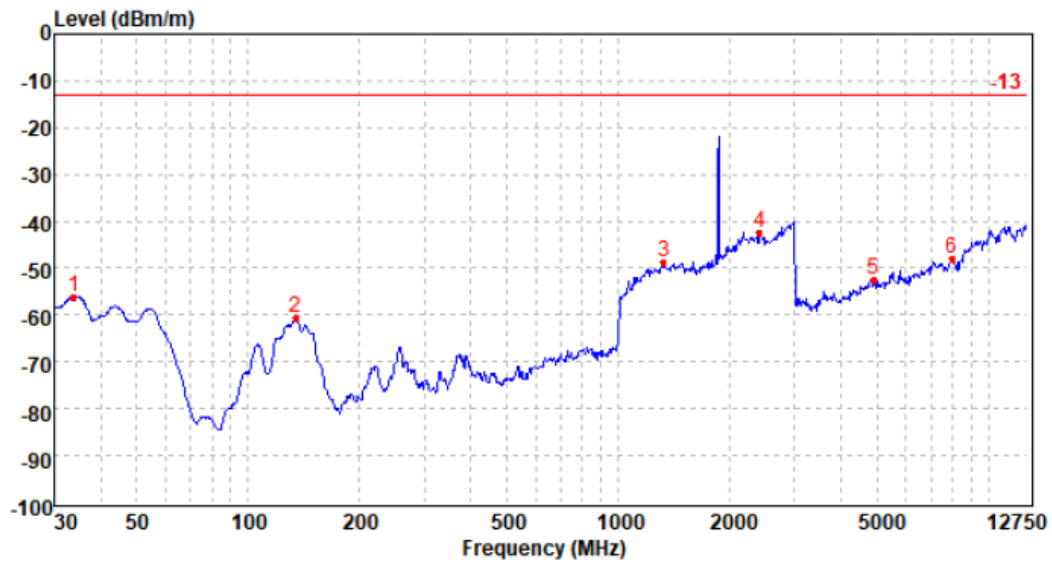
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	125.96	-87.71	21.62	7.70	0.00	-58.39	-13.00	-45.39	Peak
2	491.19	-92.19	26.03	9.53	0.00	-56.63	-13.00	-43.63	Peak
3	1593.34	-57.18	37.76	3.18	37.14	-53.38	-13.00	-40.38	Peak
4	2129.79	-56.43	40.57	3.71	37.41	-49.56	-13.00	-36.56	Peak
