



**FCC PART 15C  
TEST REPORT  
No. B17N00462-BLE**

**for**

**HUAWEI Technologies Co., Ltd.**

**HUAWEI MediaPad M3 Lite**

**Model Name: CPN-W09**

**With**

**Hardware Version: A088e**

**Software Version: CPN-W09C331B005SP01**

**FCC ID: QISCPN-W09**

**Issued Date: 2017-06-26**

**Test Laboratory:**

***FCC 2.948 Listed: No.342690***

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

**Test Laboratory:**

CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT.

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel: +86(0)10-62304633-2512, Fax: +86(0)10-62304633-2504

Email: [ctl\\_terminals@catr.cn](mailto:ctl_terminals@catr.cn), website: [www.chinattl.com](http://www.chinattl.com)



## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
B17N00462-BLE	Rev.0	1st edition	2017-06-26



## **CONTENTS**

<b>CONTENTS .....</b>	<b>3</b>
<b>1. TEST LABORATORY .....</b>	<b>5</b>
1.1. TESTING LOCATION .....	5
1.2. TESTING ENVIRONMENT .....	5
1.3. PROJECT DATA .....	5
1.4. SIGNATURE .....	5
<b>2. CLIENT INFORMATION.....</b>	<b>6</b>
2.1. APPLICANT INFORMATION .....	6
2.2. MANUFACTURER INFORMATION .....	6
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) .....</b>	<b>7</b>
3.1. ABOUT EUT .....	7
3.2. INTERNAL IDENTIFICATION OF EUT .....	7
3.3. INTERNAL IDENTIFICATION OF AE .....	7
3.4. GENERAL DESCRIPTION.....	7
<b>4. REFERENCE DOCUMENTS .....</b>	<b>8</b>
4.1. DOCUMENTS SUPPLIED BY APPLICANT .....	8
4.2. REFERENCE DOCUMENTS FOR TESTING.....	8
<b>5. TEST RESULTS .....</b>	<b>9</b>
5.1. SUMMARY OF TEST RESULTS.....	9
5.2. STATEMENTS.....	9
5.3. TERMS USED IN THE RESULT TABLE .....	9
5.4. LABORATORY ENVIRONMENT.....	10
<b>6. TEST FACILITIES UTILIZED .....</b>	<b>11</b>
<b>ANNEX A: MEASUREMENT RESULTS FOR RECEIVER .....</b>	<b>12</b>
A.0 ANTENNA REQUIREMENT .....	12
A.1 MAXIMUM PEAK OUTPUT POWER .....	13
A.2 PEAK POWER SPECTRAL DENSITY .....	13
A.3 6DB BANDWIDTH.....	14
A.4 BAND EDGES COMPLIANCE .....	14
A.5 TRANSMITTER SPURIOUS EMISSION - CONDUCTED .....	15
A.6 TRANSMITTER SPURIOUS EMISSION - RADIATED .....	16
A.7 AC POWERLINE CONDUCTED EMISSION.....	19
<b>ANNEX B: TEST GRAPHS.....</b>	<b>21</b>
FIG.1 MAXIMUM PEAK OUTPUT POWER(GFSK, CH 0).....	21
FIG.2 MAXIMUM PEAK OUTPUT POWER(GFSK, CH 19).....	21
FIG.3 MAXIMUM PEAK OUTPUT POWER(GFSK, CH 39).....	22



FIG.4	POWER SPECTRAL DENSITY (CH 0)	22
FIG.5	POWER SPECTRAL DENSITY (CH 19)	23
FIG.6	POWER SPECTRAL DENSITY (CH 39)	23
FIG.7	6DB BANDWIDTH (CH 0)	24
FIG.8	6DB BANDWIDTH (CH 19)	24
FIG.9	6DB BANDWIDTH (CH 39)	25
FIG.10	BAND EDGES (CH 0)	25
FIG.11	BAND EDGES (CH 39)	26
FIG.12	CONDUCTED SPURIOUS EMISSION (CH0, CENTER FREQUENCY)	26
FIG.13	CONDUCTED SPURIOUS EMISSION (CH0, 1 GHz-3 GHz)	27
FIG.14	CONDUCTED SPURIOUS EMISSION (CH0, 3 GHz-10 GHz)	27
FIG.15	CONDUCTED SPURIOUS EMISSION (CH19, CENTER FREQUENCY)	28
FIG.16	CONDUCTED SPURIOUS EMISSION (CH19, 1 GHz-3 GHz)	28
FIG.17	CONDUCTED SPURIOUS EMISSION (CH19, 3 GHz-10 GHz)	29
FIG.18	CONDUCTED SPURIOUS EMISSION (CH39, CENTER FREQUENCY)	29
FIG.19	CONDUCTED SPURIOUS EMISSION (CH39, 1 GHz-3 GHz)	30
FIG.20	CONDUCTED SPURIOUS EMISSION (CH39, 3 GHz-10 GHz)	30
FIG.21	CONDUCTED SPURIOUS EMISSION (ALL CHANNELS, 30 MHz-1 GHz)	31
FIG.22	CONDUCTED SPURIOUS EMISSION (ALL CHANNELS, 10 GHz-26 GHz)	31
FIG.23	RADIATED SPURIOUS EMISSION (GFSK, CH0, 1 GHz ~18 GHz)	32
FIG.24	RADIATED SPURIOUS EMISSION (CH19, 9 kHz-30 MHz)	32
FIG.25	RADIATED SPURIOUS EMISSION (CH19, 30 MHz-1 GHz)	33
FIG.26	RADIATED SPURIOUS EMISSION (CH19, 1 GHz- 18 GHz)	33
FIG.27	RADIATED SPURIOUS EMISSION (CH19, 18 GHz-26.5 GHz)	34
FIG.28	RADIATED SPURIOUS EMISSION (CH39, 1 GHz-18 GHz)	34
FIG.29	RADIATED EMISSION POWER (GFSK, CH0, 2380GHz~2450GHz)	35
FIG.30	RADIATED EMISSION POWER (GFSK, CH39, 2450GHz~2500GHz)	35
FIG.31	AC POWERLINE CONDUCTED EMISSION (TRAFFIC, AE1)	36
FIG.32	AC POWER LINE CONDUCTED EMISSION (IDLE, AE1)	37
FIG.33	AC POWERLINE CONDUCTED EMISSION (TRAFFIC, AE2)	38
FIG.34	AC POWER LINE CONDUCTED EMISSION (IDLE, AE2)	39
FIG.35	AC POWERLINE CONDUCTED EMISSION (TRAFFIC, AE3)	40
FIG.36	AC POWER LINE CONDUCTED EMISSION (IDLE, AE3)	41
<b>ANNEX C: PERSONS INVOLVED IN THIS TESTING</b>		<b>42</b>



## 1. Test Laboratory

### 1.1. Testing Location

Location: CTTL(South Branch)  
Address: TCL International E city, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong, China 518000

### 1.2. Testing Environment

Normal Temperature: 15-35°C  
Relative Humidity: 20-75%

### 1.3. Project data

Testing Start Date: 2017-05-02  
Testing End Date: 2017-05-19

### 1.4. Signature

---

An Ran  
(Prepared this test report)

---

Tang Weisheng  
(Reviewed this test report)

---

Zhang Bojun  
(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Huawei Technologies Co., Ltd  
Address: Administration Building, Headquarters of Huawei Technologies  
Co., Ltd., Bantian, Longgang District  
City: Shenzhen  
Postal Code: 518129  
Country: P.R. China  
Telephone: 15602311354  
Fax: /

### **2.2. Manufacturer Information**

Company Name: Huawei Technologies Co., Ltd  
Address: Administration Building, Headquarters of Huawei Technologies  
Co., Ltd., Bantian, Longgang District  
City: Shenzhen  
Postal Code: 518129  
Country: P.R. China  
Telephone: 15602311354  
Fax: /



### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

Description	HUAWEI MediaPad M3 Lite
Model Name	CPN-W09
Market Name	HUAWEI MediaPad M3 Lite
Frequency Range	2400MHz~2483.5MHz
Type of Modulation	GFSK
Number of Channels	40
Antenna	Integrated
Power Supply	3.8V DC by Battery
FCC ID	QISCPN-W09

Note: Components list, please refer to documents of the manufacturer.

#### **3.2. Internal Identification of EUT**

<b>EUT ID*</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>	<b>Receive Date</b>
EUT1	/	A088e	CPN-W09C331B003SP01	2017-04-18

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE**

<b>AE ID*</b>	<b>Description</b>	<b>Mode</b>	<b>Manufacturer</b>
AE1	Adapter	HW-050200U01	Shenzhen Huntkey Electric Co.,Ltd
AE2	Adapter	HW-050200U01	Huizhou BYD Electric Co.,Ltd
AE3	Adapter	HW-050200U01	Dongguan Phitek Electric Co.,Ltd
AE4	Battery	HB3080G1EBC	Huawei Technologies Co., Ltd
AE5	Battery	HB3080G1EBW	Huawei Technologies Co., Ltd

\*AE ID: is used to identify the test sample in the lab internally.

#### **3.4. General Description**

The Equipment Under Test (EUT) are a model of CPN-W09 with integrated antenna.

It consists of normal options: travel charger, USB cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.



## **4. Reference Documents**

### **4.1. Documents supplied by applicant**

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

### **4.2. Reference Documents for testing**

The following documents listed in this section are referred for testing.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz	2015
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013

## 5. Test Results

### 5.1. Summary of Test Results

No	Test cases	Sub-clause of Part15C	Verdict
0	Antenna Requirement	15.203	<b>P</b>
1	Maximum Peak Output Power	15.247 (b)	<b>P</b>
2	Peak Power Spectral Density	15.247 (e)	<b>P</b>
3	Occupied 6dB Bandwidth	15.247 (a)	<b>P</b>
4	Band Edges Compliance	15.247 (d)	<b>P</b>
5	Transmitter Spurious Emission - Conducted	15.247 (d)	<b>P</b>
6	Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	<b>P</b>
7	AC Powerline Conducted Emission	15.107, 15.207	<b>P</b>

See **ANNEX A** for details.

### 5.2. Statements

CTTL has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

### 5.3. Terms used in the result table

Terms used in Verdict column

P	Pass
NA	Not Available
F	Fail

Abbreviations

AC	Alternating Current
AFH	Adaptive Frequency Hopping
BW	Band Width
E.I.R.P.	equivalent isotropic radiated power
ISM	Industrial, Scientific and Medical
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
Tx	Transmitter

#### 5.4. Laboratory Environment

**Semi-anechoic chamber** did not exceed following limits along the EMC testing

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ±4dB, 3m/10m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Shielded room** did not exceed following limits along the EMC testing

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

**Fully-anechoic chamber** did not exceed following limits along the EMC testing

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Voltage Standing Wave Ratio (VSWR)	≤6dB, from 1 to 18 GHz, 3m distance

## 6. Test Facilities Utilized

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2018-01-18	1 year

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	LISN	ESH2-Z5	100196	R&S	2018-01-05	1 year
2	Test Receiver	ESCI	100701	R&S	2017-08-09	1 year
3	Loop Antenna	HLA6120	35779	TESEQ	2019-05-02	3 years
4	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2020-02-27	3 years
5	Horn Antenna	3117	00066585	ETS-Lindgren	2019-03-05	3 years
6	Test Receiver	ESR7	101675	R&S	2017-07-21	1 year
7	Spectrum Analyzer	FSP40	100378	R&S	2017-12-15	1 year
8	Chamber	FACT5-2.0	4166	ETS-Lindgren	2018-05-13	3 years
9	Antenna	3160-09	LM4214/0011 8383	ETS-Lindgren	2018-07-14	3 years

### Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	8.53.0
3	EMC32	Rohde & Schwarz	10.01.00

EUT is Qualcomm engineering software provided by the customer to control the transmitting signal. The EUT was programmed to be in continuously transmitting mode.

### Anechoic chamber

Fully anechoic chamber by ETS-Lindgren



## **ANNEX A: MEASUREMENT RESULTS FOR RECEIVER**

### **A.0 Antenna requirement**

#### **Measurement Limit:**

<b>Standard</b>	<b>Requirement</b>
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

**Conclusion: The Directional gains of antenna used for transmitting is -1.1 dBi.  
The RF transmitter uses an integrate antenna without connector.**



### A.1 Maximum Peak Output Power

**Measurement Limit:**

Standard	Limit (dBm)
FCC CRF Part 15.247(b) & RSS-247 Issue1 5.4	< 30

**Measurement Results:**

Mode	Channel	Maximum Peak Output Power (dBm)	Conclusion	
GFSK	0	Fig.1	6.49	P
	19	Fig.2	6.54	P
	39	Fig.3	6.47	P

See ANNEX B for test graphs.

Conclusion: Pass

### A.2 Peak Power Spectral Density

**Measurement Limit:**

Standard	Limit
FCC CRF Part 15.247(e) & RSS-247 Issue1 5.2	< 8 dBm/3 kHz

**Measurement Results:**

Mode	Channel	Peak Power Spectral Density (dBm)	Conclusion	
GFSK	0	Fig.4	-8.34	P
	19	Fig.5	-8.15	P
	39	Fig.6	-8.25	P

See ANNEX B for test graphs.

Conclusion: PASS



### A.3 6dB Bandwidth

#### Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a) & RSS-247 Issue1 5.2	≥ 500

#### Measurement Result:

Mode	Channel	Test Results ( kHz)		conclusion
GFSK	0	Fig.7	720.5	P
	19	Fig.8	719.0	P
	39	Fig.9	717.5	P

See ANNEX B for test graphs.

Conclusion: PASS

### A.4 Band Edges Compliance

#### Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d) & RSS-247 Issue1 5.5	> 20

#### Measurement Result:

Mode	Channel	Test Results	Conclusion
GFSK	0	Fig.10	P
	39	Fig.11	P

See ANNEX B for test graphs.

