



TEST REPORT

For LTE

Report Reference No...... : **TRE1603019103** R/C.....: 14043

Applicant's name..... : **Vonino Electronics Limited**

Address..... : Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong

Manufacturer..... : Vonino Electronics Limited

Address..... : Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong

Test item description : **XAVY L8 / Epic M8**

Trade Mark : vonino

Model/Type reference..... : T8S

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

Standard : **ETSI EN 301 908-1: V6.2.1: 2013-04**
ETSI EN 301 908-13: V6.2.1: 2013-10

Date of receipt of test sample..... : Mar 29, 2016

Date of testing..... : Mar 30, 2016- Apr 20, 2016

Date of issue..... : Apr 20, 2016

Result..... : **PASS**

Compiled by
(position+printedname+signature).... : File administrators Shayne Zhu

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(position+printedname+signature).... : Project Engineer Lion Cai

Approved by
(position+printedname+signature).... : RF Manager 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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1. Test standards and Test description

1.1. Test Standards

The tests were performed according to following standards:

[ETSI EN 301 908-1 V6.2.1\(2013-04\)](#)–IMT cellular networks;Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive;Part 1: Introduction and common requirements.

[ETSI EN 301908-13V6.2.1\(2013-10\)](#)–IMT cellular networks;Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive;Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA)User Equipment (UE)

[ETSI TS 136 521-1 V12.5.0 \(2015-05\)](#)–LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing (3GPP TS 36.521-1 version 12.5.0 Release 12)

[ETSI TS 136 508V12.5.0 \(2015-05\)](#)-LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing (3GPP TS 36.508 version 12.5.0 Release 12)

1.2. Test Description

Test item	Standards requirement	Result
Radiated emissions (UE)	EN 301 908-1 Section 4.2.2	Pass
Control and monitoring functions (UE)	EN 301 908-1 Section 4.2.4	Pass
Transmitter Maximum Output Power	EN 301 908-13Section 4.2.2	Pass
Transmitter Spectrum emission mask	EN 301 908-13Section 4.2.3	Pass
Transmitter Spurious Emissions	EN 301 908-13Section 4.2.4	Pass
Transmitter Minimum Output Power	EN 301 908-13Section 4.2.5	Pass
Receiver Adjacent Channel Selectivity	EN 301 908-13Section 4.2.6	Pass
Receiver Blocking Characteristics	EN 301 908-13Section 4.2.7	Pass
Receiver Spurious Response	EN 301 908-13Section 4.2.8	Pass
Receiver Intermodulation Characteristics	EN 301 908-13Section 4.2.9	Pass
Receiver Spurious Emissions	EN 301 908-13Section 4.2.10	Pass
Transmitter Adjacent Channel Leakage Power Ratio	EN 301 908-13 Section 4.2.11	Pass

Remark: The measurement uncertainty is not included in the test result.

2. Summary

2.1. Client Information

Applicant:	Vonino Electronics Limited
Address:	Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong
Manufacturer:	Vonino Electronics Limited
Address:	Miramar Tower 10F - no1010, 132 Nathan Road, Tsim Sha Tsui, Kowloon, Hong Kong

2.2. Product Description

Name of EUT	XAVY L8 / Epic M8
Trade Mark:	vonino
Model No.:	T8S
Listed Model(s):	-
Power supply:	DC 3.7V From internal battery
Adapter information:	Model:FJ-SW728L0502000UE Input:AC 100-240V,50/60Hz 0.4A Max Output: 5Vd.c., 2000mA
RF Technical Description	
<input checked="" type="checkbox"/> FDD Band 3	
Operation Frequency:	Uplink: 1710 MHz – 1785 MHz Downlink: 1805 MHz – 1880 MHz
Channel bandwidth:	<input checked="" type="checkbox"/> 1.4MHz <input checked="" type="checkbox"/> 3MHz <input checked="" type="checkbox"/> 5MHz <input checked="" type="checkbox"/> 10MHz <input checked="" type="checkbox"/> 15MHz <input checked="" type="checkbox"/> 20MHz
<input checked="" type="checkbox"/> FDD Band 7	
Operation Frequency:	Uplink:2500 MHz – 2570 MHz Downlink: 2620 MHz – 2690 MHz
Channel bandwidth:	<input type="checkbox"/> 1.4MHz <input type="checkbox"/> 3MHz <input checked="" type="checkbox"/> 5MHz <input checked="" type="checkbox"/> 10MHz <input checked="" type="checkbox"/> 15MHz <input checked="" type="checkbox"/> 20MHz
<input checked="" type="checkbox"/> FDD Band 20	
Operation Frequency:	Uplink:832 MHz –862 MHz Downlink: 791 MHz –821 MHz
Channel bandwidth:	<input type="checkbox"/> 1.4MHz <input type="checkbox"/> 3MHz <input checked="" type="checkbox"/> 5MHz <input checked="" type="checkbox"/> 10MHz <input checked="" type="checkbox"/> 15MHz <input checked="" type="checkbox"/> 20MHz
Power Class:	<input type="checkbox"/> Class 1 <input type="checkbox"/> Class 2 <input checked="" type="checkbox"/> Class 3 <input type="checkbox"/> Class 3
Modulation type:	<input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input type="checkbox"/> 64QAM
Antennna type:	1 * TRX, 1 * RX-only
Antenna gain:	1.8dBi