5	3805.33	-66.37	42.01	5.08	36.76	-56.04	-13.00	-43.04	Peak
6	5762.24	-60.86	44.09	6.63	33.42	-43.56	-13.00	-30.56	Peak





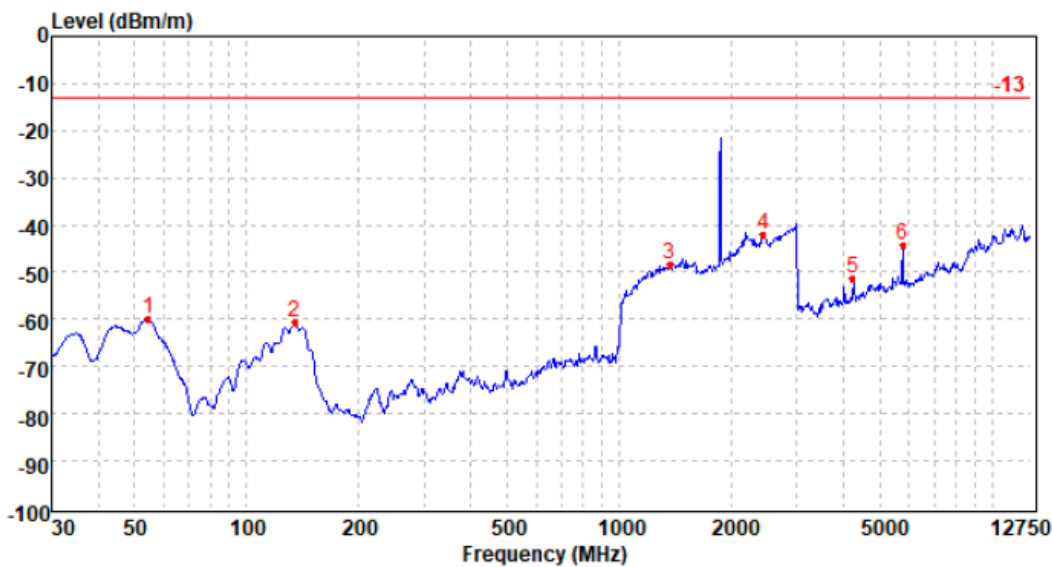
**LTE Band 25**

Test channel: Low Polarization: Horizontal

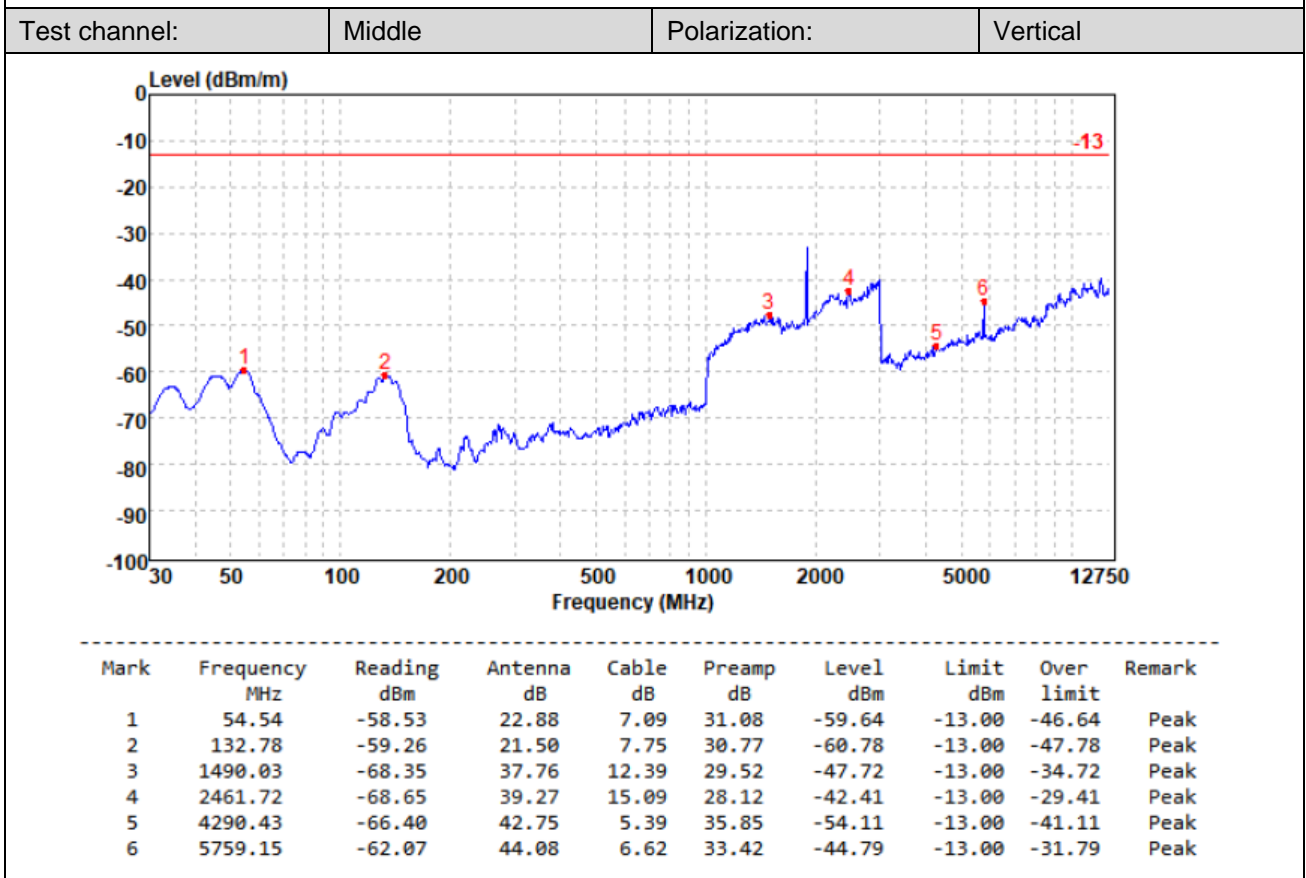
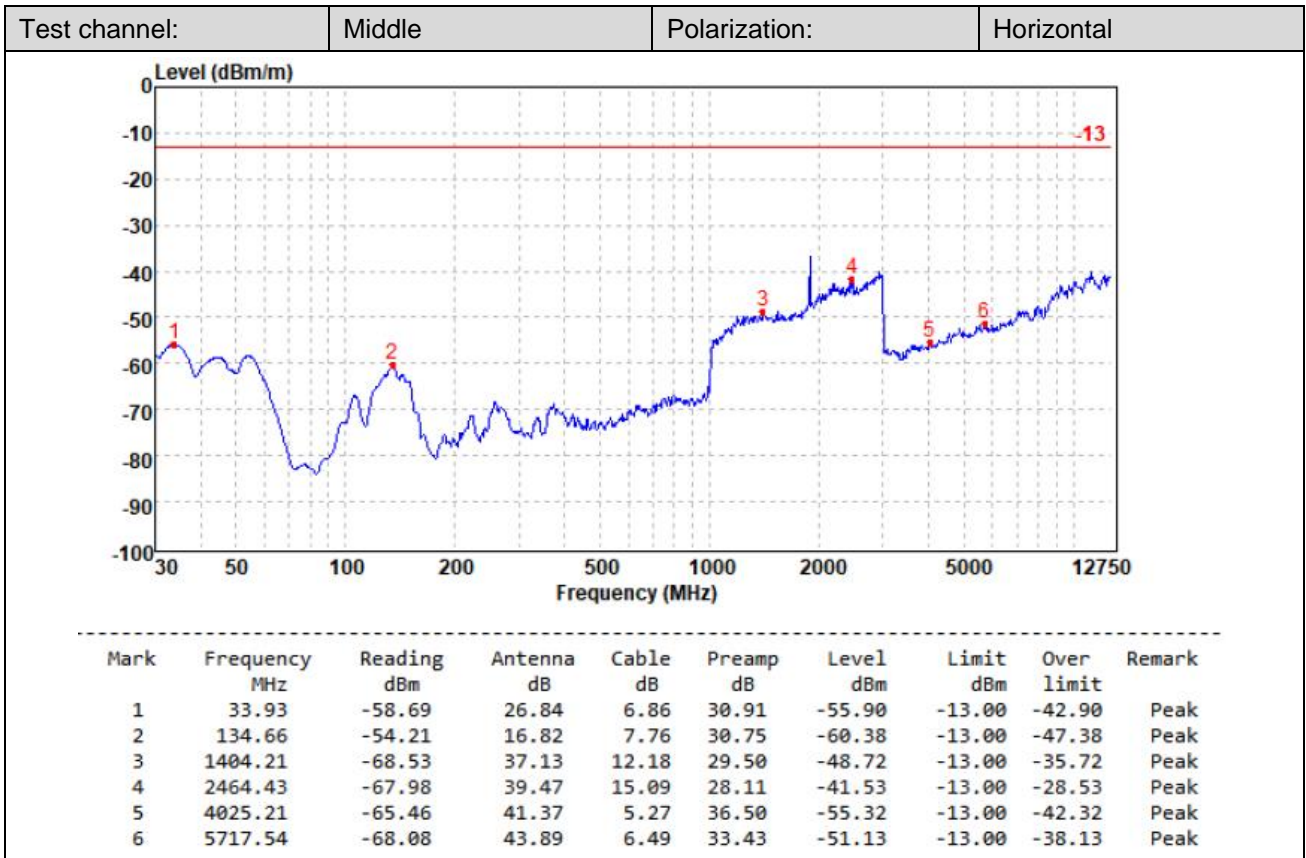