Conclusion: Pass

## A.5 Transmitter Spurious Emission - Conducted

### Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d) & RSS-247 Issue1 5.5/RSS-Gen 6.13	20dB below peak output power in 100 kHz bandwidth

### Measurement Results:

MODE	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	2.402 GHz	Fig.12	P
		1GHz -3GHz	Fig.13	P
		3GHz-10GHz	Fig.14	P
	19	2.440 GHz	Fig.15	P
		1GHz -3GHz	Fig.16	P
		3GHz-10GHz	Fig.17	P
	39	2.480 GHz	Fig.18	P
		1GHz -3GHz	Fig.19	P
		3GHz-10GHz	Fig.20	P
	All channels	30MHz-1GHz	Fig.21	P
		10GHz-26GHz	Fig.22	P

See ANNEX B for test graphs.

Conclusion: Pass

## A.6 Transmitter Spurious Emission - Radiated

### Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209 & RSS-247 Issue1 5.5/RSS-Gen 6.13	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

### Limit in restricted band:

Frequency of emission (MHz)	Field strength( $\mu$ V/m)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

### Test Condition:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

**Note:** According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.



**Measurement Results:**

GFSK	0	1 GHz ~18 GHz	Fig.23	P
	19	9 kHz ~30 MHz	Fig.24	P
		30 MHz ~1 GHz	Fig.25	P
		1 GHz ~18 GHz	Fig.26	P
		18 GHz~ 26.5 GHz	Fig.27	P
		39	1 GHz ~18 GHz	Fig.28
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.29	P
	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.30	P

**GFSK CH0 (1-18GHz)**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13911.500000	55.93	74.00	18.07	V	21.0
14584.500000	56.47	74.00	17.53	H	21.3
15103.500000	58.38	74.00	15.62	H	22.3
15939.500000	60.36	74.00	13.64	H	24.9
16583.500000	61.66	74.00	12.34	V	26.4
17722.500000	61.49	74.00	12.51	H	27.6

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.000000	44.74	54.00	9.26	V	21.1
14683.500000	44.98	54.00	9.02	V	21.5
15576.500000	46.94	54.00	7.06	V	23.8
15740.000000	48.36	54.00	5.64	V	24.4
16583.500000	50.02	54.00	3.98	V	26.4
17708.000000	50.09	54.00	3.91	H	27.6

**GFSK CH19 (1-18GHz)**

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13869.500000	55.85	74.00	18.15	H	20.1
14636.500000	56.44	74.00	17.56	V	21.4
15550.000000	58.56	74.00	15.44	H	23.4
16309.500000	60.45	74.00	13.55	H	25.5
16594.500000	61.29	74.00	12.71	V	26.3
17706.500000	61.66	74.00	12.34	H	27.6



Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13909.500000	44.66	54.00	9.34	V	21.1
14693.500000	45.18	54.00	8.82	V	21.6
15576.000000	47.16	54.00	6.84	H	23.8
15732.500000	48.42	54.00	5.58	H	24.1
16592.500000	49.84	54.00	4.16	H	26.3
17707.500000	49.80	54.00	4.20	H	27.6

**GFSK CH39 (1-18GHz)**

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13360.000000	55.04	74.00	18.96	V	19.8
14644.500000	56.65	74.00	17.35	V	21.3
15130.000000	59.39	74.00	14.61	H	22.2
15925.500000	59.84	74.00	14.16	V	24.7
17104.500000	61.32	74.00	12.68	H	25.8
17694.000000	61.55	74.00	12.45	H	27.1

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13872.000000	44.38	54.00	9.62	V	20.2
14680.000000	44.78	54.00	9.22	V	21.4
15577.000000	46.83	54.00	7.17	H	23.8
15962.000000	48.52	54.00	5.48	V	25.4
16583.000000	49.95	54.00	4.05	H	26.4
17708.500000	49.73	54.00	4.27	H	27.6

**Note:**

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss", and Antenna Factor, the gain of the preamplifier, the cable loss.  $P_{Mea}$  is the field strength recorded from the instrument.

The measurement results are obtained as described below:

$$\text{Result} = P_{Mea} + \text{Cable Loss} + \text{Antenna Factor} - \text{Gain of the preamplifier.}$$

**See ANNEX B for test graphs.**

**Conclusion: Pass**

## A.7 AC Powerline Conducted Emission

### Test Condition:

Voltage (V)	Frequency (Hz)
120	60

### Measurement Result and limit:

#### BLE (Quasi-peak Limit)-AE1

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.31	Fig.32	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

#### BLE (Average Limit)-AE1

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig 31	Fig 32	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

#### BLE (Quasi-peak Limit)-AE2

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.33	Fig.34	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

#### BLE (Average Limit)-AE2

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig 33	Fig 34	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

BLE (Quasi-peak Limit)-AE3

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.35	Fig.36	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

BLE (Average Limit)-AE3

Frequency range (MHz)	Average-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig 35	Fig 36	P
0.5 to 5	46			
5 to 30	50			

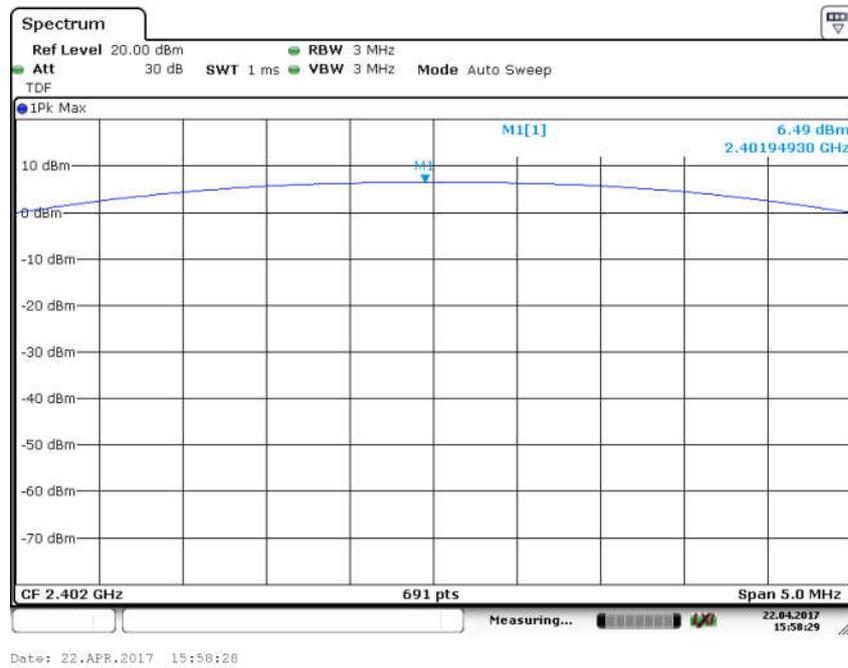
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

**Note:** The measurement results include the L1 and N measurements.

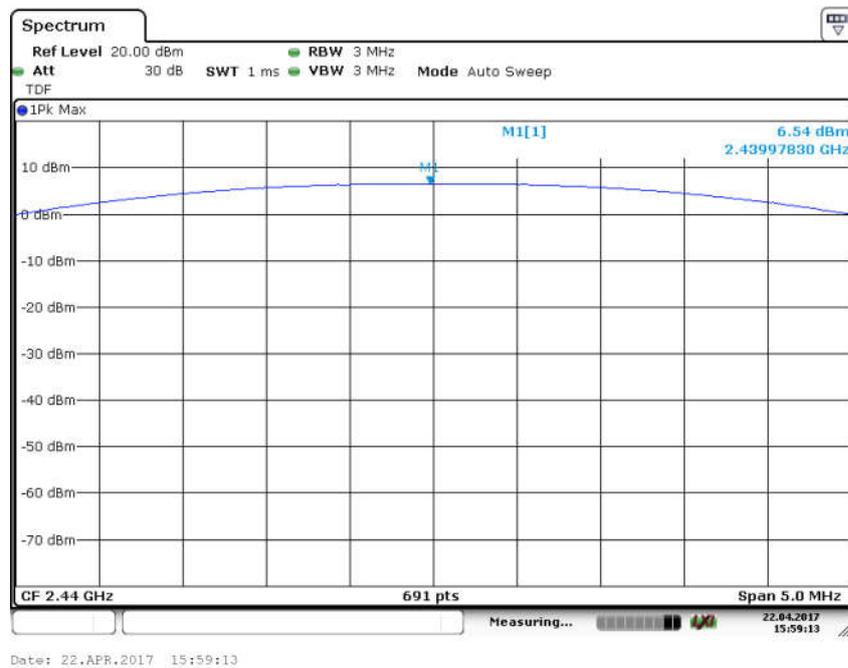
**See ANNEX B for test graphs.**

**Conclusion: Pass**

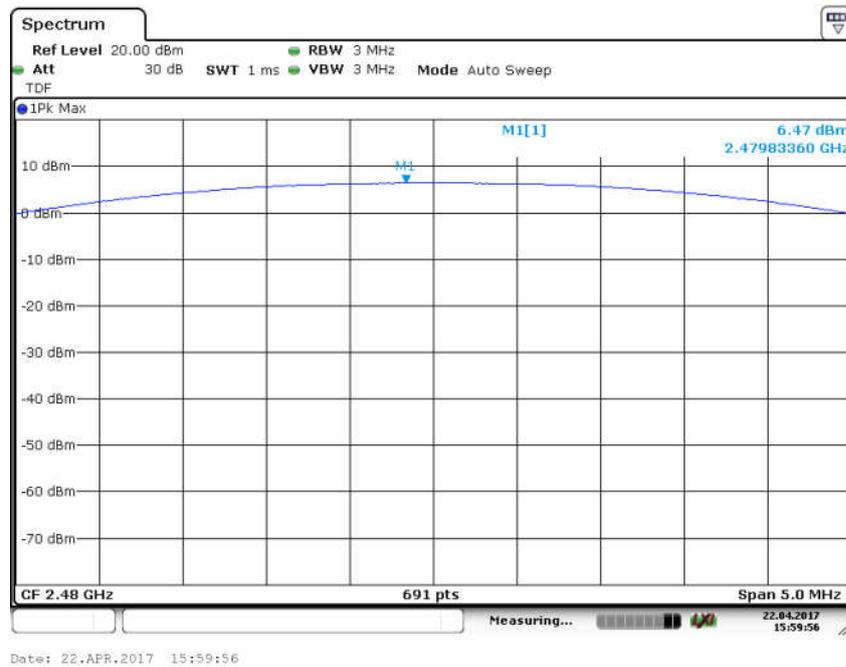
## ANNEX B: TEST GRAPHS



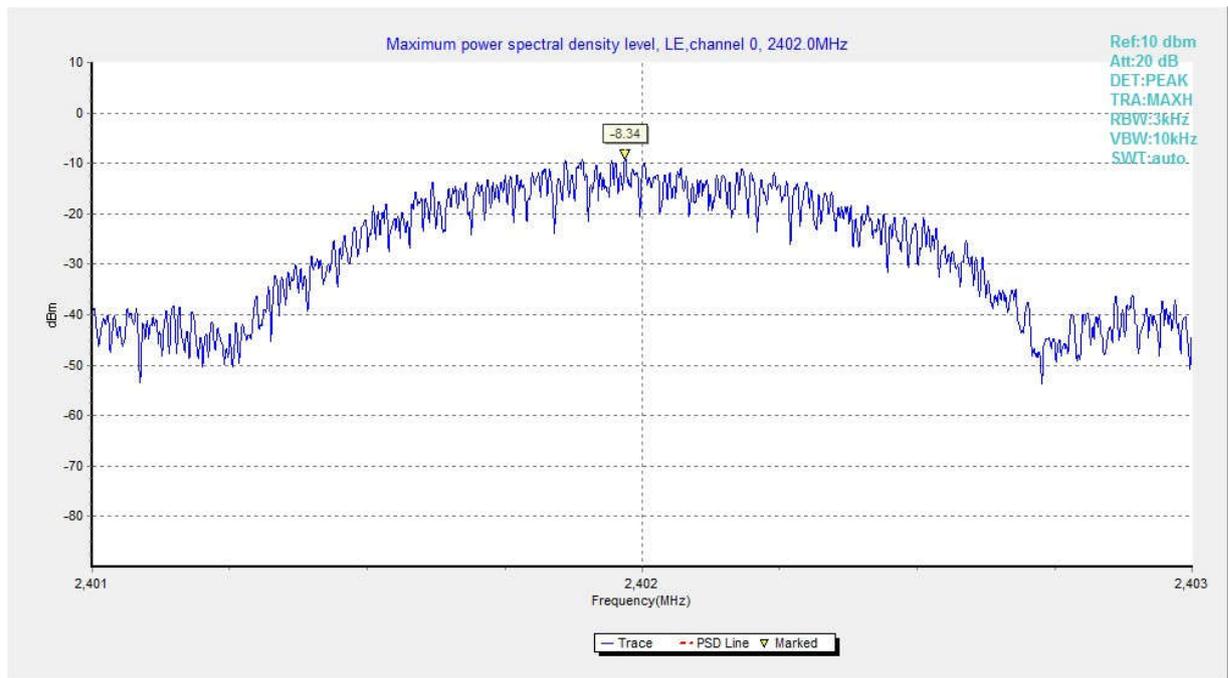
**Fig.1 Maximum Peak Output Power(GFSK, Ch 0)**