2.3. Test Frequency

FDD Band 3

Test Frequency ID	Bandwidth [MHz]	N _{UL}	Frequency of Uplink [MHz]	N _{DL}	Frequency of Downlink [MHz]
Low Range	1.4	19207	1710.7	1207	1805.7
	3	19215	1711.5	1215	1806.5
	5	19225	1712.5	1225	1807.5
	10	19250	1715	1250	1810
	15 ^[1]	19275	1717.5	1275	1812.5
	20 ^[1]	19300	1720	1300	1815
Mid Range	1.4/3/5/10 15 ^[1] /20 ^[1]	19575	1747.5	1575	1842.5
High Range	1.4	19943	1784.3	1943	1879.3
	3	19935	1783.5	1935	1878.5
	5	19925	1782.5	1925	1877.5
	10	19900	1780	1900	1875
	15 ^[1]	19875	1777.5	1875	1872.5
	20 ^[1]	19850	1775	1850	1870

FDD Band 7

Test Frequency ID	Bandwidth [MHz]	N _{UL}	Frequency of Uplink [MHz]	N _{DL}	Frequency of Downlink [MHz]
Low Range	5	20775	2502.5	2775	2622.5
	10	20800	2505	2800	2625
	15	20825	2507.5	2825	2627.5
	20 ^[1]	20850	2510	2850	2630
Mid Range	5/10/15 20 ^[1]	21100	2535	3100	2655
High Range	5	21425	2567.5	3425	2687.5
	10	21400	2565	3400	2685
	15	21375	2562.5	3375	2682.5
	20 ^[1]	21350	2560	3350	2680

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

FDD Band 20

Test Frequency ID	Bandwidth [MHz]	N _{UL}	Frequency of Uplink [MHz]	N _{DL}	Frequency of Downlink [MHz]
Low Range	5	24175	834.5	6175	793.5
	10 ^[1]	24200	837	6200	796
	15 ^[1]	24225	839.5	6225	798.5
	20 ^[1]	24250	842	6250	801
Mid Range	5/10 ^[1] /15 ^[1] /20 ^[1]	24300	847	6300	806
High range	5	24425	859.5	6425	818.5
	10 ^[1]	24400	857	6400	816
	15 ^[1]	24375	854.5	6375	813.5
	20 ^[1]	24350	852	6350	811

NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.

2.4. EUT operation mode

The EUT has been tested under typical operating condition. The Applicant provides software to control the EUT for staying in continuous transmitting and receiving mode for testing.

All the tests are performed at each SIM card mode, the datum recorded is the worst case for all the mode at SIM1 Card mode.

2.5. EUT configuration

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

● - supplied by the manufacturer

○ - supplied by the lab

	Length (m) :	/
	Shield :	/
	Detachable :	/
	Manufacturer :	/
	Model No. :	/

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. Test Environment

3.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

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

Phone: 86-755-26748019 Fax: 86-755-26748089

3.2. Test Facility

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

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

A2LA-Lab Cert. No. 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until December 31, 2016.

FCC-Registration No.: 317478

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

IC-Registration No.: 5377A&5377B

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

VCCI

The 3m Semi-

anechoic chamber (12.2m×7.95m×6.7m) of Shenzhen Huatongwei International Inspection Co., Ltd.

has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 29, 2015.

Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

3.3. Environmental conditions

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

Temperature	Normal Temperature/T _{nor} :	25°C
	High Temperature/T _{high} :	55°C
	Low Temperature/T _{low} :	-10°C
Voltage	Normal Voltage	DC 3.70V
	High Voltage	DC 4.25V
	Low Voltage	DC 3.50V
Other	Relative Humidity	55 %
	Air Pressure	989 hPa

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Frequency error	25 Hz	(1)
Frequency range	25 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Adjacent and alternate channel power Conducted	1.20 dB	(1)
Conducted spurious emission	1.60 dB	(1)
Radiated spurious emission	2.20 dB	(1)
Intermodulation attenuation	1.00 dB	(1)
Maximum useable receiver sensitivity	2.80 dB	(1)
Co-channel rejection	2.80 dB	(1)
Adjacent channel selectivity	2.80 dB	(1)
Spurious response rejection	2.80 dB	(1)
Intermodulation response rejection	2.80 dB	(1)
Blocking or desensitization	2.80 dB	(1)

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

3.5. Equipments Used during the Test

TS 8980-PRE						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	WIDEB.RADIO COMM.TESRER	R&S	CMW500	1201.0002K50	2015/11/3	2016/11/2
2	AVG Power Sensor	R&S	NRP-Z31	1169.2400.02	2015/11/3	2016/11/2
3	VECTOR SIGNAL GENNERATOR	R&S	SMW200A	1412.0000K02	2015/11/3	2016/11/2
4	SIGNAL& SPECTRUM ANALYZER	R&S	FSW26	1312.8000K26	2015/11/3	2016/11/2
5	WIDEBAND FILTER UNIT	R&S	TS-TUF11	1521.0000.03	2015/11/3	2016/11/2
6	SIGNA SWITCHING AND CONDITIONING UNIT	R&S	SSCU-PRE1	1518.0026.12	2015/11/3	2016/11/2
			SSCU-UPG4	1518.0732.02		
7	POWER SUPPLY	R&S	NGMO1	1504.8420.03	2015/11/3	2016/11/2
5	Climate Chamber	ESPEC	EL-10KA	05107008	2015/11/3	2016/11/2