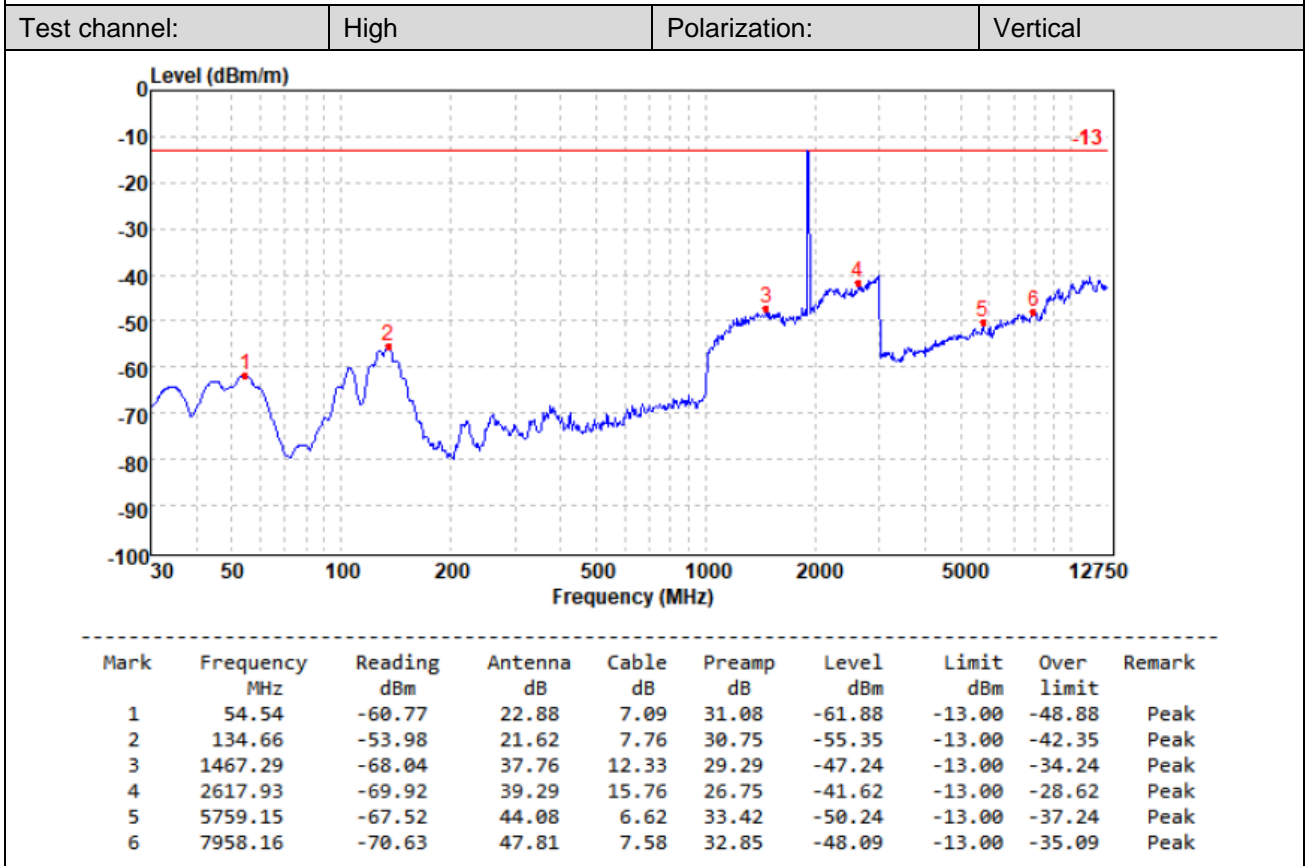
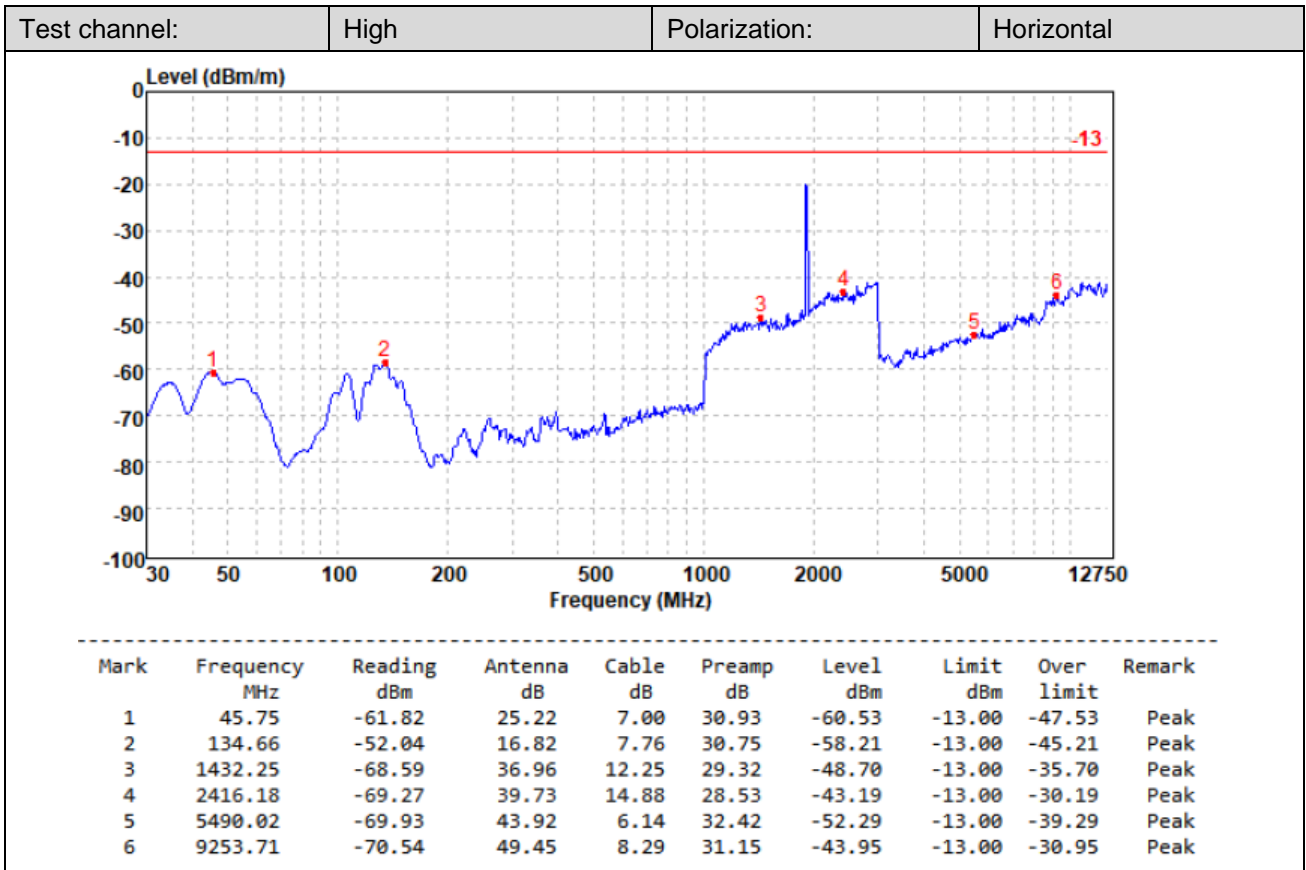
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	33.93	-58.94	26.84	6.86	30.91	-56.15	-13.00	-43.15	Peak
2	134.66	-54.34	16.82	7.76	30.75	-60.51	-13.00	-47.51	Peak
3	1332.08	-68.19	37.02	12.02	29.48	-48.63	-13.00	-35.63	Peak
4	2418.83	-68.31	39.72	14.89	28.51	-42.21	-13.00	-29.21	Peak
5	4895.72	-67.74	43.99	5.85	34.41	-52.31	-13.00	-39.31	Peak
6	7992.86	-70.90	48.12	7.61	32.82	-47.99	-13.00	-34.99	Peak