**Fig.2 Maximum Peak Output Power(GFSK, Ch 19)**



**Fig.3 Maximum Peak Output Power(GFSK, Ch 39)**



**Fig.4 Power Spectral Density (Ch 0)**

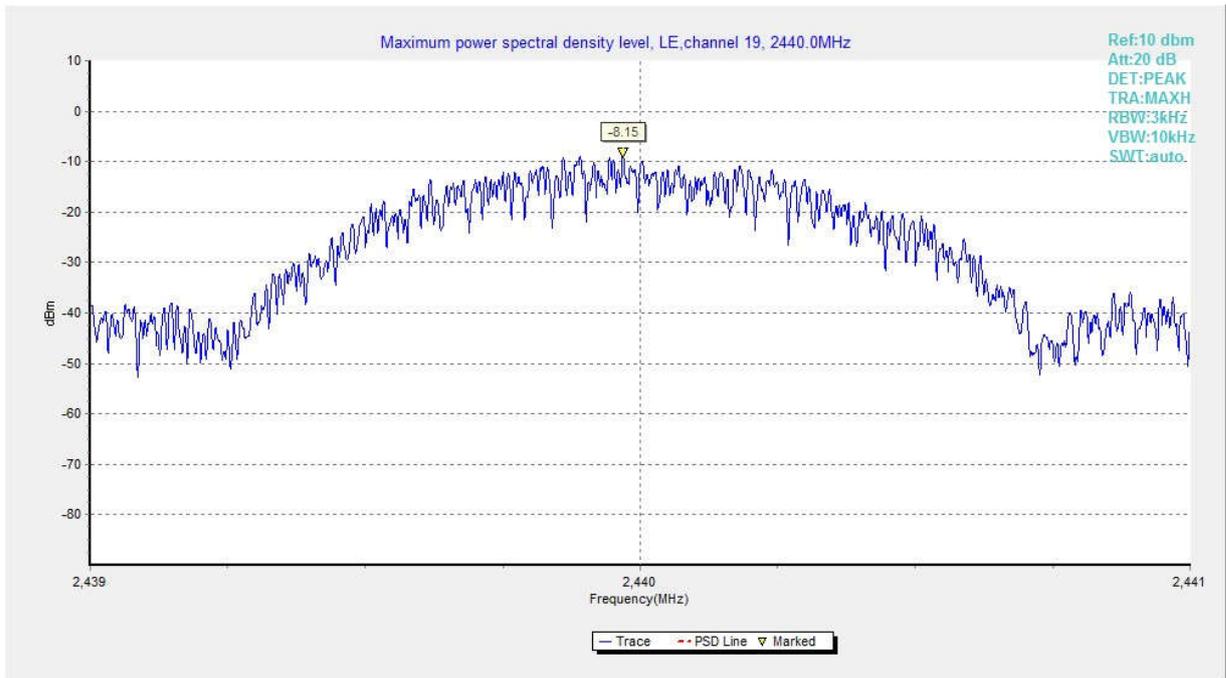


Fig.5 Power Spectral Density (Ch 19)

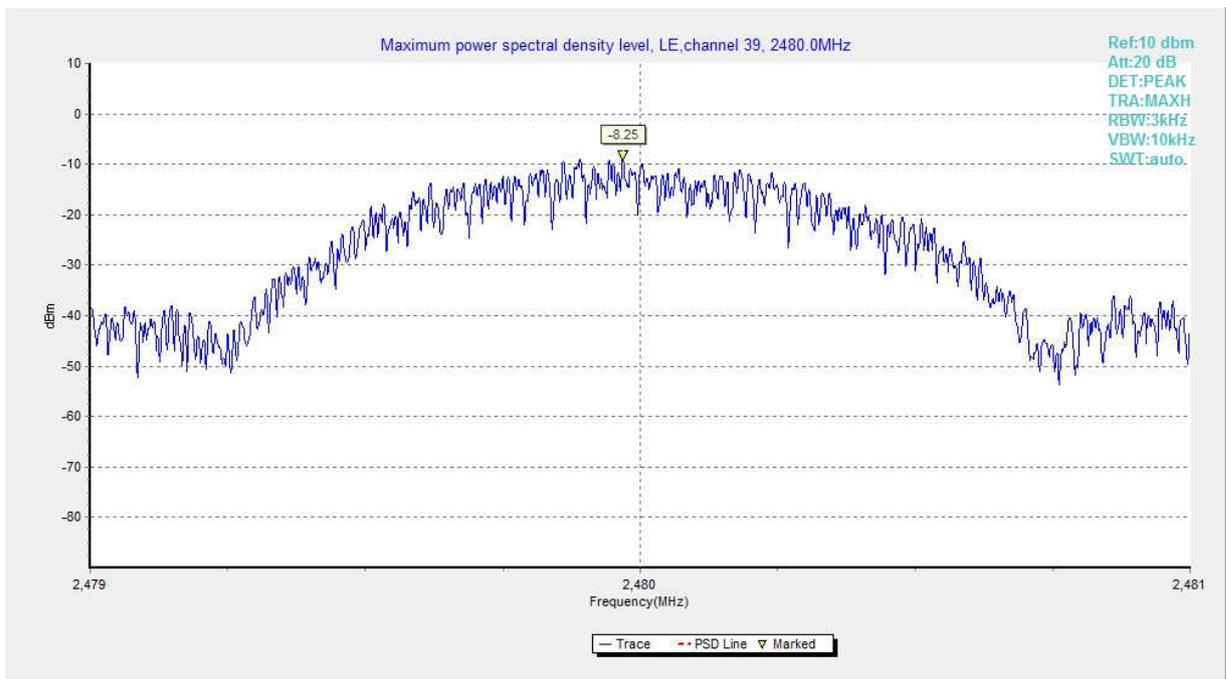


Fig.6 Power Spectral Density (Ch 39)

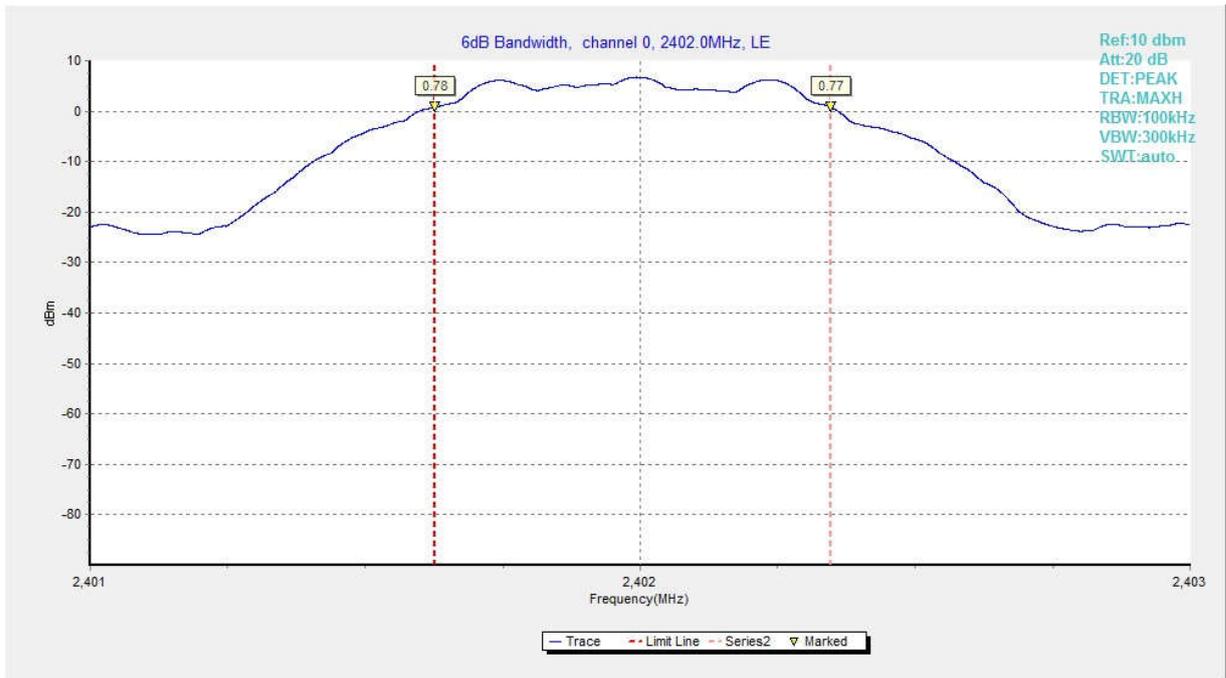
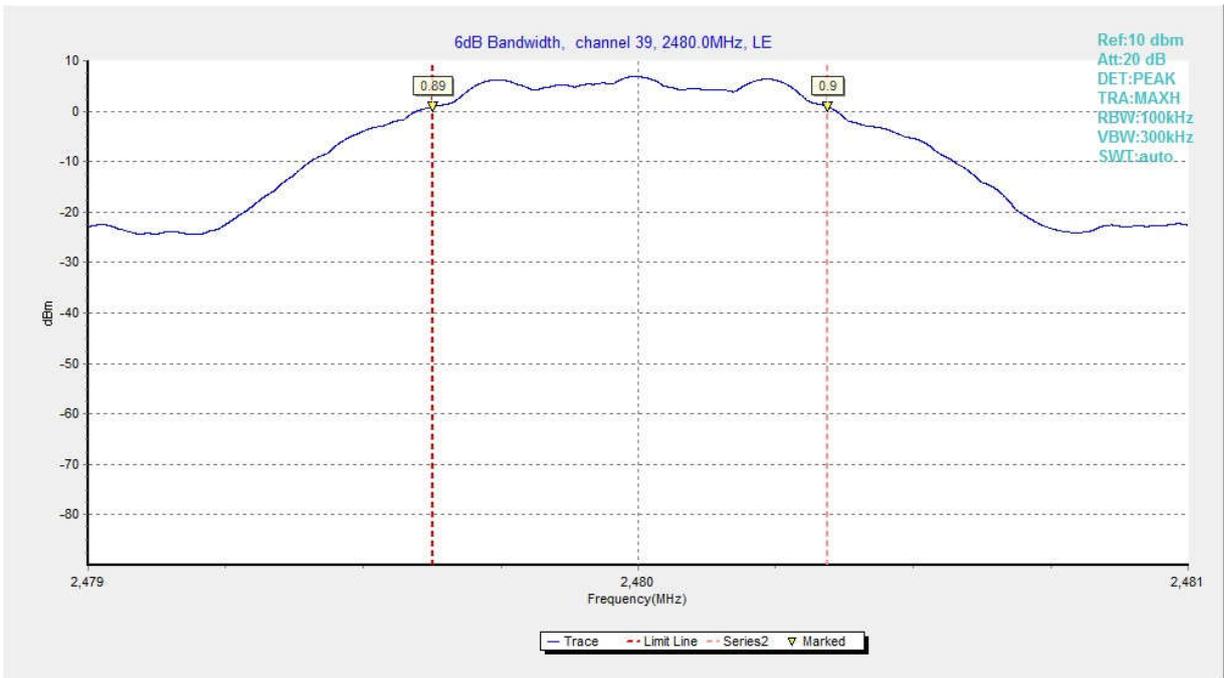


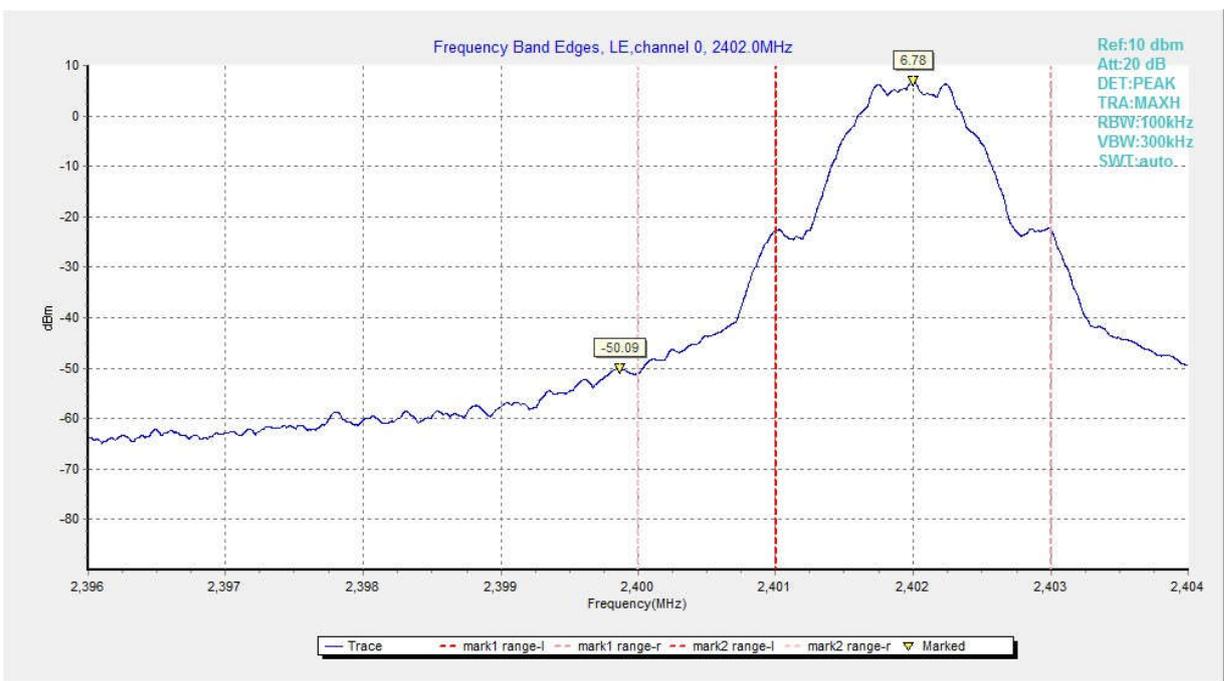
Fig.7 6dB Bandwidth (Ch 0)



Fig.8 6dB Bandwidth (Ch 19)