Radiated Emission/ Radiated power						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Ultra-Broadband Antenna	SCHWARZB ECK	VULB9163	546	11/8/2014	11/7/2017
2	Double-Ridged- Waveguide Horn Antenna	SCHWARZB ECK	9120D	1011	11/8/2014	11/7/2017
3	Spectrum Analyzer	R&S	FSP40	100597	11/3/2015	11/2/2016
4	Pre-amplifer	SCHWARZB ECK	BBV 9743	9743-0022	11/3/2015	11/2/2016
5	Broadband Preamplifer	SCHWARZB ECK	BBV 9718	9718-248	11/3/2015	11/2/2016
6	Turntable	Maturo Germany	TT2.0-1T	\	N/A	N/A
7	Antenna Mast	Maturo Germany	CAM-4.0-P- 12	\	N/A	N/A
8	Test Software	R&S	ES-K1	/	N/A	N/A
9	WIDEB.RADIO COMM.TESRER	R&S	CMW500	1201.0002K50	2015/11/3	2016/11/2

The Calibration Interval was one year.

4. Test conditions and Results

Test Item	Test Requirement EN301908-1	Test Conditions	Test Bandwidth(MHz)			Verdict	Note:
			1.4	5	20		
Radiated emissions (UE)	Section 4.2.2	NT/NV	B3	B3,B7, B20	B3,B7, B20	Pass	Reference to the section 4.2.1
Control and monitoring functions (UE)	Section 4.2.4	NT/NV	B3	B3,B7, B20	B3,B7, B20	Pass	

Test Item	Test Requirement EN301908-13	Test Method TS13412 1-1	Test Bandwidth(MHz)				Test Conditions	Verdict	Note:
			1.4	5	10	20			
Transmitter Maximum Output Power	Section 4.2.2	Clause 5.2	B3,	B3, B7, B20		B3, B7, B20	NT/NV LT/LV LT/HV HT/LV HT/HV	Pass Pass Pass Pass Pass	Reference to the section 4.1.1
Transmitter Spectrum emission mask	Section 4.2.3	Clause 5.9	B3,	B3, B7, B20	B3, B7, B20	B3, B7, B20	NT/NV	Pass	
Transmitter Spurious Emissions	Section 4.2.4	Clause 5.11	B3,	B3, B7, B20		B3, B7, B20	NT/NV	Pass	
Transmitter Minimum Output Power	Section 4.2.5	Clause 5.4.3	B3,	B3, B7, B20		B3, B7, B20	NT/NV LT/LV LT/HV HT/LV HT/HV	Pass Pass Pass Pass Pass	
Receiver Adjacent Channel Selectivity	Section 4.2.6	Clause 6.4	B3,	B3, B7, B20		B3, B7, B20	NT/NV	Pass	
Receiver Blocking Characteristics	Section 4.2.7	Clause 6.5	B3,	B3, B7, B20		B3, B7, B20	NT/NV	Pass	
Receiver Spurious Response	Section 4.2.8	Clause 6.6	B3,	B3, B7, B20		B3, B7, B20	NT/NV	Pass	
Receiver Intermodulation Characteristics	Section 4.2.9	Clause 6.7	B3,	B3, B7, B20		B3, B7, B20	NT/NV	Pass	
Receiver Spurious Emissions	Section 4.2.10	Clause 5.11	B3,	B3, B7, B20		B3, B7, B20	NT/NV	Pass	
Out-of-synchronisation handling of output power	Section 4.2.11	Clause 5.4.4	B3,	B3, B7, B20		B3, B7, B20	NT/NV	Pass	
Transmitter Adjacent Channel Leakage Power Ratio	Section 4.2.12	Clause 5.10	B3,	B3, B7, B20	B3, B7, B20	B3, B7, B20	NT/NV LT/LV LT/HV HT/LV HT/HV	Pass Pass Pass Pass Pass	

4.1. ETSI EN301908-13 Requirement

4.1.1. Transmitter Maximum Output Power

LIMIT

ETSI EN 301 908-13 Sub-clause 4.2.2.1.2

E-UTRA Band	Power Class 3 (dBm)	Tolerance (dB)
1	23	±2,7
3	23	±2,7
7	23	±2,7
8	23	±2,7
20	23	±2,7
33	23	±2,7
34	23	±2,7
38	23	±2,7
40	23	±2,7
42	23	+3,0/-4,0
43	23	+3,0/-4,0

TEST PROCEDURE

ETSI EN 301 908-13 Sub-clause 5.3.1.1.1.2

1. SS sends uplink scheduling information for each UL HARQ process via PDCCH DCI format 0 for C_RNTI to schedule the UL RMC according to table 6.2.2.1.4.1-1 of TS 36 521-1 [1]. Since the UE has no payload and no loopback data to send the UE sends uplink MAC padding bits on the UL RMC.
2. Send continuously uplink power control "up" commands in every uplink scheduling information to the UE; allow at least 200 ms for the UE to reach PUMAX level.
3. Measure the mean power of the UE in the channel bandwidth of the radio access mode. The period of measurement shall be at least the continuous duration of one sub-frame (1 ms). For TDD slots with transient periods are not under test.
4. Repeat for applicable test frequencies, channel bandwidths, operating band combinations and environmental conditions.