Test channel: Low Polarization: Vertical



Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	54.54	-58.86	22.88	7.09	31.08	-59.97	-13.00	-46.97	Peak
2	134.66	-59.22	21.62	7.76	30.75	-60.59	-13.00	-47.59	Peak
3	1364.66	-68.61	37.61	12.09	29.42	-48.33	-13.00	-35.33	Peak
4	2440.18	-68.08	39.28	14.99	28.29	-42.10	-13.00	-29.10	Peak
5	4247.10	-63.66	42.65	5.51	35.85	-51.35	-13.00	-38.35	Peak
6	5759.15	-61.70	44.08	6.62	33.42	-44.42	-13.00	-31.42	Peak

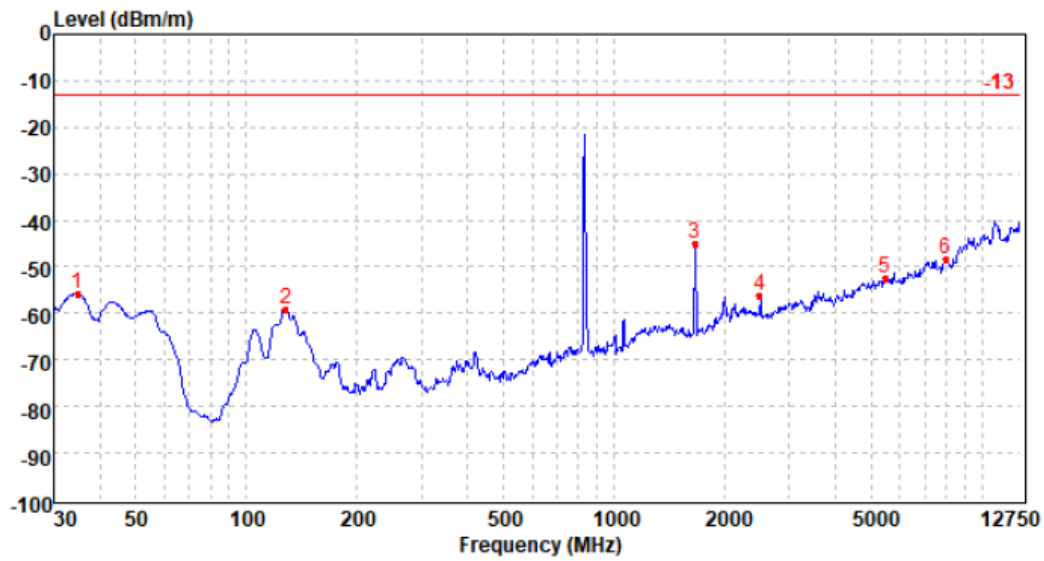






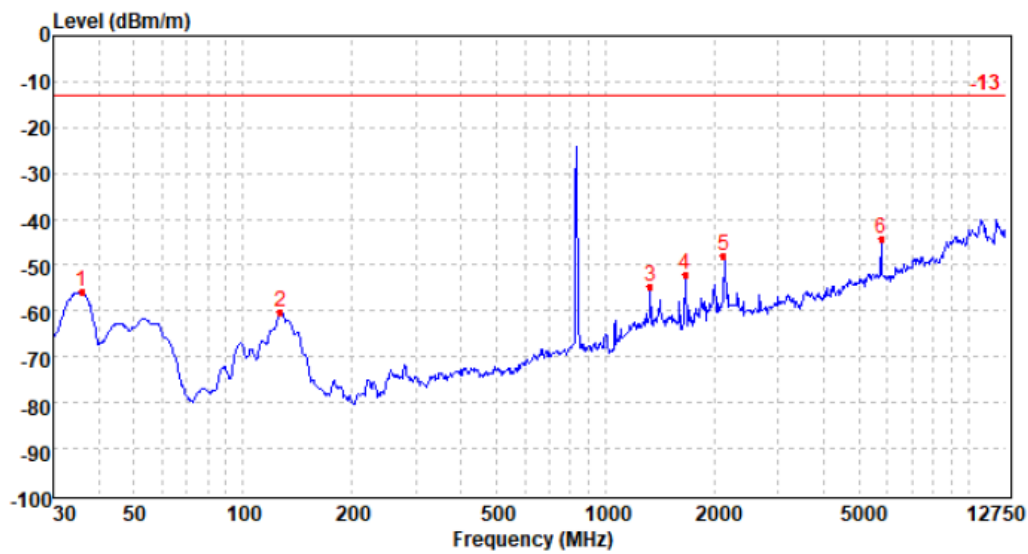
**LTE Band 26**

Test channel: Low      Polarization: Horizontal

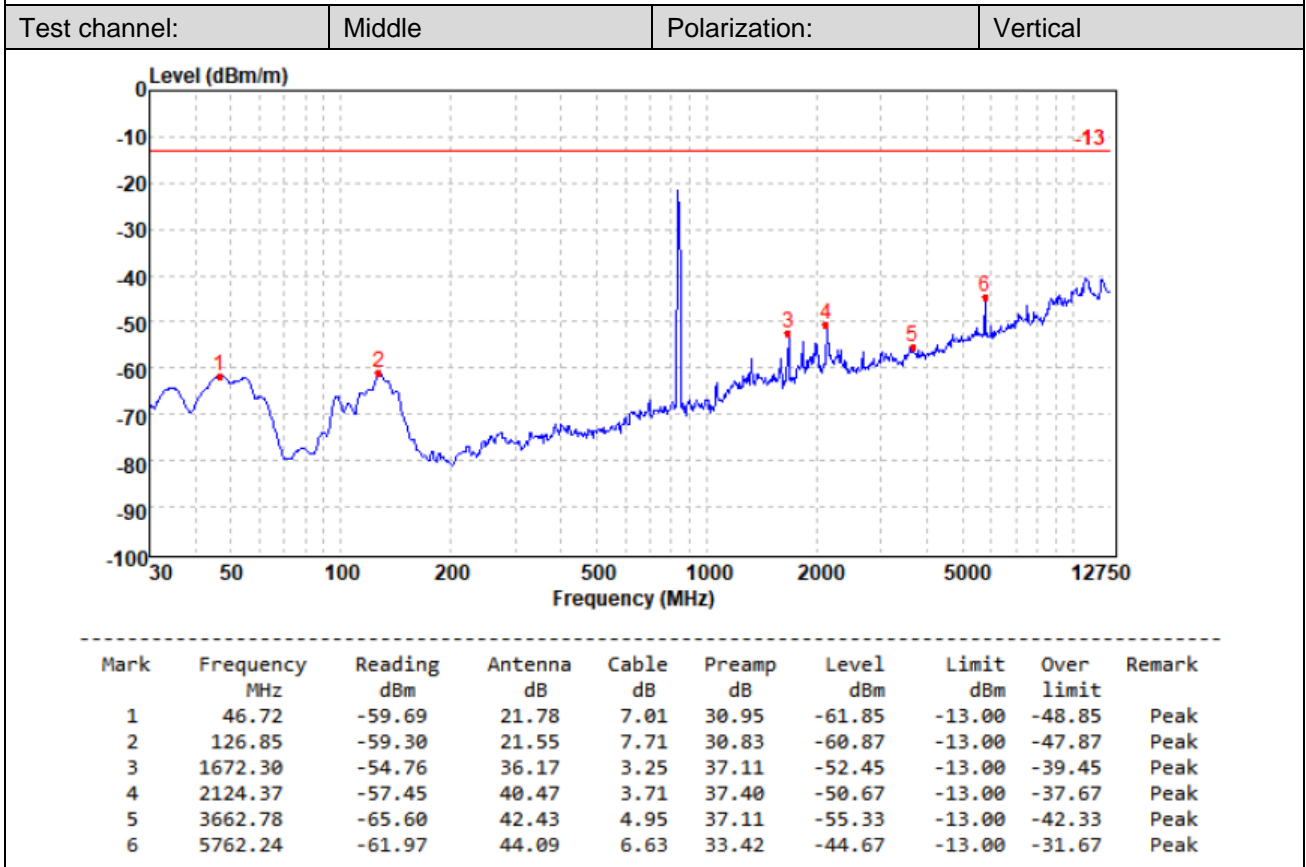
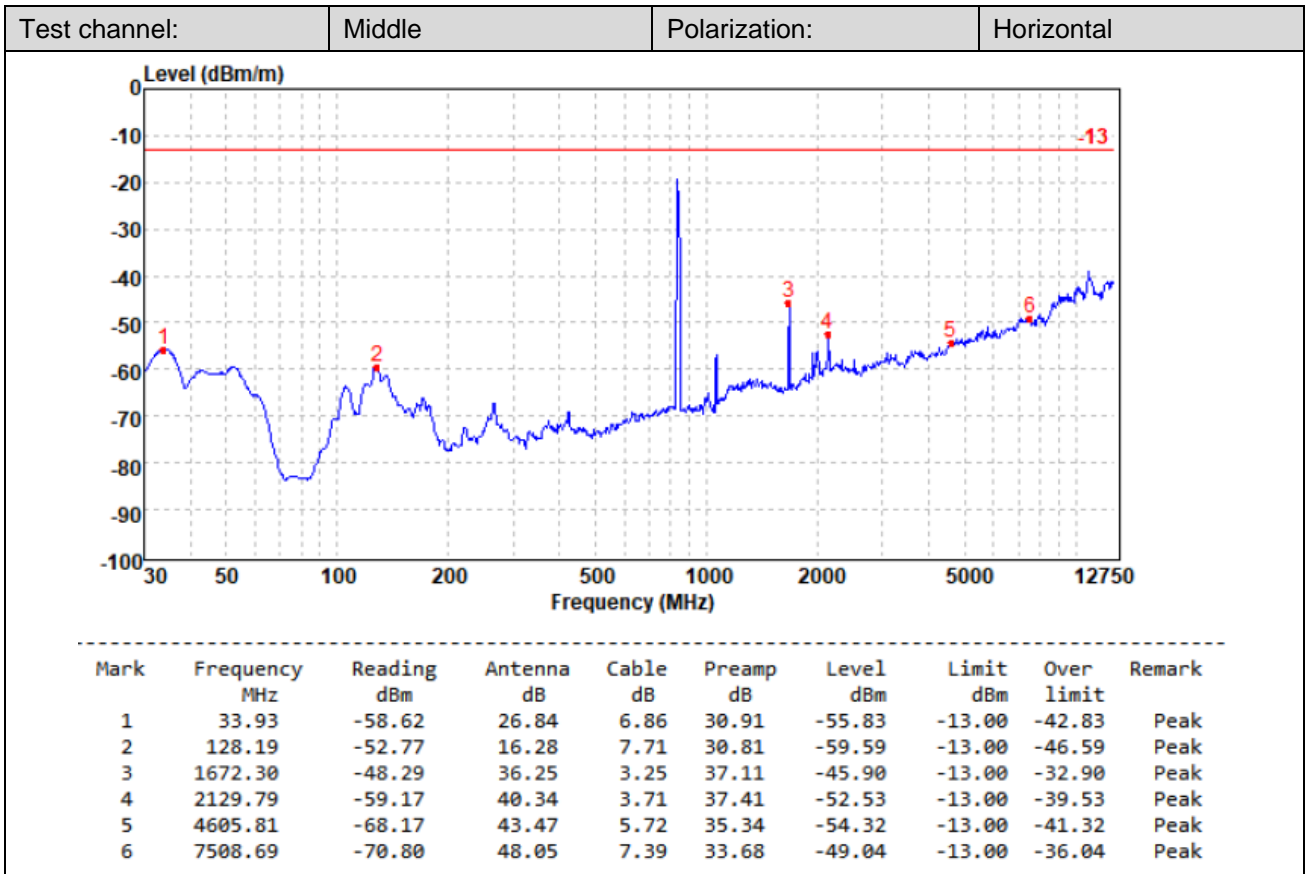