**Fig.9 6dB Bandwidth (Ch 39)**



**Fig.10 Band Edges (Ch 0)**

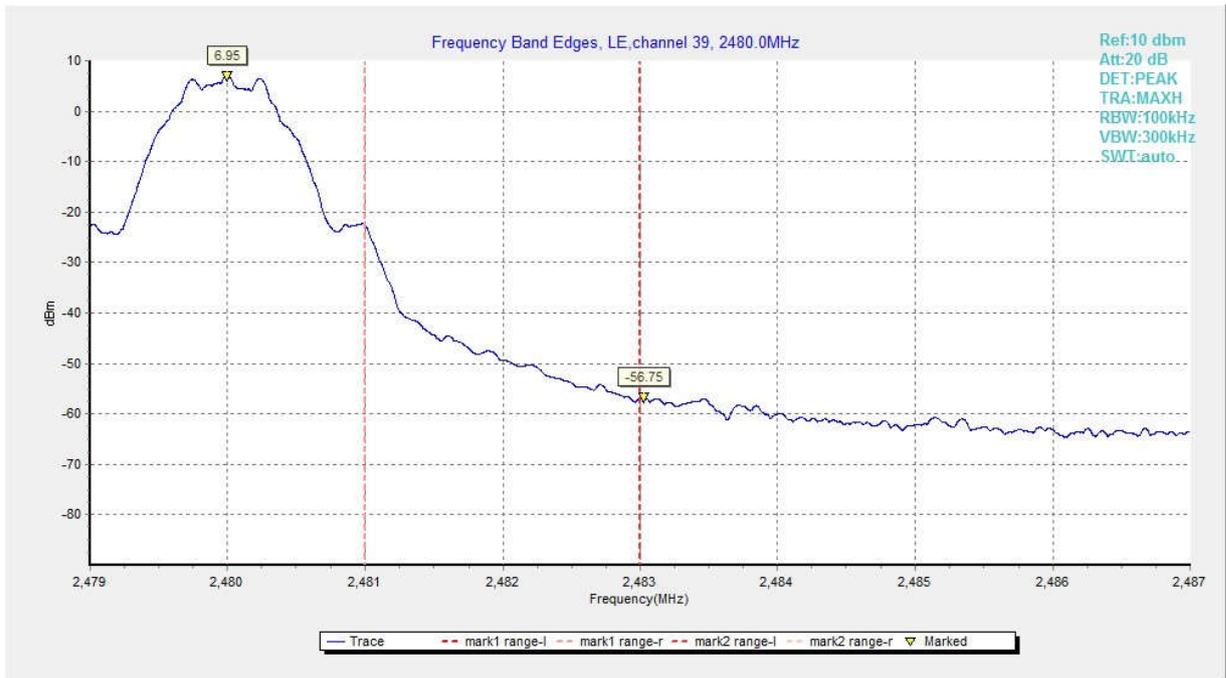


Fig.11 Band Edges (Ch 39)

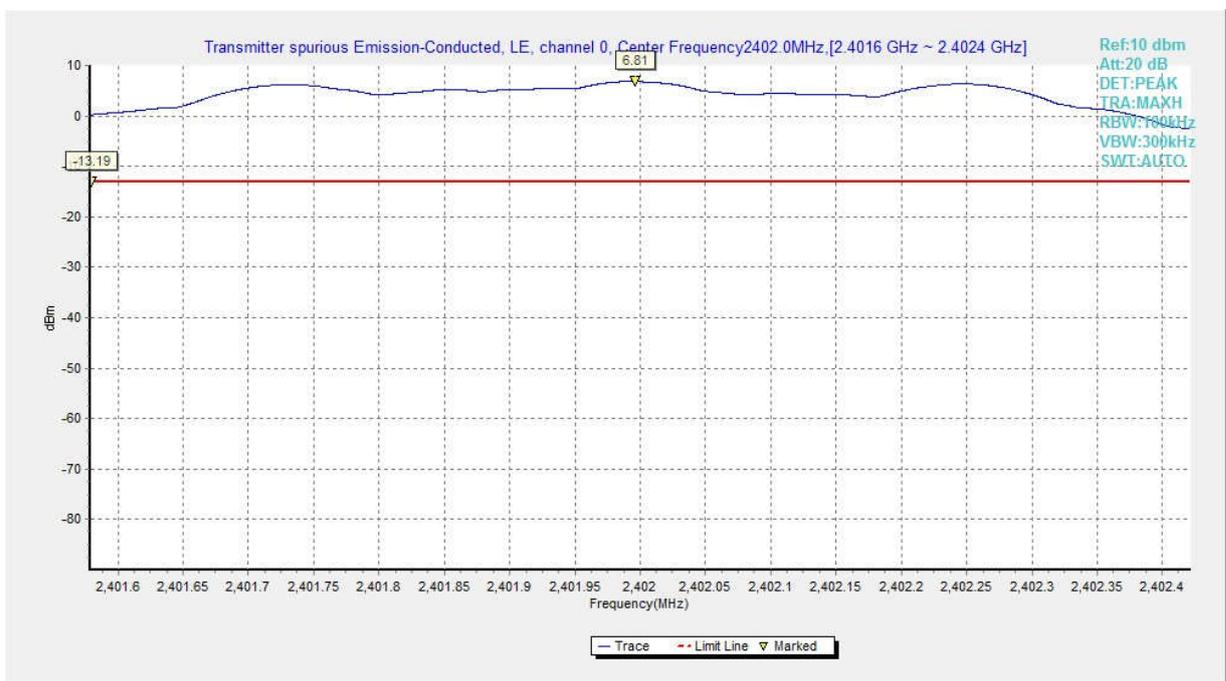
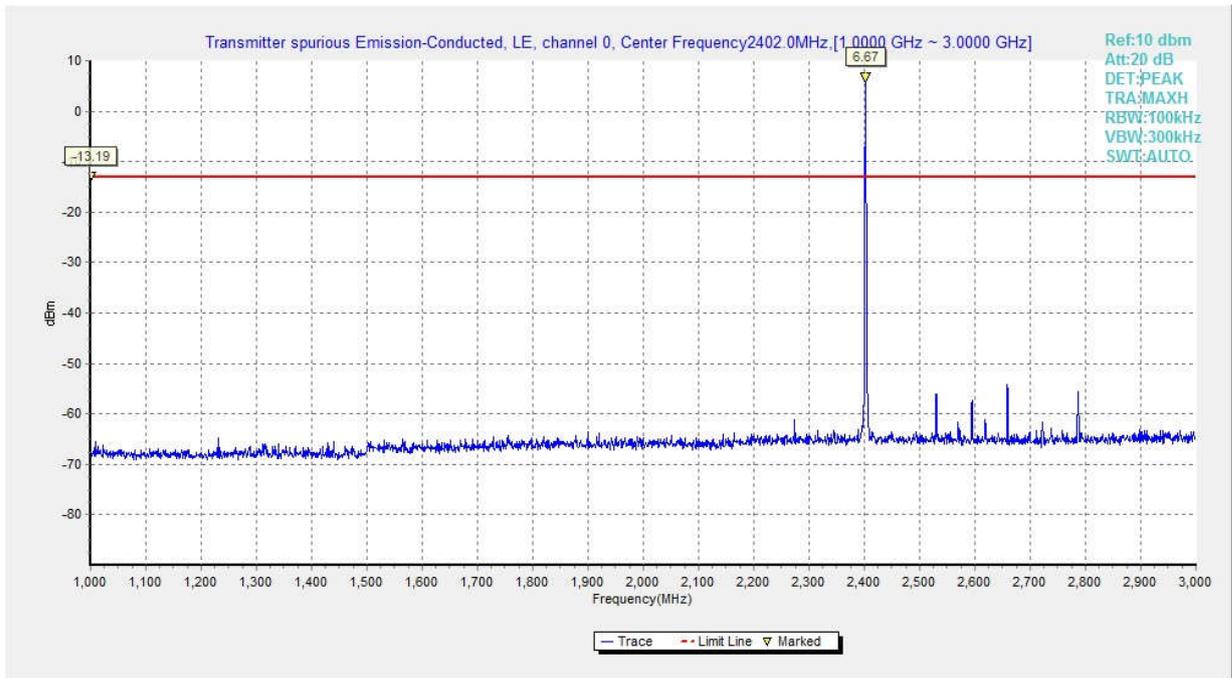
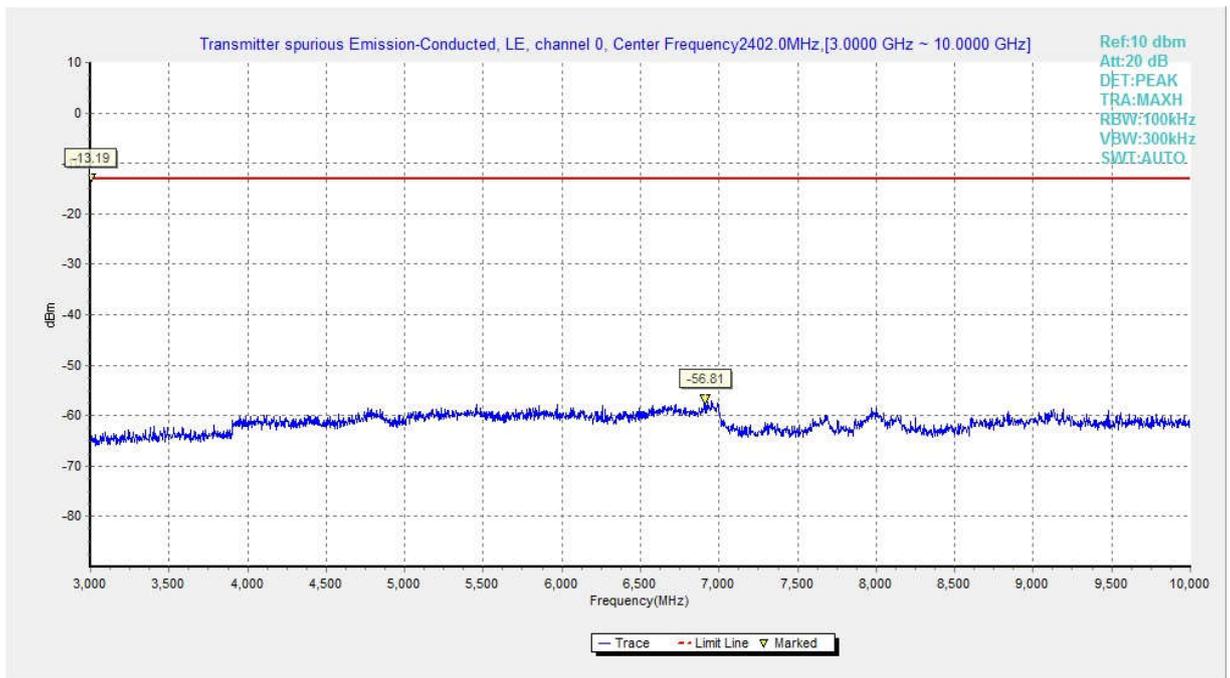


Fig.12 Conducted Spurious Emission (Ch0, Center Frequency)



**Fig.13 Conducted Spurious Emission (Ch0, 1 GHz-3 GHz)**



**Fig.14 Conducted Spurious Emission (Ch0, 3 GHz-10 GHz)**

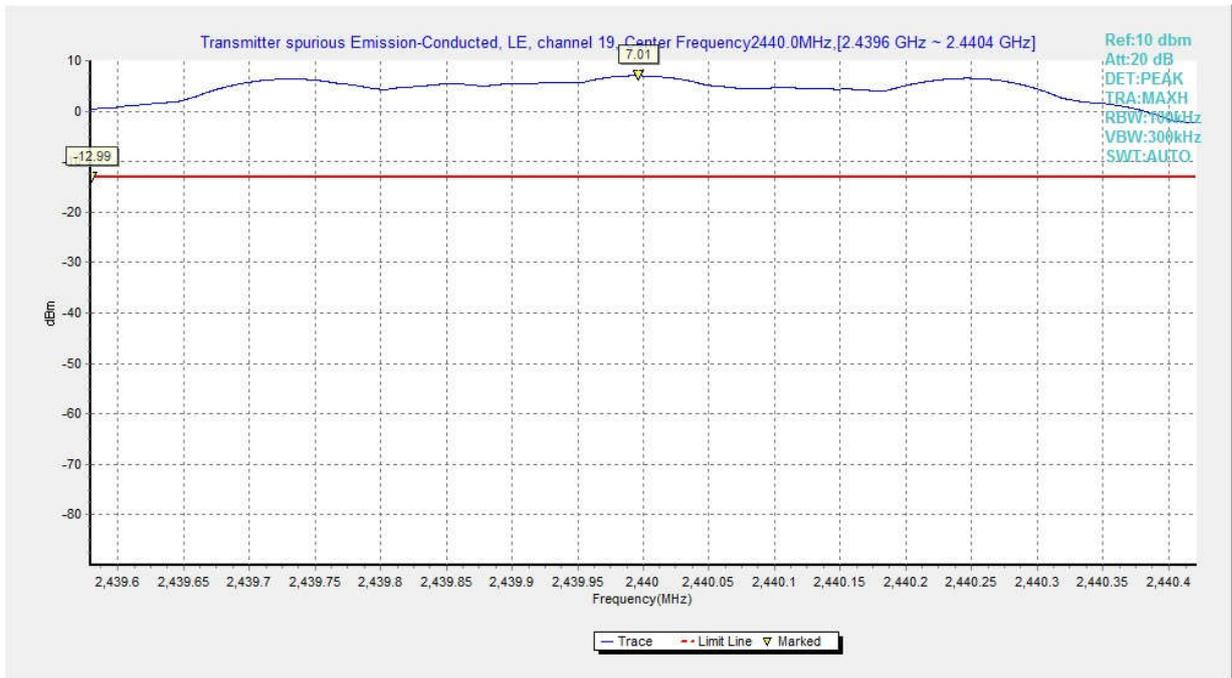


Fig.15 Conducted Spurious Emission (Ch19, Center Frequency)