TEST CONFIGURATION

Test Environment:	Normal, TL/VL, TL/VH, TH/VL, TH/VH																																																										
Test Frequencies:	Low range, Mid range, High range																																																										
Test Channel Bandwidths:	Lowest, 5MHz, highest channel bandwidth																																																										
Uplink Configuration	<table border="1"> <thead> <tr> <th rowspan="2">Ch BW</th> <th rowspan="2">Mod'n</th> <th colspan="2">Uplink Configuration</th> </tr> <tr> <th colspan="2">RB allocation</th> </tr> <tr> <th></th> <th></th> <th>FDD</th> <th>TDD</th> </tr> </thead> <tbody> <tr> <td>1.4MHz</td> <td>QPSK</td> <td>1</td> <td>1</td> </tr> <tr> <td>1.4MHz</td> <td>QPSK</td> <td>5</td> <td>5</td> </tr> <tr> <td>3MHz</td> <td>QPSK</td> <td>1</td> <td>1</td> </tr> <tr> <td>3MHz</td> <td>QPSK</td> <td>4</td> <td>4</td> </tr> <tr> <td>5MHz</td> <td>QPSK</td> <td>1</td> <td>1</td> </tr> <tr> <td>5MHz</td> <td>QPSK</td> <td>8</td> <td>8</td> </tr> <tr> <td>10MHz</td> <td>QPSK</td> <td>1</td> <td>1</td> </tr> <tr> <td>10MHz</td> <td>QPSK</td> <td>12</td> <td>12</td> </tr> <tr> <td>15MHz</td> <td>QPSK</td> <td>1</td> <td>1</td> </tr> <tr> <td>15MHz</td> <td>QPSK</td> <td>16</td> <td>16</td> </tr> <tr> <td>20MHz</td> <td>QPSK</td> <td>1</td> <td>1</td> </tr> <tr> <td>20MHz</td> <td>QPSK</td> <td>18</td> <td>18</td> </tr> </tbody> </table>	Ch BW	Mod'n	Uplink Configuration		RB allocation				FDD	TDD	1.4MHz	QPSK	1	1	1.4MHz	QPSK	5	5	3MHz	QPSK	1	1	3MHz	QPSK	4	4	5MHz	QPSK	1	1	5MHz	QPSK	8	8	10MHz	QPSK	1	1	10MHz	QPSK	12	12	15MHz	QPSK	1	1	15MHz	QPSK	16	16	20MHz	QPSK	1	1	20MHz	QPSK	18	18
Ch BW	Mod'n			Uplink Configuration																																																							
		RB allocation																																																									
		FDD	TDD																																																								
1.4MHz	QPSK	1	1																																																								
1.4MHz	QPSK	5	5																																																								
3MHz	QPSK	1	1																																																								
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5MHz	QPSK	1	1																																																								
5MHz	QPSK	8	8																																																								
10MHz	QPSK	1	1																																																								
10MHz	QPSK	12	12																																																								
15MHz	QPSK	1	1																																																								
15MHz	QPSK	16	16																																																								
20MHz	QPSK	1	1																																																								
20MHz	QPSK	18	18																																																								

TEST RESULTS

Passed Not Applicable

Please refer to the below test data:

Bandwidth 1.4MHz							
Test Conditions	Test Frequency	UL Configuration	Power level (dBm)			Limit	Result
			Band 3	Band 7	Band 20		
Normal	L	QPSK, 1 RB #0	22.32	-	-	<±2.7	Pass
	M	QPSK, 1 RB #0	21.94	-	-		
		QPSK, 1 RB #max	22.32	-	-		
		QPSK, partial RBs #0	22.15	-	-		
	H	QPSK, 1 RB #0	22.08	-	-		
QPSK, 1 RB #max		22.37	-	-			
TL/VL	L	QPSK, 1 RB #0	22.40	-	-	<±2.7	Pass
	M	QPSK, 1 RB #0	22.30	-	-		
		QPSK, 1 RB #max	22.17	-	-		
		QPSK, partial RBs #0	22.17	-	-		
	H	QPSK, 1 RB #0	22.06	-	-		
QPSK, 1 RB #max		22.44	-	-			
TL/VH	L	QPSK, 1 RB #0	22.45	-	-	<±2.7	Pass
	M	QPSK, 1 RB #0	22.07	-	-		
		QPSK, 1 RB #max	22.25	-	-		
		QPSK, partial RBs #0	22.25	-	-		
	H	QPSK, 1 RB #0	22.05	-	-		
QPSK, 1 RB #max		22.45	-	-			
TH/VL	L	QPSK, 1 RB #0	22.47	-	-	<±2.7	Pass
	M	QPSK, 1 RB #0	22.24	-	-		
		QPSK, 1 RB #max	22.26	-	-		
		QPSK, partial RBs #0	22.27	-	-		
	H	QPSK, 1 RB #0	22.03	-	-		
QPSK, 1 RB #max		22.47	-	-			
TH/VH	L	QPSK, 1 RB #0	22.49	-	-	<±2.7	Pass
	M	QPSK, 1 RB #0	22.24	-	-		
		QPSK, 1 RB #max	22.33	-	-		
		QPSK, partial RBs #0	22.33	-	-		
	H	QPSK, 1 RB #0	21.98	-	-		
QPSK, 1 RB #max		22.48	-	-			