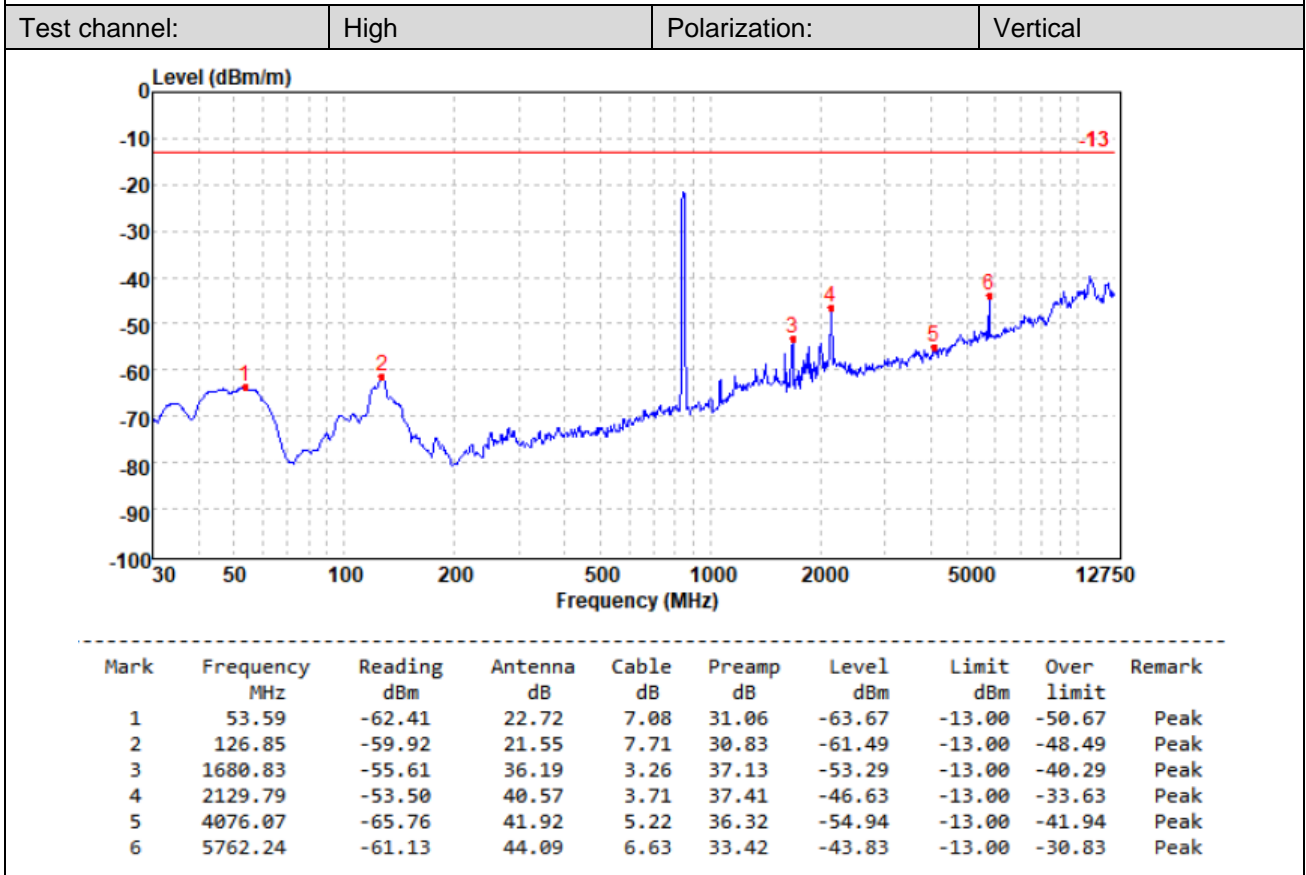
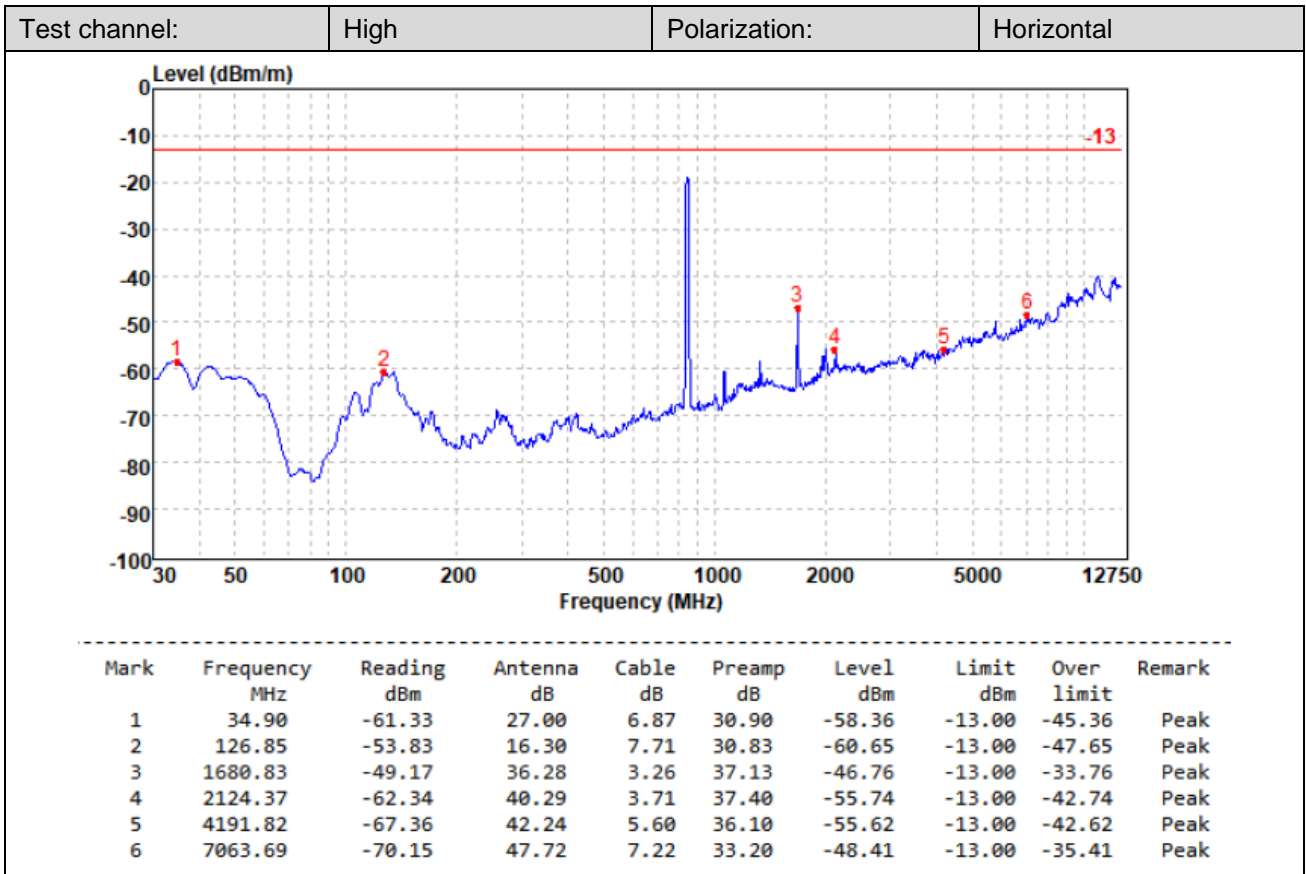
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	34.90	-58.70	27.00	6.87	30.90	-55.73	-13.00	-42.73	Peak
2	128.19	-52.13	16.28	7.71	30.81	-58.95	-13.00	-45.95	Peak
3	1659.57	-47.38	36.20	3.24	37.18	-45.12	-13.00	-32.12	Peak
4	2493.90	-62.27	39.31	4.04	37.28	-56.20	-13.00	-43.20	Peak
5	5462.30	-69.95	43.97	6.13	32.55	-52.40	-13.00	-39.40	Peak
6	8002.06	-71.28	48.12	7.61	32.84	-48.39	-13.00	-35.39	Peak

Test channel: Low      Polarization: Vertical



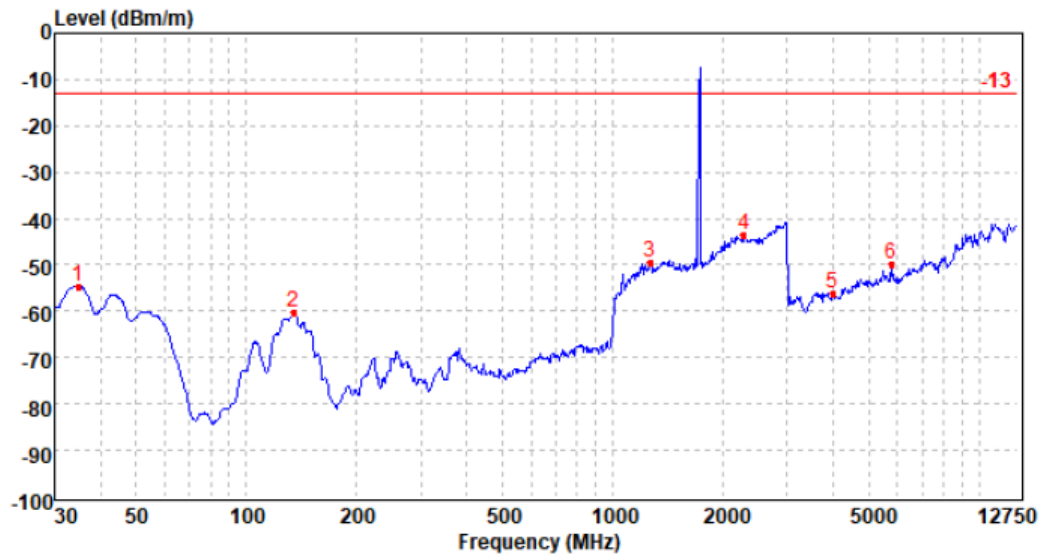
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	35.89	-51.75	19.87	6.88	30.89	-55.89	-13.00	-42.89	Peak
2	126.85	-58.47	21.55	7.71	30.83	-60.04	-13.00	-47.04	Peak
3	1329.89	-58.73	37.45	2.90	36.37	-54.75	-13.00	-41.75	Peak
4	1659.57	-54.15	36.14	3.24	37.18	-51.95	-13.00	-38.95	Peak
5	2124.37	-54.70	40.47	3.71	37.40	-47.92	-13.00	-34.92	Peak
6	5762.24	-61.64	44.09	6.63	33.42	-44.34	-13.00	-31.34	Peak