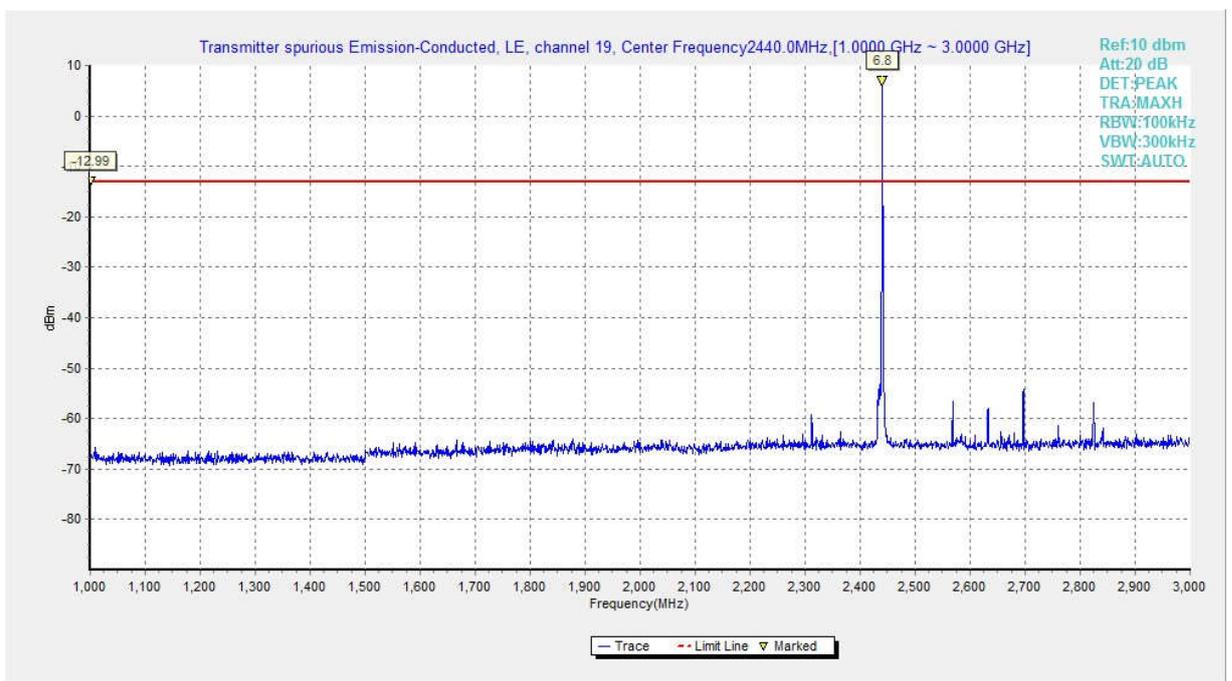


Fig.16 Conducted Spurious Emission (Ch19, 1 GHz-3 GHz)

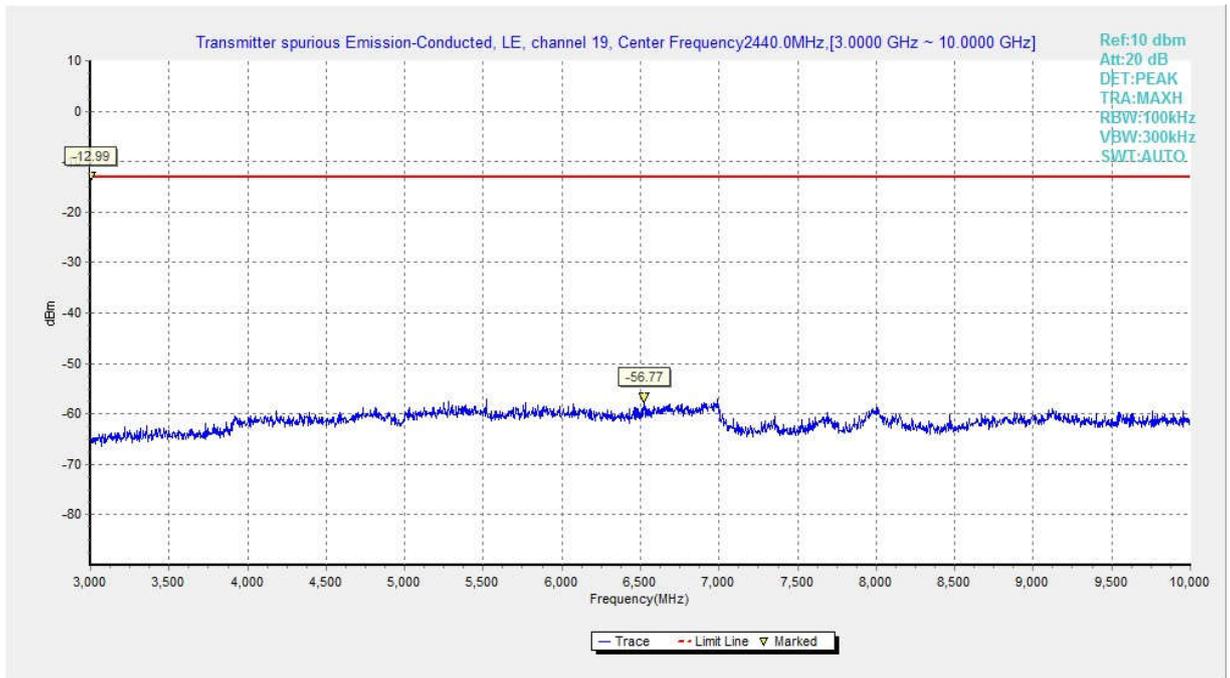


Fig.17 Conducted Spurious Emission (Ch19, 3 GHz-10 GHz)

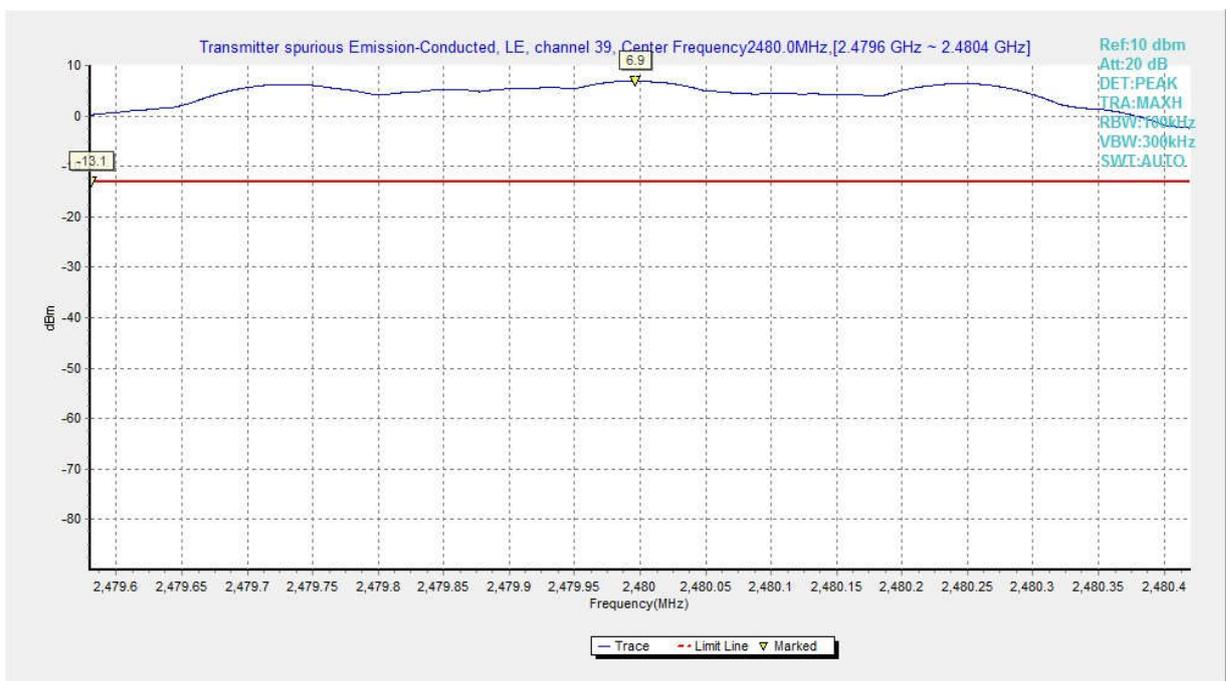


Fig.18 Conducted Spurious Emission (Ch39, Center Frequency)

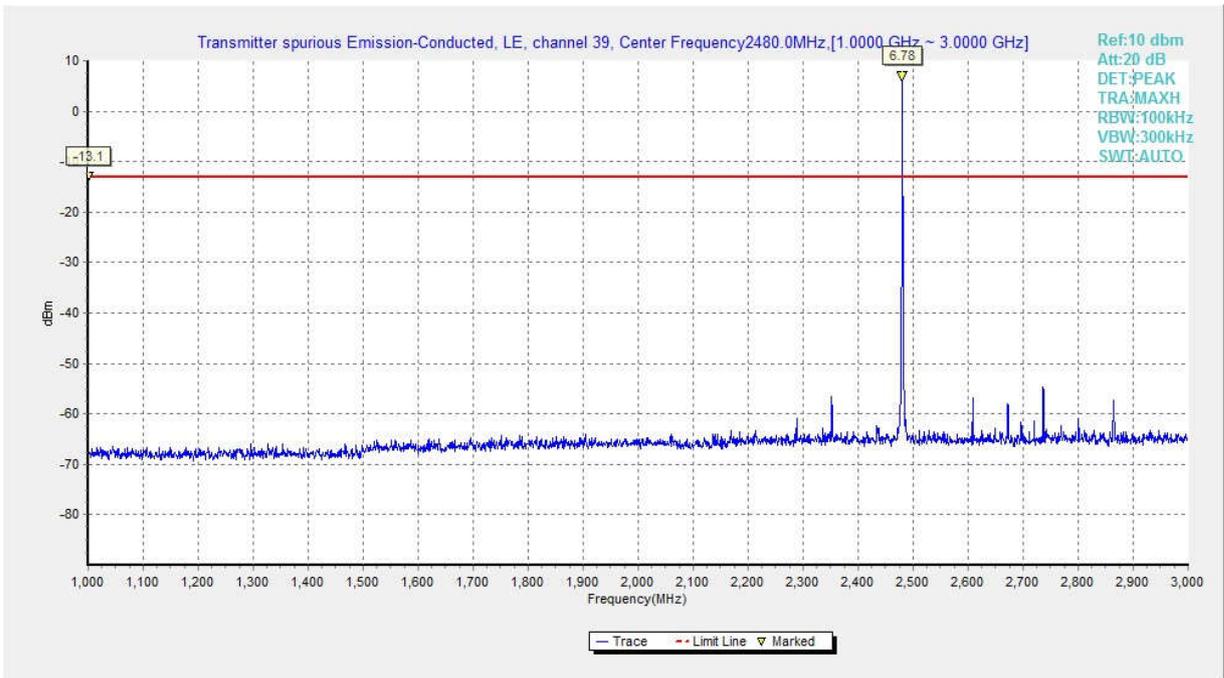


Fig.19 Conducted Spurious Emission (Ch39, 1 GHz-3 GHz)

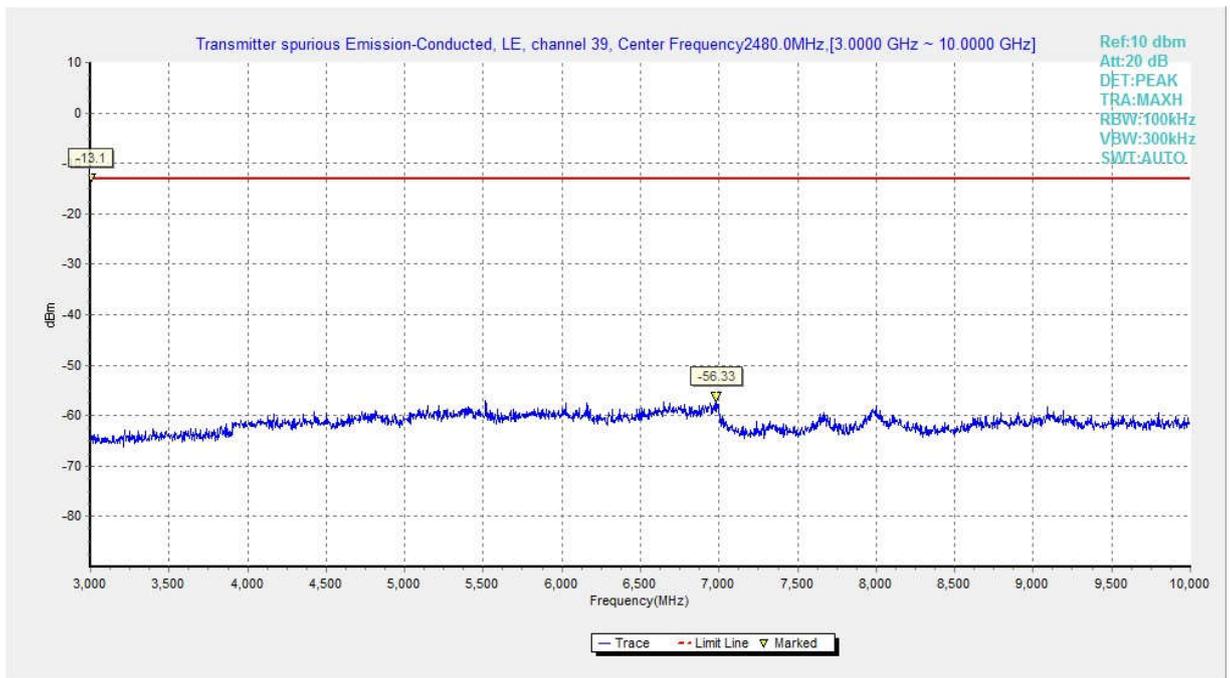


Fig.20 Conducted Spurious Emission (Ch39, 3 GHz-10 GHz)