Bandwidth 5MHz							
Test Conditions	Test Frequency	UL Configuration	Power level (dBm)			Limit	Result
			Band 3	Band 7	Band 20		
Normal	L	QPSK, 1 RB #0	22.24	22.25	22.25	<±2.7	Pass
		QPSK, 1 RB #max	22.08	21.94	22.38		
	M	QPSK, 1 RB #0	22.15	22.27	22.28		
		QPSK, 1 RB #max	22.32	22.36	22.47		
		QPSK, partial RBs #0	22.42	21.62	21.59		
	H	QPSK, 1 RB #0	22.16	22.32	21.96		
QPSK, 1 RB #max		22.38	21.84	22.36			
TL/VL	L	QPSK, 1 RB #0	22.13	22.39	22.16	<±2.7	Pass
		QPSK, 1 RB #max	21.98	21.81	22.29		
	M	QPSK, 1 RB #0	22.24	22.38	22.21		
		QPSK, 1 RB #max	22.40	22.26	22.54		
		QPSK, partial RBs #0	22.34	21.72	21.66		
	H	QPSK, 1 RB #0	22.23	22.23	21.90		
QPSK, 1 RB #max		22.28	21.96	22.28			
TL/VH	L	QPSK, 1 RB #0	22.05	22.29	22.09	<±2.7	Pass
		QPSK, 1 RB #max	21.90	21.90	22.36		
	M	QPSK, 1 RB #0	22.38	22.21	22.32		
		QPSK, 1 RB #max	22.53	22.41	22.44		
		QPSK, partial RBs #0	22.22	21.57	21.56		
	H	QPSK, 1 RB #0	22.31	22.33	21.83		
QPSK, 1 RB #max		22.21	21.87	22.34			
TH/VL	L	QPSK, 1 RB #0	21.99	22.37	22.14	<±2.7	Pass
		QPSK, 1 RB #max	21.84	21.83	22.31		
	M	QPSK, 1 RB #0	22.43	22.28	22.27		
		QPSK, 1 RB #max	22.58	22.35	22.39		
		QPSK, partial RBs #0	22.15	21.66	21.61		
	H	QPSK, 1 RB #0	22.37	22.26	21.88		
QPSK, 1 RB #max		22.15	21.93	22.30			
TH/VH	L	QPSK, 1 RB #0	21.89	22.25	22.06	<±2.7	Pass
		QPSK, 1 RB #max	21.75	21.94	22.23		
	M	QPSK, 1 RB #0	22.52	22.18	22.34		
		QPSK, 1 RB #max	22.68	22.47	22.47		
		QPSK, partial RBs #0	22.06	21.55	21.54		
	H	QPSK, 1 RB #0	22.45	22.36	21.81		
QPSK, 1 RB #max		22.10	21.87	22.25			

Bandwidth 20MHz							
Test Conditions	Test Frequency	UL Configuration	Power level (dBm)			Limit	Result
			Band 3	Band 7	Band 20		
Normal	L	QPSK, 1 RB #0	21.95	22.25	21.43	<±2.7	Pass
		QPSK, 1 RB #max	21.87	22.43	21.95		
	M	QPSK, 1 RB #0	22.25	22.31	21.89		
		QPSK, 1 RB #max	21.97	21.94	22.04		
		QPSK, partial RBs #0	21.94	22.15	22.15		
	H	QPSK, 1 RB #0	21.78	22.25	22.32		
QPSK, 1 RB #max		22.08	22.01	21.94			
TL/VL	L	QPSK, 1 RB #0	22.49	22.33	21.51	<±2.7	Pass
		QPSK, 1 RB #max	21.36	22.35	22.03		
	M	QPSK, 1 RB #0	21.82	22.22	21.83		
		QPSK, 1 RB #max	22.38	22.00	21.98		
		QPSK, partial RBs #0	22.32	22.21	22.21		
	H	QPSK, 1 RB #0	21.42	22.20	22.37		
QPSK, 1 RB #max		21.60	21.91	21.87			
TL/VH	L	QPSK, 1 RB #0	22.87	22.39	21.45	<±2.7	Pass
		QPSK, 1 RB #max	21.73	22.41	22.08		
	M	QPSK, 1 RB #0	21.15	22.12	21.92		
		QPSK, 1 RB #max	21.77	21.87	21.89		
		QPSK, partial RBs #0	22.90	22.29	22.12		
	H	QPSK, 1 RB #0	21.80	22.25	22.43		
QPSK, 1 RB #max		21.25	21.85	21.92			
TH/VL	L	QPSK, 1 RB #0	22.57	22.32	21.41	<±2.7	Pass
		QPSK, 1 RB #max	22.01	22.45	22.04		
	M	QPSK, 1 RB #0	21.42	22.16	21.97		
		QPSK, 1 RB #max	21.52	21.83	21.93		
		QPSK, partial RBs #0	22.56	22.22	22.07		
	H	QPSK, 1 RB #0	22.07	22.29	22.39		
QPSK, 1 RB #max		21.50	21.89	21.96			
TH/VH	L	QPSK, 1 RB #0	22.10	22.25	21.48	<±2.7	Pass
		QPSK, 1 RB #max	21.59	22.36	21.97		
	M	QPSK, 1 RB #0	21.83	22.22	21.90		
		QPSK, 1 RB #max	21.99	21.90	22.00		
		QPSK, partial RBs #0	22.13	22.15	22.14		
	H	QPSK, 1 RB #0	21.67	22.20	22.33		
QPSK, 1 RB #max		21.78	21.93	21.92			