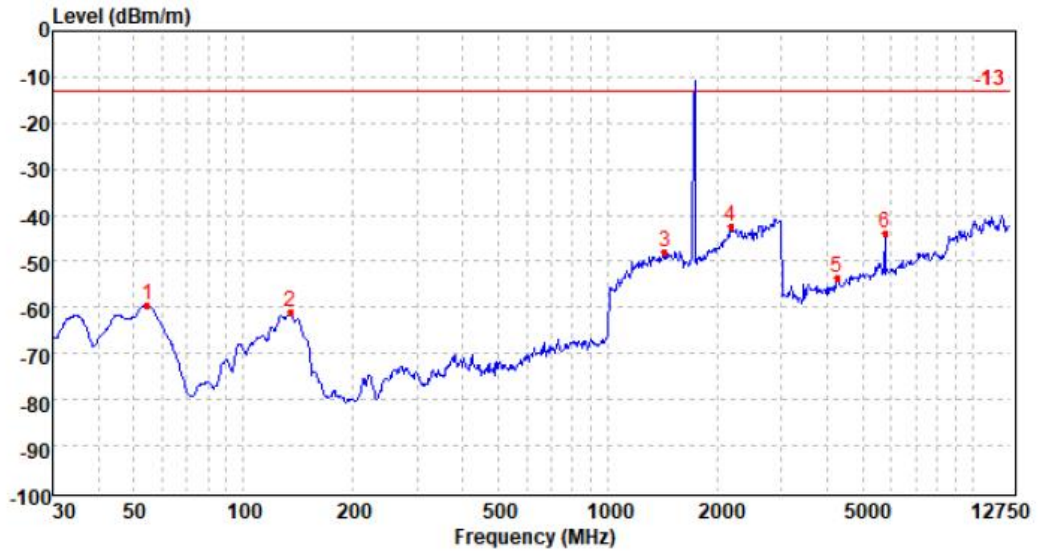
**LTE Band 66**

Test channel: Low      Polarization: Horizontal

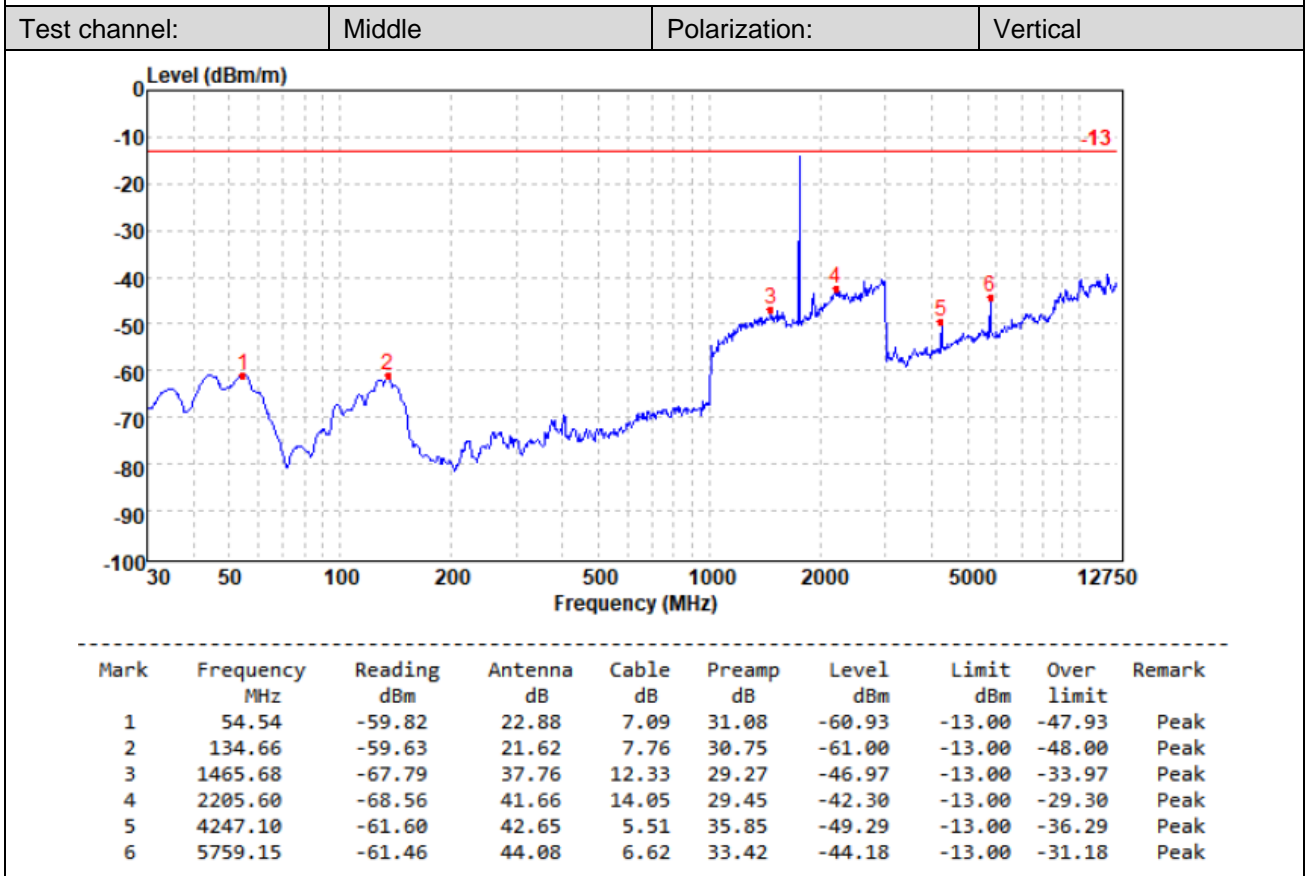
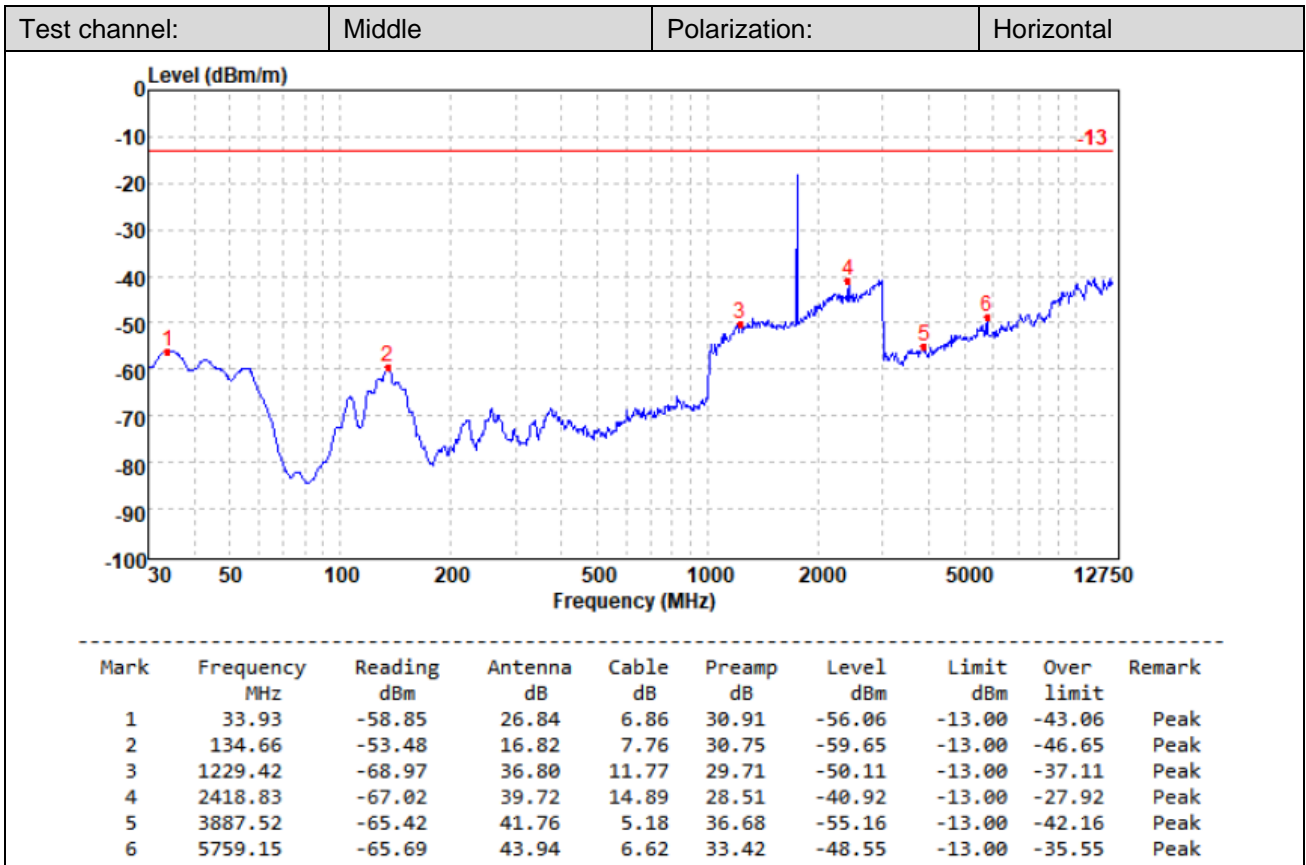