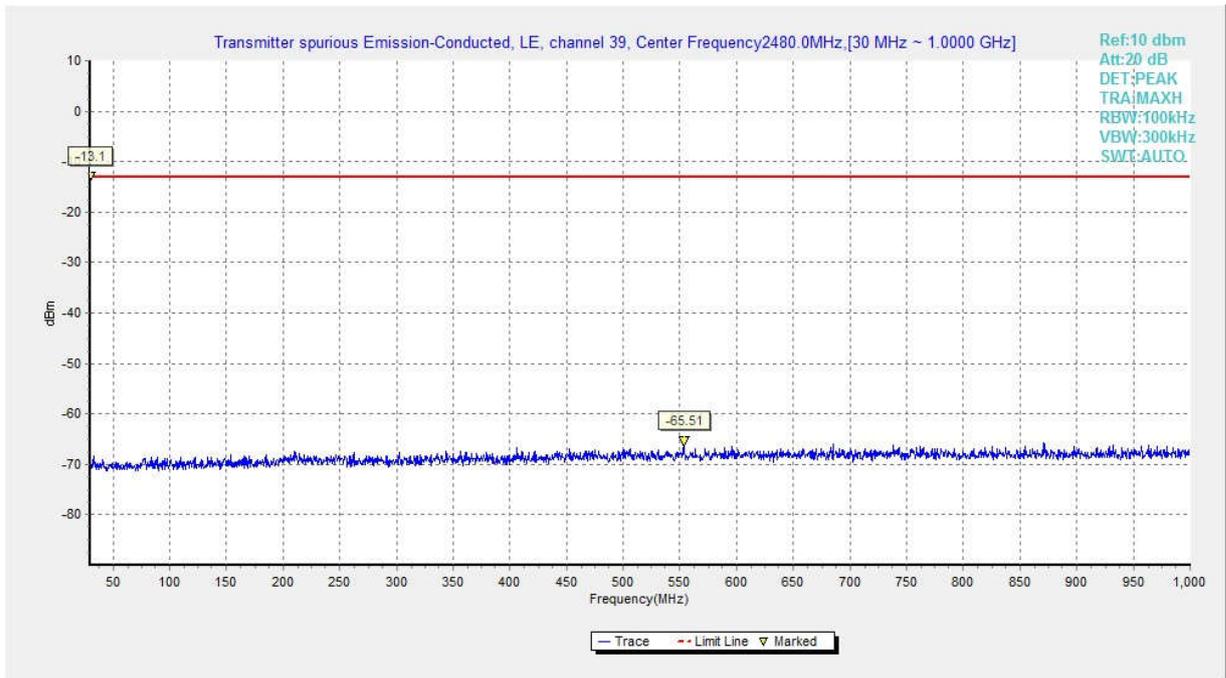


Fig.21 Conducted Spurious Emission (All channels, 30 MHz-1 GHz)

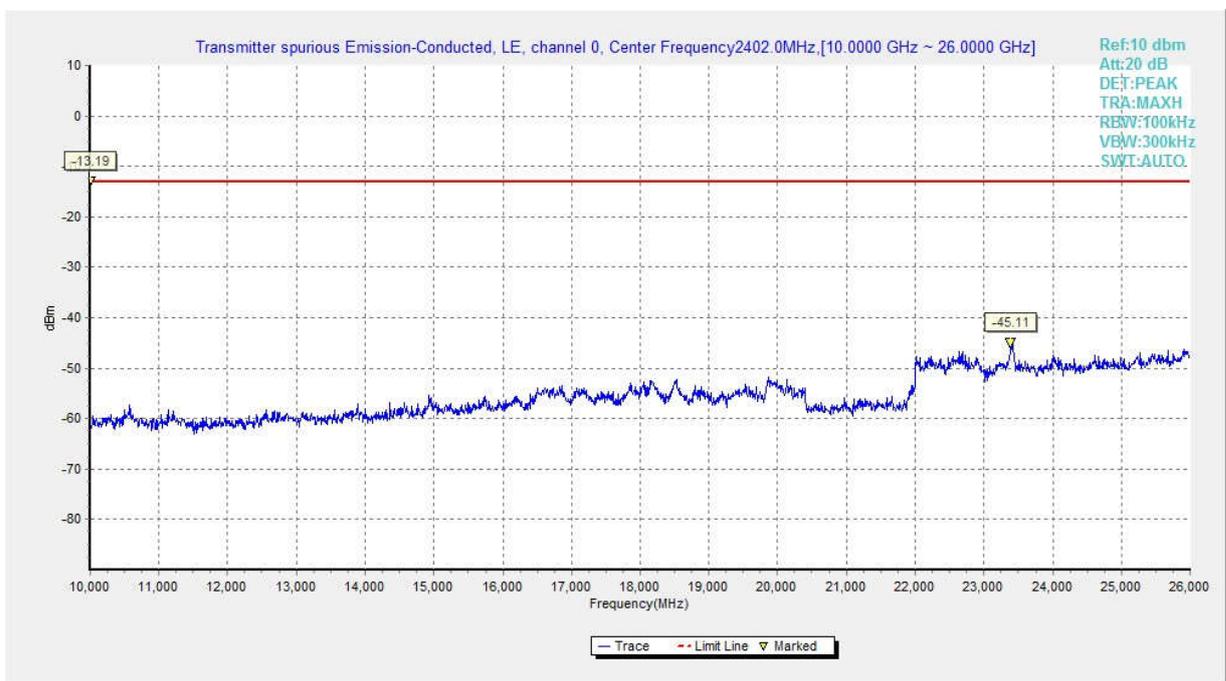


Fig.22 Conducted Spurious Emission (All channels, 10 GHz-26 GHz)

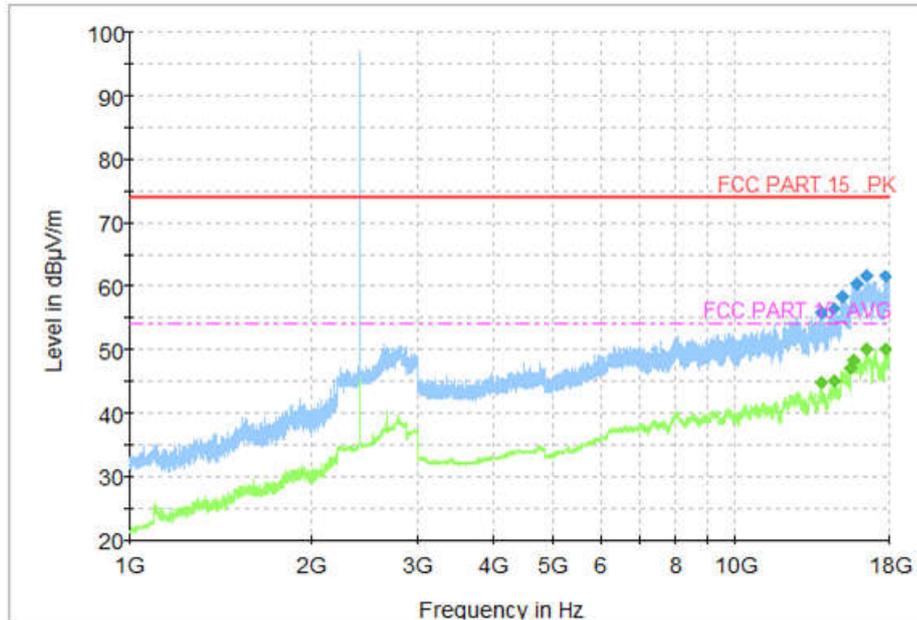


Fig.23 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~18 GHz)

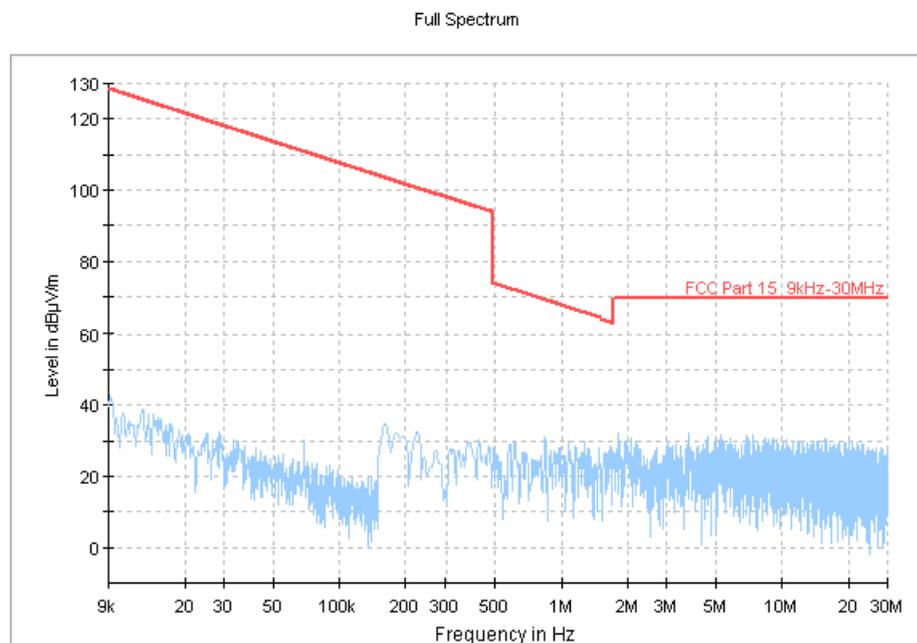
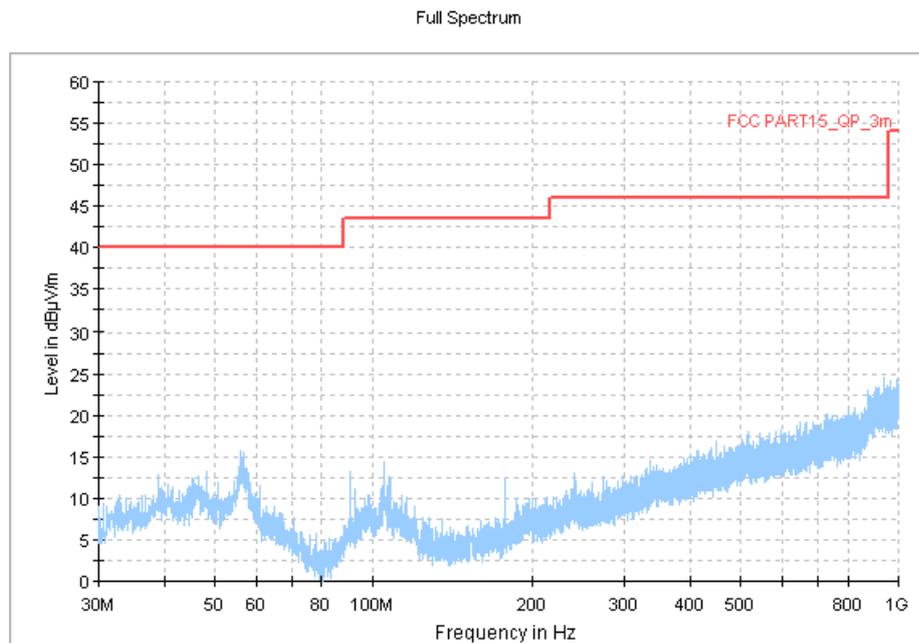
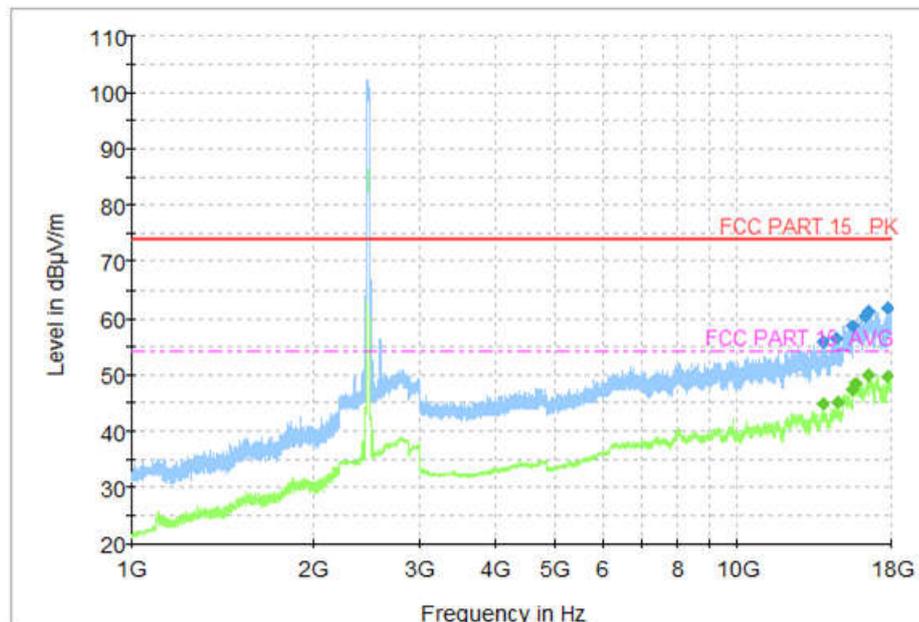