Note:

(1) "-" is not require test, so don't show on the test report.

4.2. ETSI EN301908-1 Requirement

4.2.1. Radiated emissions (UE)

LIMIT

ETSI EN 301 908-1 Sub-clause 4.2.2.2

This test assesses the ability of radio communications equipment and ancillary equipment to limit unwanted emissions from the enclosure port.

This test is applicable to radio communications equipment and ancillary equipment.

This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

The frequency boundary and reference bandwidths for the detailed transitions of the limits between the requirements for out-of-band emissions and spurious emissions are based on ITU-R Recommendations SM.329-10 [3] and SM.1539-1 [4].

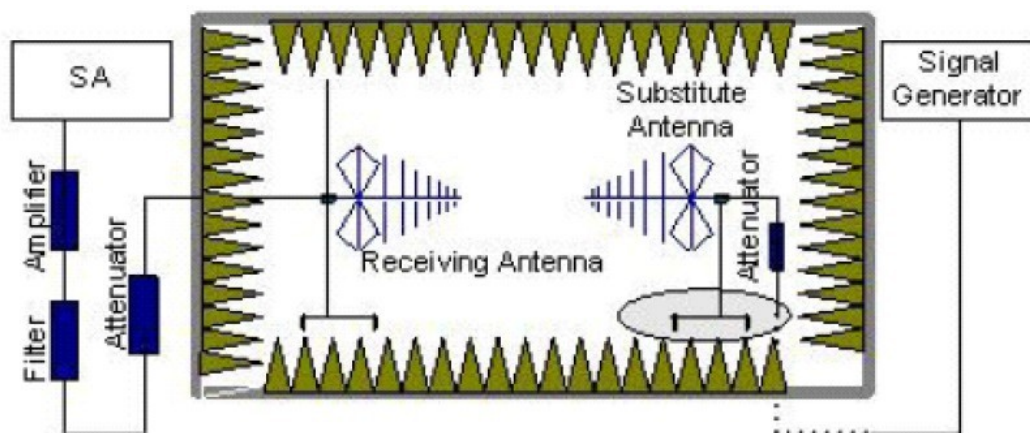
The requirements shown in table 4.2.2.2-1 are only applicable for frequencies in the spurious domain.

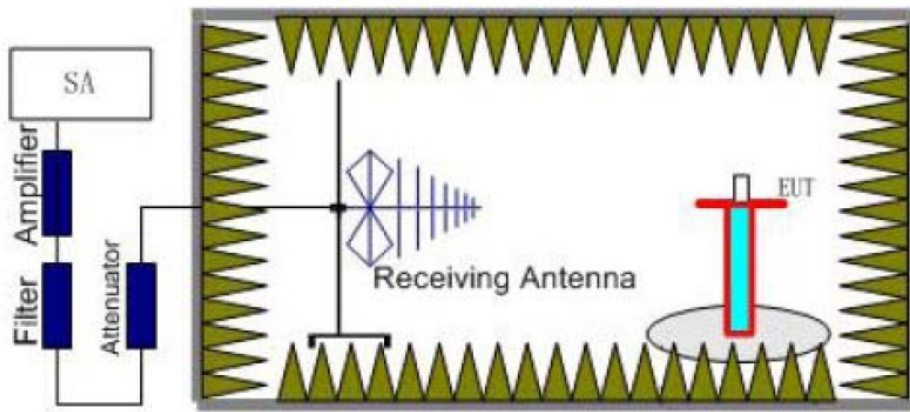
Table 4.2.2.2-1: Radiated spurious emissions requirements (UE)

Frequency	Minimum requirement (e.r.p.)/ reference bandwidth idle mode	Minimum requirement (e.r.p.)/ reference bandwidth traffic mode	Applicability
$30 \text{ MHz} \leq f < 1\,000 \text{ MHz}$	-57 dBm/100 kHz	-36 dBm/100 kHz	All
$1 \text{ GHz} \leq f < 12.75 \text{ GHz}$	-47 dBm/1 MHz	-30 dBm/1 MHz	All
$f_c - 2.5 \times 5 \text{ MHz} < f < f_c + 2.5 \times 5 \text{ MHz}$		Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3
$f_c - 2.5 \times \text{BWChannel MHz} < f < f_c + 2.5 \times \text{BWChannel MHz}$		Not defined	E-UTRA FDD, E-UTRA TDD, Mobile WiMAX, UMB
$f_c - 2.5 \times 10 \text{ MHz} < f < f_{c1} + 2.5 \times 10 \text{ MHz}$		Not defined	UTRA TDD, 7,68 Mcps option
$f_c - 4 \text{ MHz} < f < f_c + 4 \text{ MHz}$		Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1
$f_c - 500 \text{ kHz} < f < f_c + 500 \text{ kHz}$		Not defined	UWC 136, 200 kHz option
$f_c - 250 \text{ kHz} < f < f_c + 250 \text{ kHz}$		Not defined	UWC 136, 30 kHz option

NOTE: f_c is the UE transmit centre frequency.