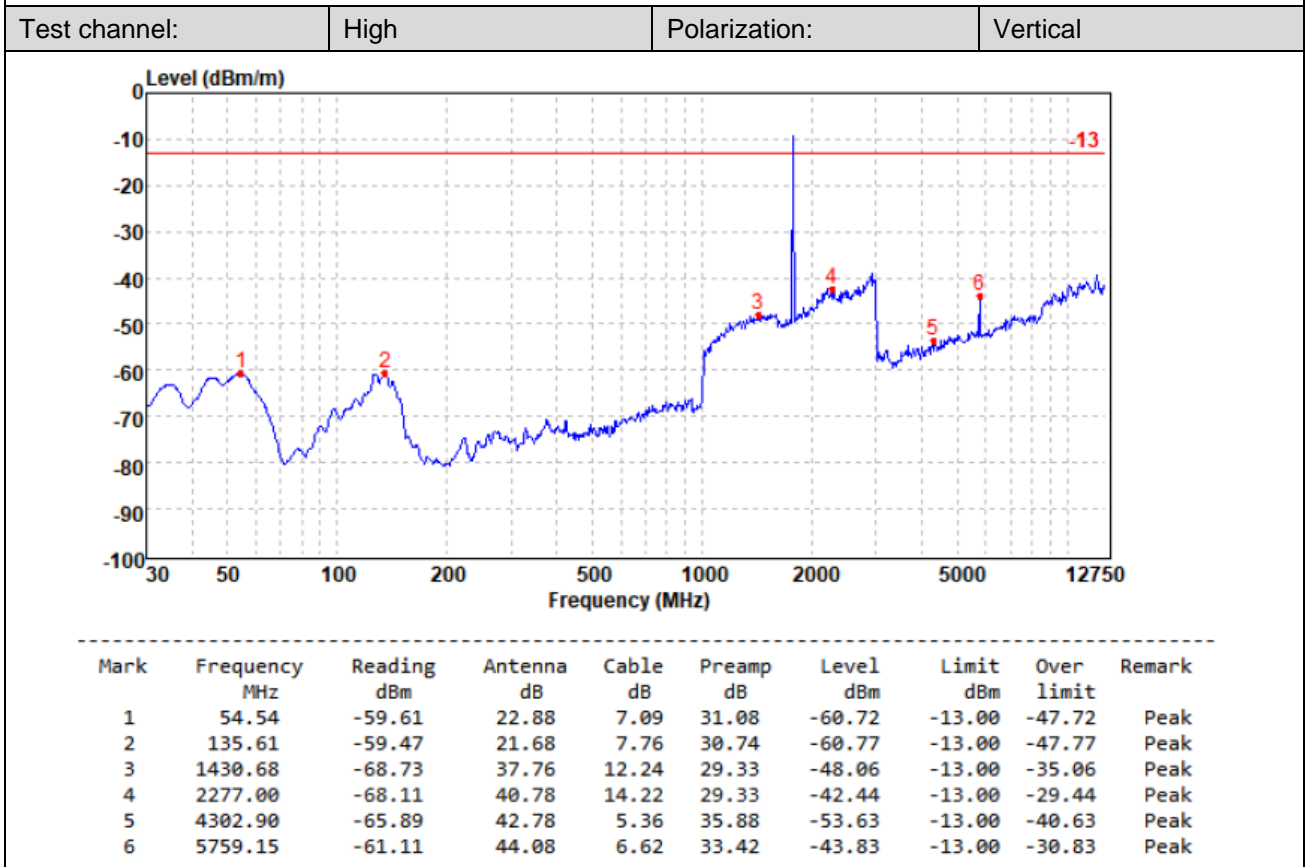
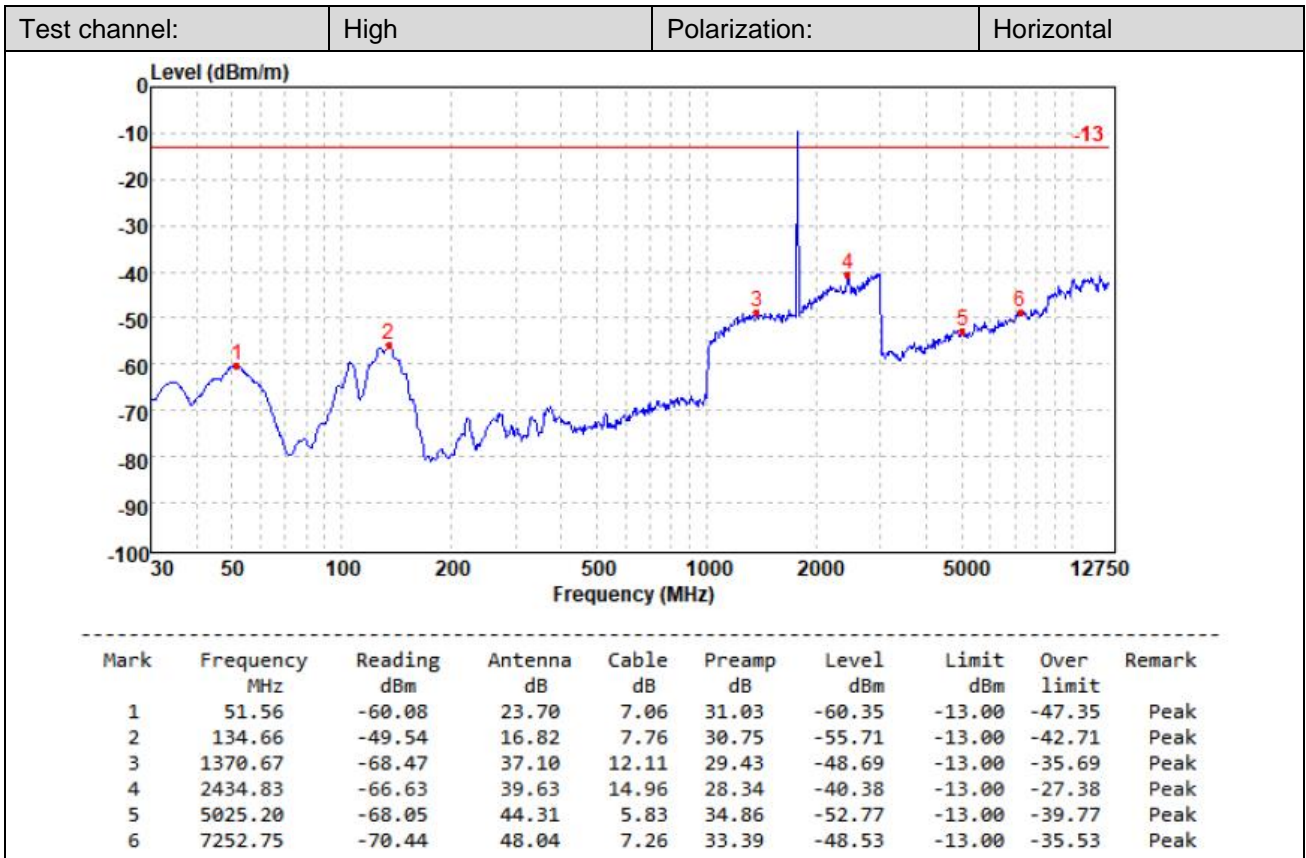
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	34.90	-57.47	27.00	6.87	30.90	-54.50	-13.00	-41.50	Peak
2	134.66	-53.97	16.82	7.76	30.75	-60.14	-13.00	-47.14	Peak
3	1266.43	-68.51	36.88	11.86	29.70	-49.47	-13.00	-36.47	Peak
4	2292.06	-69.04	40.43	14.26	29.17	-43.52	-13.00	-30.52	Peak
5	3990.33	-66.20	41.28	5.29	36.51	-56.14	-13.00	-43.14	Peak
6	5759.15	-67.12	43.94	6.62	33.42	-49.98	-13.00	-36.98	Peak

Test channel: Low      Polarization: Vertical

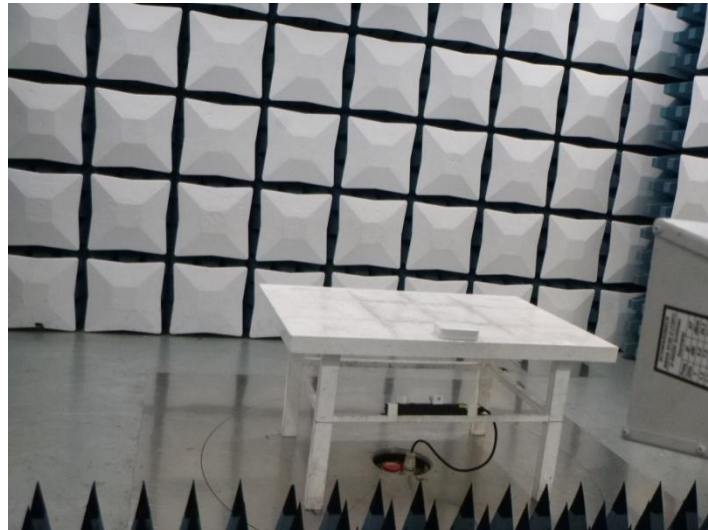
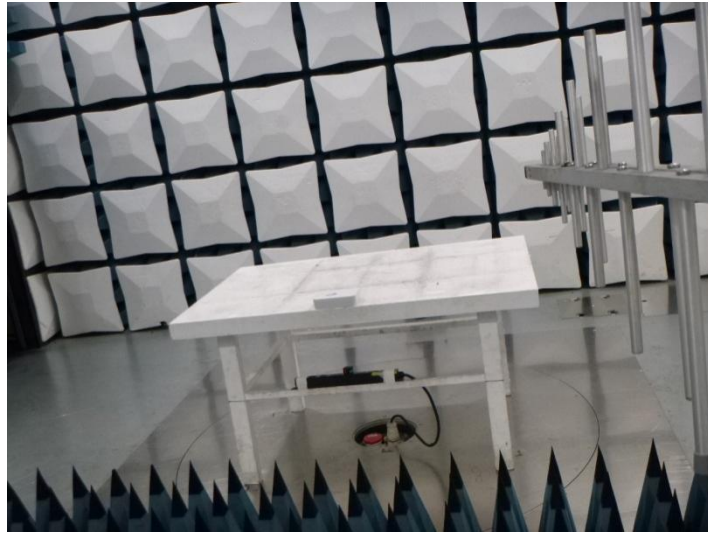


Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	54.54	-58.25	22.88	7.09	31.08	-59.36	-13.00	-46.36	Peak
2	134.66	-59.74	21.62	7.76	30.75	-61.11	-13.00	-48.11	Peak
3	1433.82	-68.62	37.76	12.25	29.30	-47.91	-13.00	-34.91	Peak
4	2176.72	-68.41	41.35	13.97	29.38	-42.47	-13.00	-29.47	Peak
5	4253.26	-66.00	42.66	5.49	35.83	-53.68	-13.00	-40.68	Peak
6	5759.15	-61.32	44.08	6.62	33.42	-44.04	-13.00	-31.04	Peak