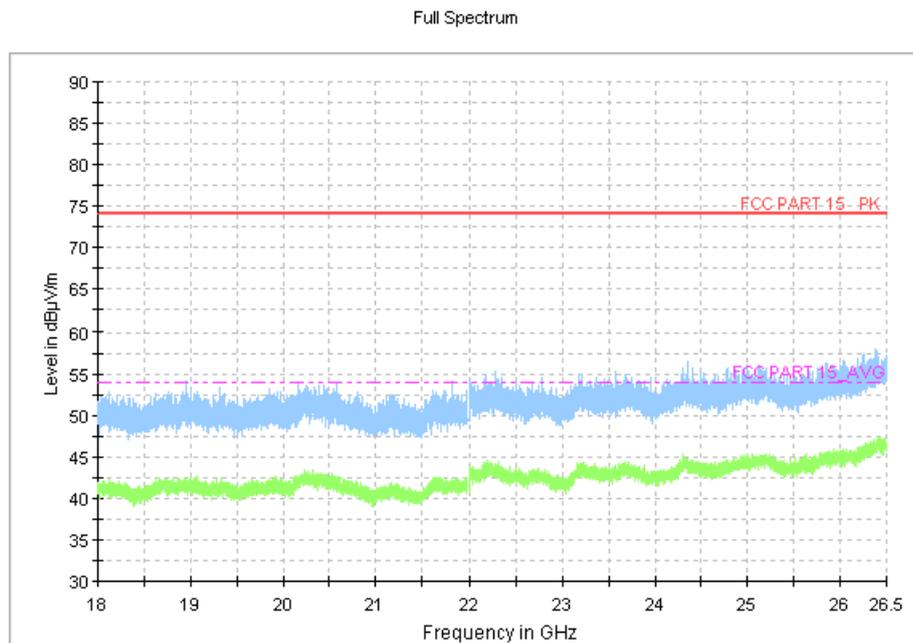
Fig.24 Radiated Spurious Emission (Ch19, 9 kHz-30 MHz)



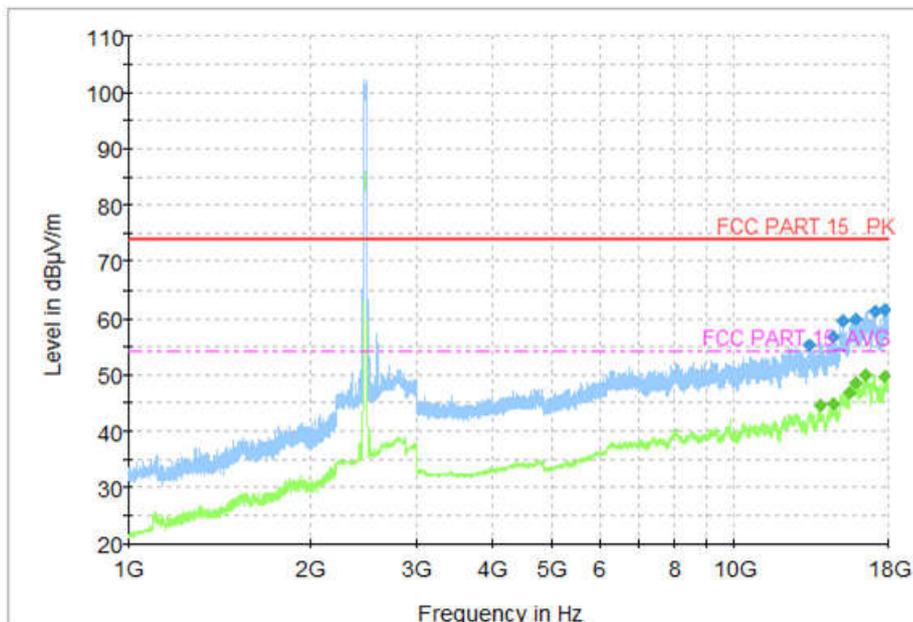
**Fig.25 Radiated Spurious Emission (Ch19, 30 MHz-1 GHz)**



**Fig.26 Radiated Spurious Emission (Ch19, 1 GHz- 18 GHz)**



**Fig.27 Radiated Spurious Emission (Ch19, 18 GHz-26.5 GHz)**



**Fig.28 Radiated Spurious Emission (Ch39, 1 GHz-18 GHz)**

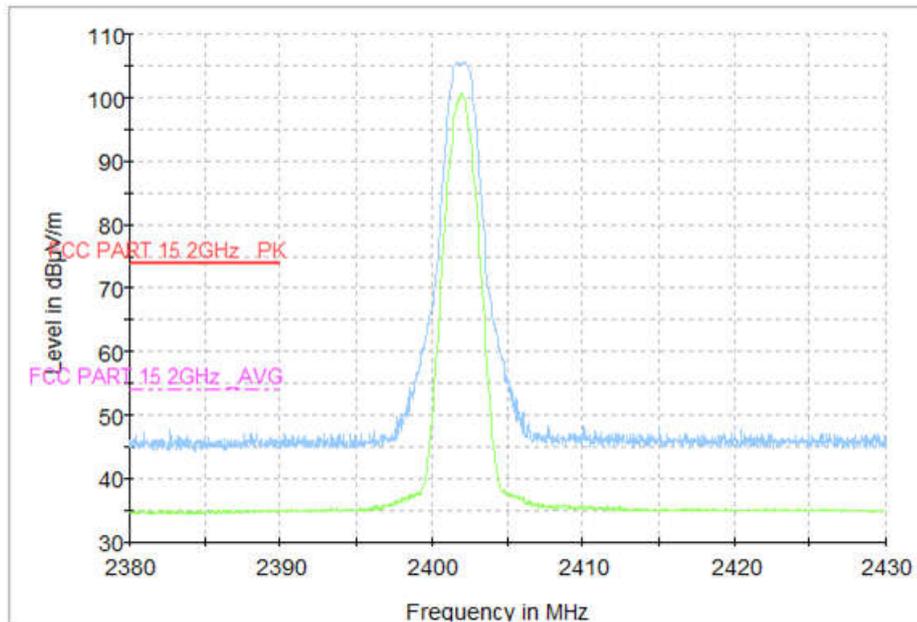


Fig.29 Radiated Band Edges (GFSK, Ch0, 2380GHz~2450GHz)

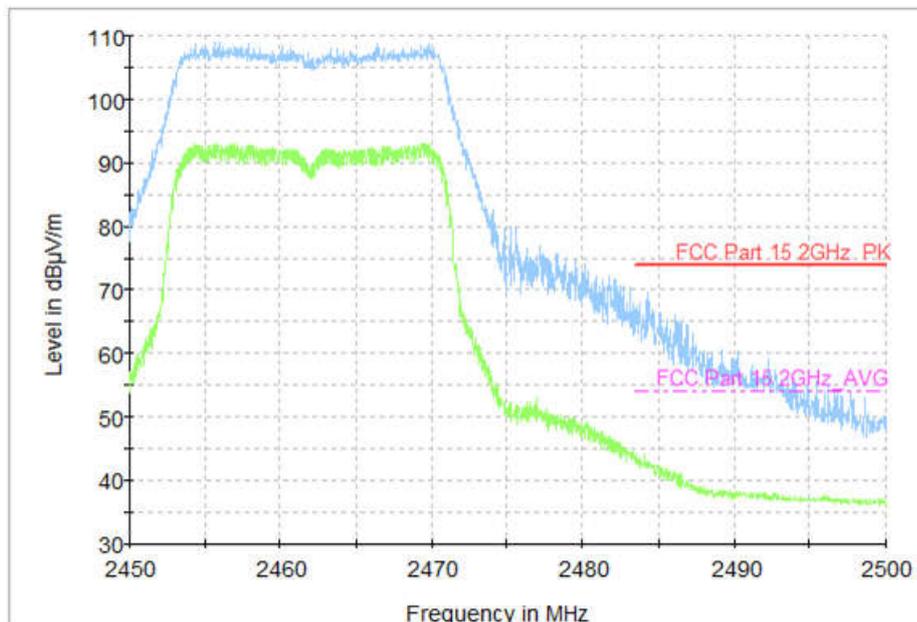


Fig.30 Radiated Band Edges (GFSK, Ch39, 2450GHz~2500GHz)

ESH2-Z5 Scan-FCC

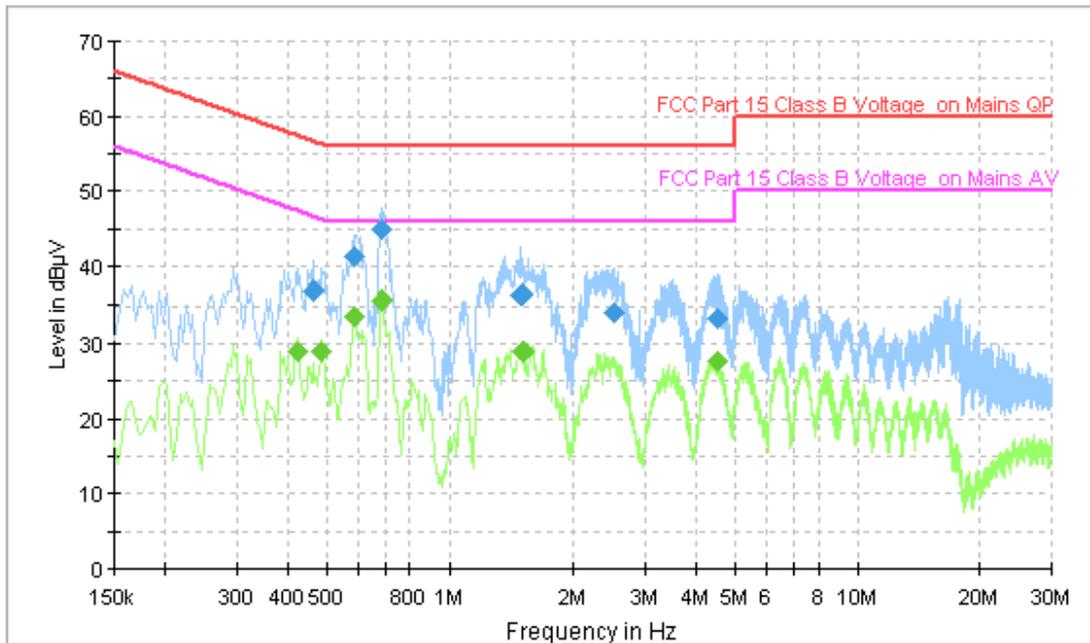


Fig.31 AC Powerline Conducted Emission (Traffic, AE1)

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.462000	37.0	GND	N	9.7	19.7	56.7
0.586000	41.3	GND	N	9.6	14.7	56.0
0.686000	45.1	GND	N	9.5	10.9	56.0
1.490000	36.5	GND	N	9.6	19.5	56.0
2.514000	34.1	GND	N	9.6	21.9	56.0
4.522000	33.4	GND	N	9.6	22.6	56.0

MEASUREMENT RESULT: " Average "

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.426000	29.1	GND	N	9.7	18.3	47.3
0.486000	29.1	GND	N	9.7	17.2	46.2
0.586000	33.6	GND	N	9.6	12.4	46.0
0.686000	35.7	GND	N	9.5	10.3	46.0
1.510000	28.9	GND	N	9.6	17.1	46.0
4.538000	27.7	GND	N	9.6	18.3	46.0

ESH2-Z5 Scan-FCC

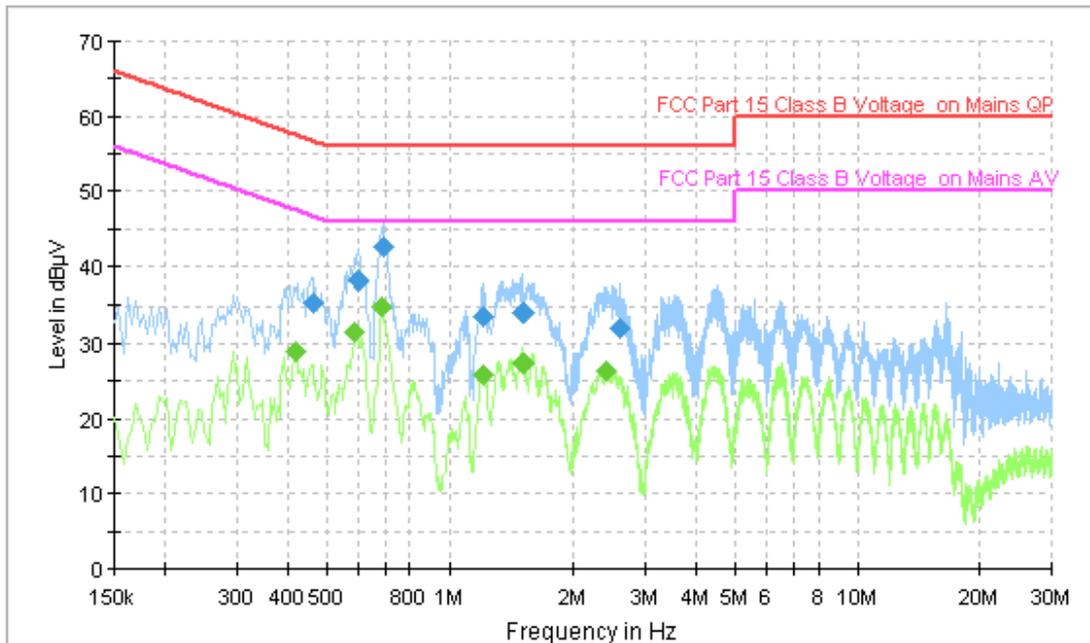


Fig.32 AC Power line Conducted Emission (Idle, AE1)

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.462000	35.5	GND	N	9.7	21.2	56.7
0.598000	38.2	GND	N	9.6	17.8	56.0
0.690000	42.5	GND	N	9.5	13.5	56.0
1.214000	33.5	GND	N	9.5	22.5	56.0
1.518000	34.0	GND	N	9.6	22.0	56.0
2.594000	31.9	GND	N	9.6	24.1	56.0