TEST CONFIGURATION





TEST PROCEDURE

Please refer to ETSI EN 300 328 Sub-clause 5.7.2.2

Step 1:

The measurement is carried out in the fully anechoic chamber. EUT was placed on a 1.50 meter high non-conductive table at a 3 meter test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna is 1.50 m and varies in certain range to find the maximum power value. Connect the EUT to the BTS simulator via the air interface. The measurement is carried out using a spectrum analyzer or receiver. Then the antenna height and turn table rotation is adjusted till the maximum power value is founded on spectrum analyzer or receiver. A filter is necessary in the band near to the carrier frequency. A filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency.

Step 2:

A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

Calculation procedure:

The data of cable loss, antenna gain and air loss has been calibrated in full testing frequency range before the testing.

The power of the Radiated Spurious Emissions is calculated by adding the cable loss, antenna gain and air loss. The basic equation with a sample calculation is as followed:

$$P = P_R + L_C + L_A - G$$

Where

P: Power of the Radiated Spurious Emissions (dBm)

P_R : reading of the receiver (dBm)

L_C : Cable Lose and power amilifer gain and filter cable loss (dB)

L_A : Air loss (dB)

G: Antenna Gain (dBi)

Assumed the reading of the receiver is -60dBm. A cable lose of 10dB, an air lose of 30dB and an antenna gain of 11dBi are added.

$$P = P_R + L_C + L_A - G = -60 + 10 + 30 - 11 = -31 \text{ dBm}$$

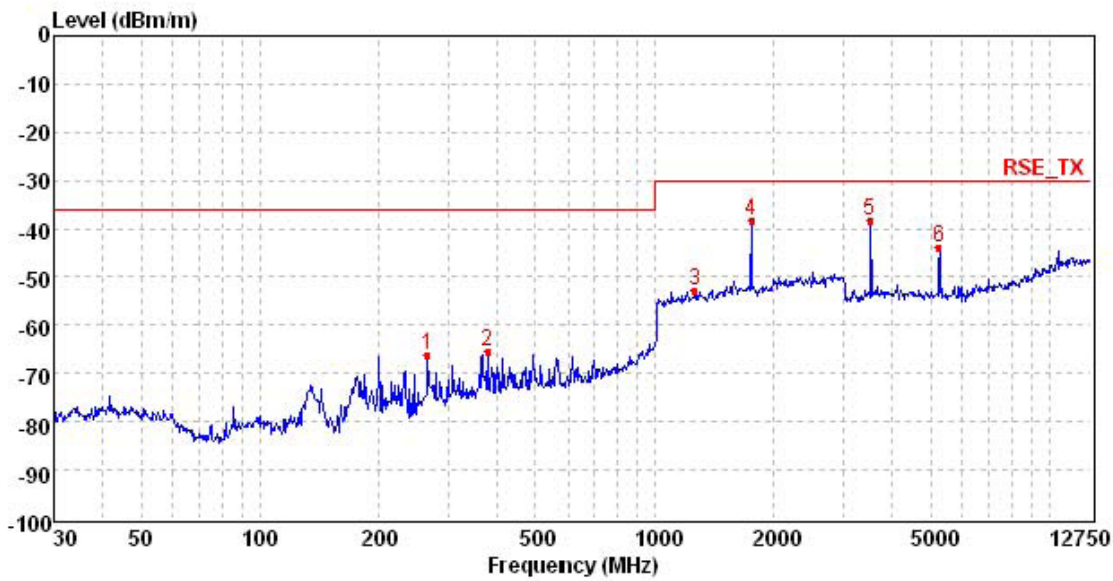
TEST RESULTS

This test was carried out in all the test modes, here only the worst test result was shown.

The EUT has met the requirements of 3GPP2 C.S0011-A's requirement.