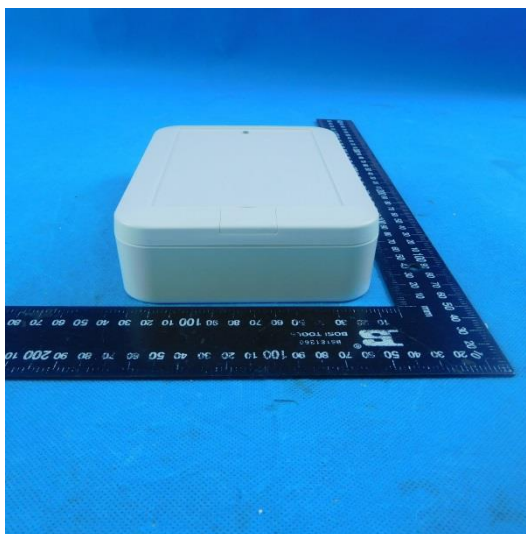
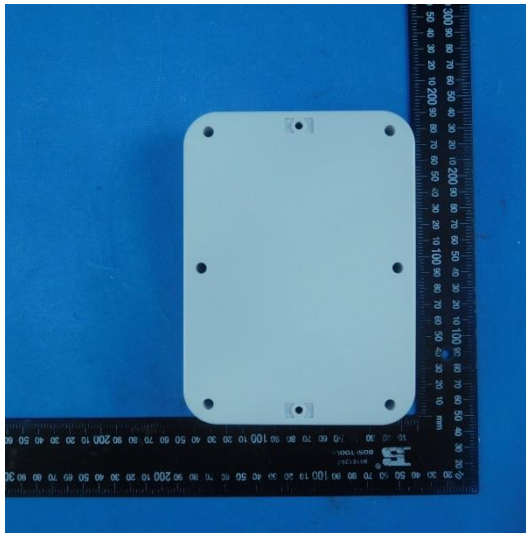


## 6. TEST SETUP PHOTOS OF THE EUT

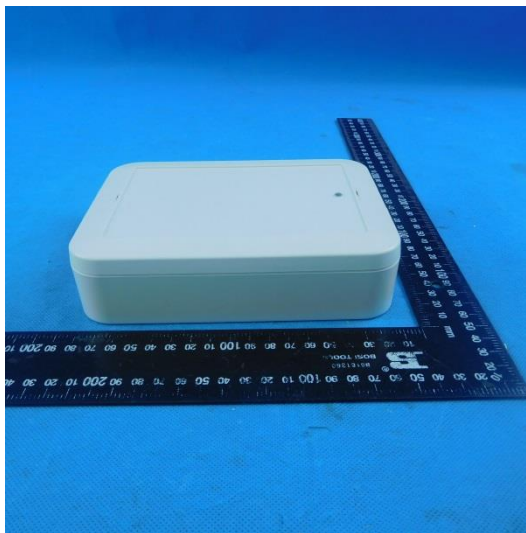


## 7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

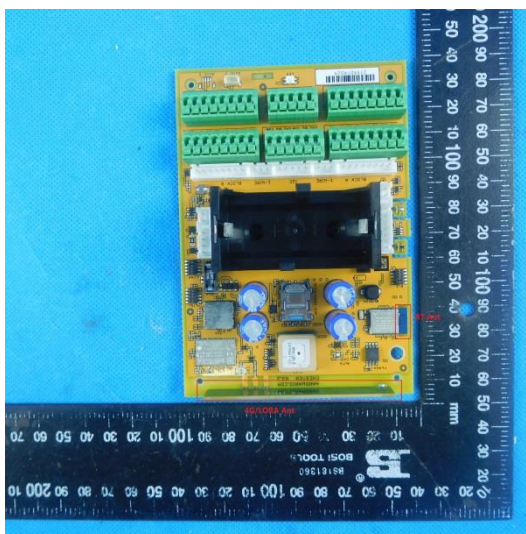
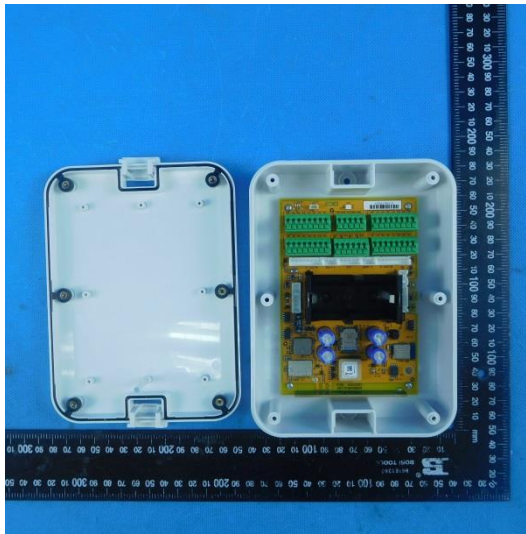
### EXTERNAL PHOTOS OF THE EUT

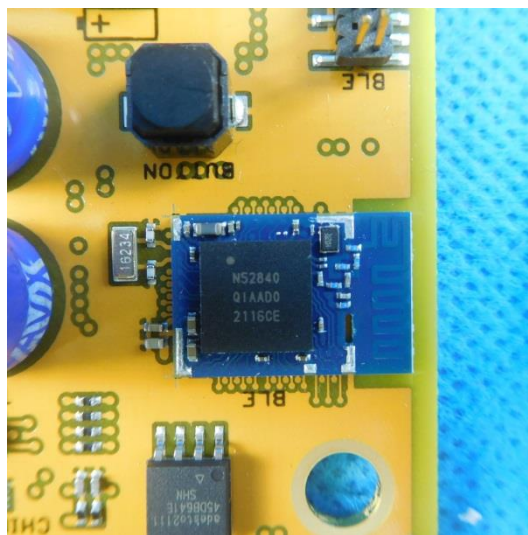
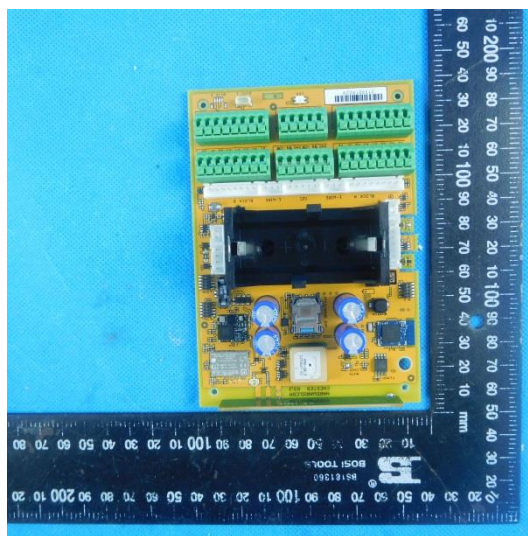
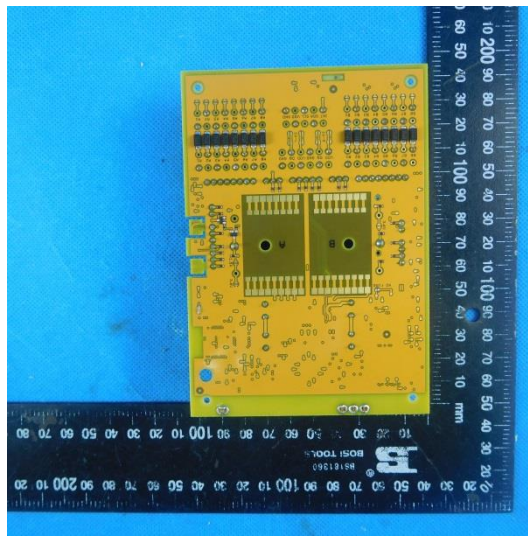


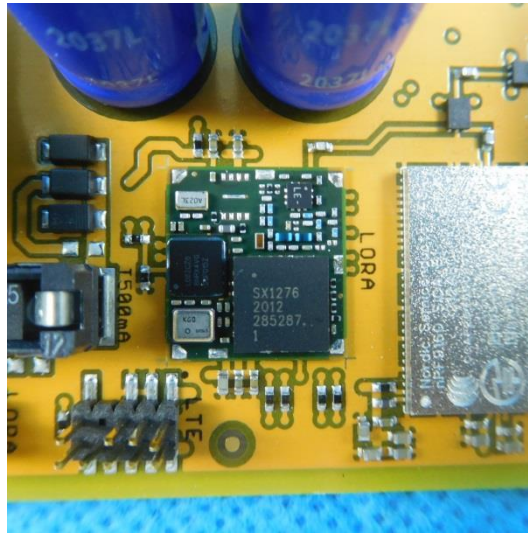




**INTERNAL PHOTOS OF THE EUT**







-----END OF REPORT-----