MEASUREMENT RESULT: " Average "

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	29.0	GND	N	9.7	18.4	47.5
0.586000	31.6	GND	N	9.6	14.4	46.0
0.686000	34.8	GND	N	9.5	11.2	46.0
1.214000	25.8	GND	N	9.5	20.2	46.0
1.518000	27.4	GND	N	9.6	18.6	46.0
2.410000	26.2	GND	N	9.6	19.8	46.0

ESH2-Z5 Scan-FCC

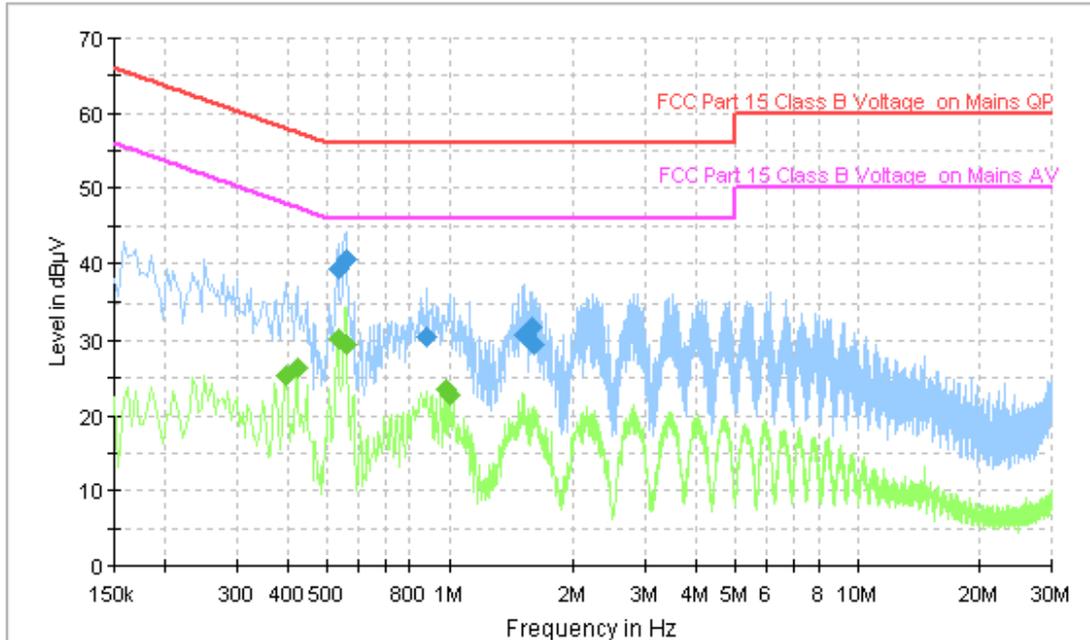


Fig.33 AC Powerline Conducted Emission (Traffic, AE2)

**MEASUREMENT RESULT: " QuasiPeak "**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.534000	39.3	GND	N	9.7	16.7	56.0
0.558000	40.7	GND	N	9.7	15.3	56.0
0.882000	30.4	GND	N	9.6	25.6	56.0
1.538000	30.7	GND	N	9.6	25.3	56.0
1.578000	31.8	GND	N	9.6	24.2	56.0
1.606000	29.4	GND	N	9.6	26.6	56.0

**MEASUREMENT RESULT: " Average "**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.398000	25.3	GND	N	9.6	22.6	47.9
0.422000	26.2	GND	N	9.7	21.2	47.4
0.534000	30.1	GND	N	9.7	15.9	46.0
0.558000	29.5	GND	N	9.7	16.5	46.0
0.978000	23.4	GND	N	9.6	22.6	46.0
1.002000	22.7	GND	N	9.5	23.3	46.0

ESH2-Z5 Scan-FCC

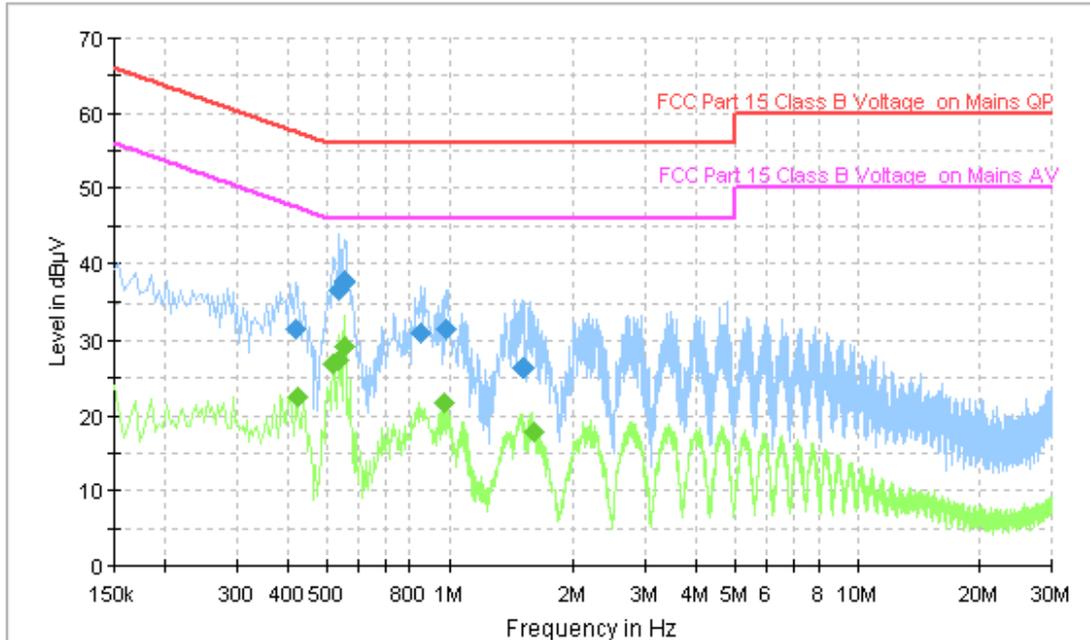


Fig.34 AC Power line Conducted Emission (Idle, AE2)

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	31.4	GND	N	9.7	26.1	57.5
0.538000	36.8	GND	N	9.7	19.2	56.0
0.554000	37.7	GND	N	9.7	18.3	56.0
0.850000	31.0	GND	N	9.5	25.0	56.0
0.978000	31.6	GND	N	9.6	24.4	56.0
1.522000	26.5	GND	N	9.6	29.5	56.0

MEASUREMENT RESULT: " Average "

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.422000	22.5	GND	N	9.7	24.9	47.4
0.518000	27.0	GND	N	9.7	19.0	46.0
0.538000	27.4	GND	N	9.7	18.6	46.0
0.554000	29.1	GND	N	9.7	16.9	46.0
0.974000	21.6	GND	N	9.6	24.4	46.0
1.598000	17.8	GND	N	9.6	28.2	46.0

ESH2-Z5 Scan-FCC

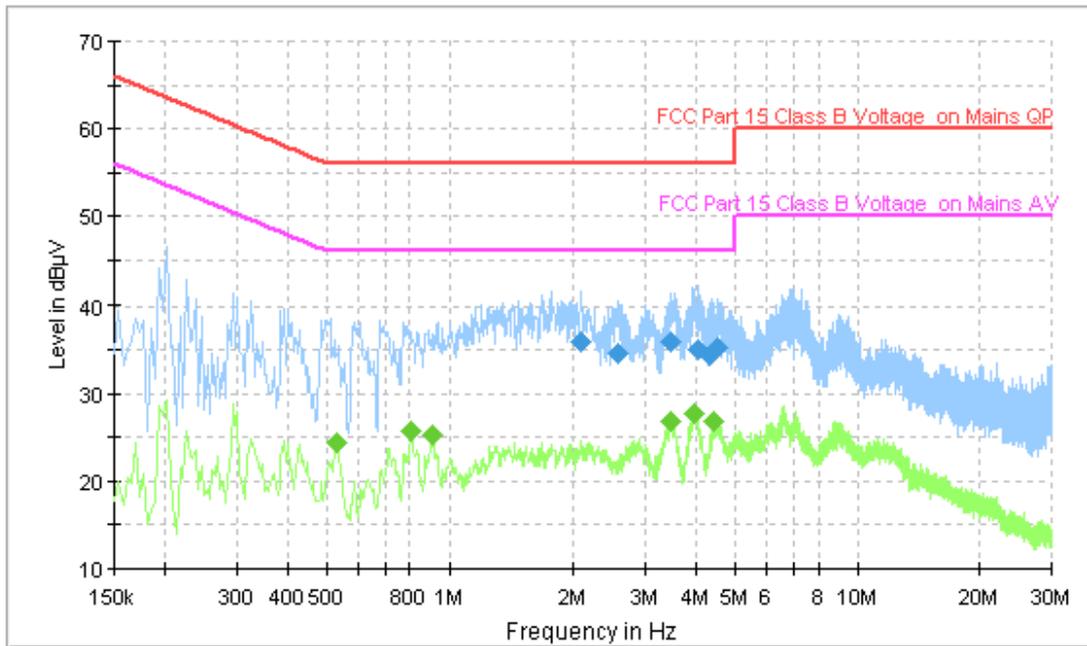


Fig.35 AC Powerline Conducted Emission (Traffic, AE3)

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.086000	35.9	GND	N	9.6	20.1	56.0
2.578000	34.5	GND	N	9.6	21.5	56.0
3.458000	35.8	GND	N	9.6	20.2	56.0
4.042000	35.1	GND	N	9.6	20.9	56.0
4.346000	34.4	GND	N	9.6	21.6	56.0
4.546000	35.1	GND	N	9.6	20.9	56.0

MEASUREMENT RESULT: " Average "

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.530000	24.4	GND	N	9.7	21.6	46.0
0.810000	25.7	GND	N	9.6	20.3	46.0
0.910000	25.3	GND	N	9.6	20.7	46.0
3.466000	26.8	GND	N	9.6	19.2	46.0
3.954000	27.8	GND	N	9.6	18.2	46.0
4.450000	26.9	GND	N	9.6	19.1	46.0

ESH2-Z5 Scan-FCC

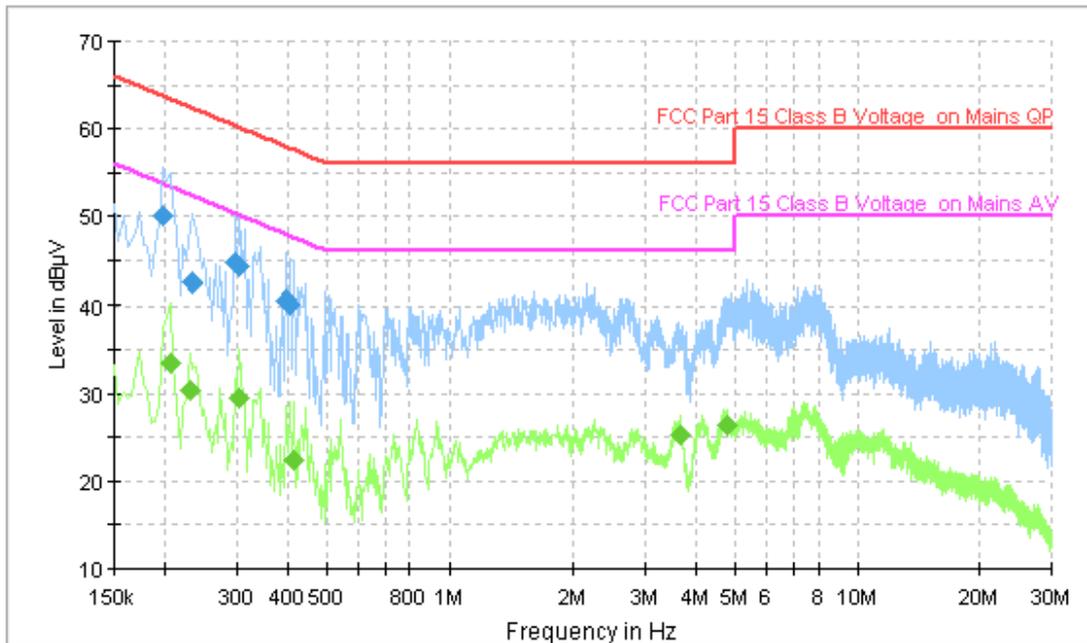


Fig.36 AC Power line Conducted Emission (Idle, AE3)

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	50.0	GND	N	9.6	13.6	63.7
0.234000	42.5	GND	N	9.6	19.9	62.3
0.298000	44.7	GND	N	9.6	15.6	60.3
0.306000	44.3	GND	N	9.6	15.8	60.1
0.398000	40.5	GND	N	9.6	17.4	57.9
0.406000	40.1	GND	N	9.7	17.7	57.7

MEASUREMENT RESULT: " Average "

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.206000	33.4	GND	N	9.6	20.0	53.4
0.230000	30.5	GND	N	9.6	22.0	52.4
0.306000	29.5	GND	N	9.6	20.6	50.1
0.414000	22.4	GND	N	9.7	25.2	47.6
3.654000	25.2	GND	N	9.6	20.8	46.0
4.762000	26.3	GND	N	9.6	19.7	46.0



**ANNEX C: Persons involved in this testing**

Test Name	Tester
Maximum Peak Output Power	An Ran, Tang Weisheng
Peak Power Spectral Density	An Ran, Tang Weisheng
Occupied 6dB Bandwidth	An Ran, Tang Weisheng
Band Edges Compliance	An Ran, Tang Weisheng
Transmitter Spurious Emission - Conducted	An Ran, Tang Weisheng
Transmitter Spurious Emission - Radiated	An Ran, Tang Weisheng
AC Powerline Conducted Emission	An Ran, Tang Weisheng

**\*\*\*END OF REPORT\*\*\***