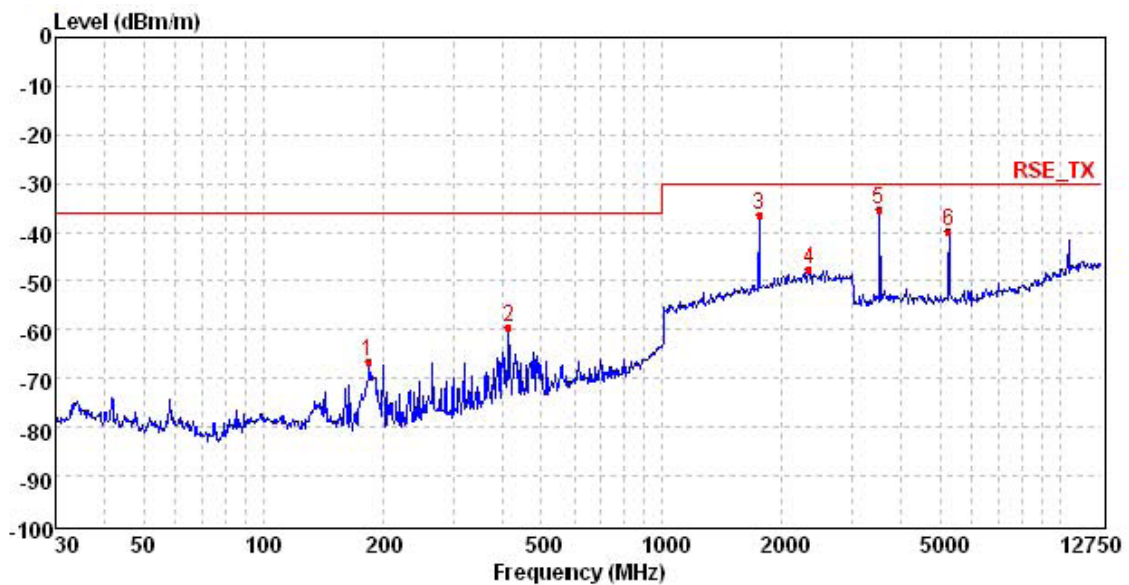
FDD Band 3, Mid Channel, band width 5MHz

Test mode: Traffic Mode Polarity: Horizontal

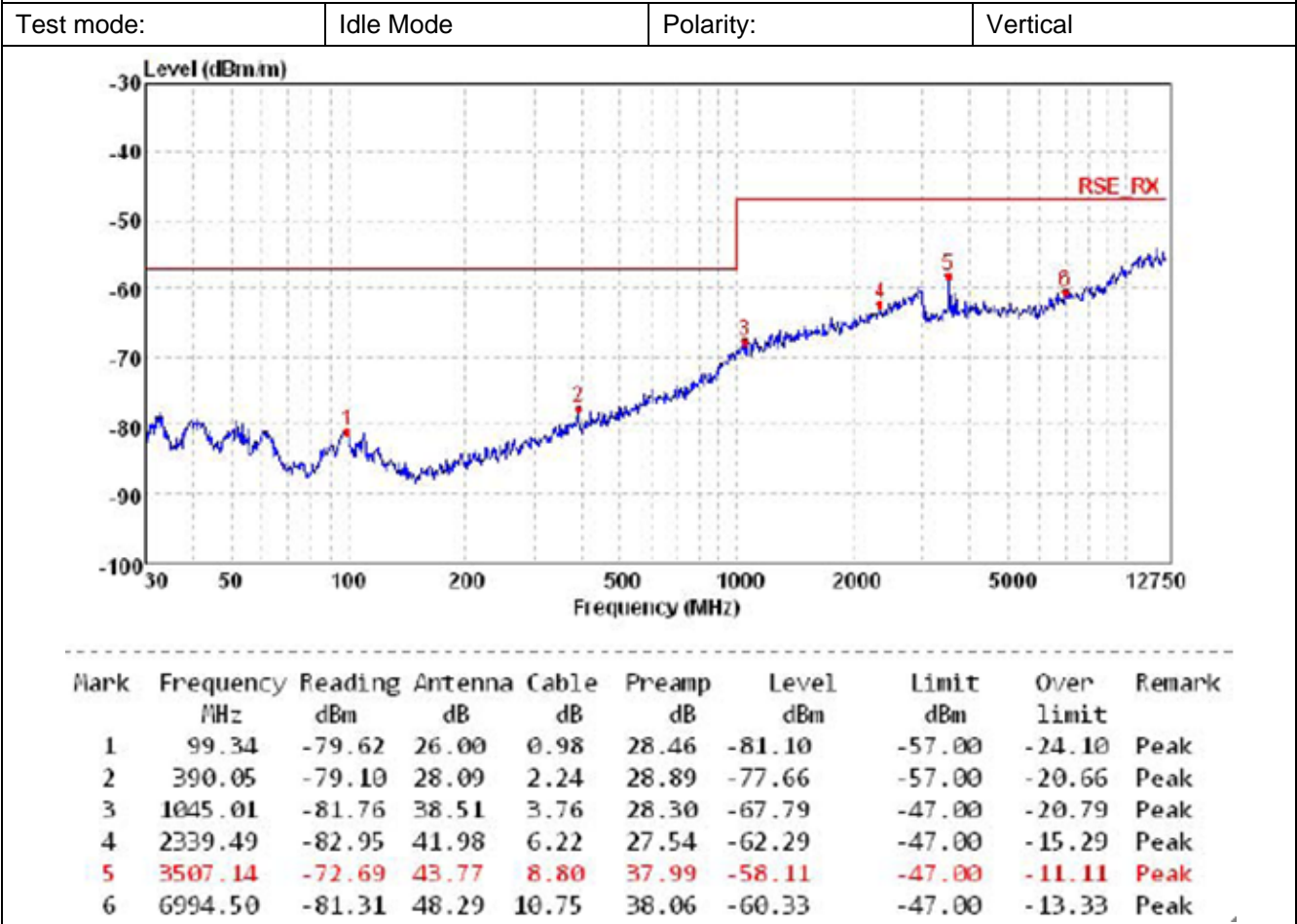
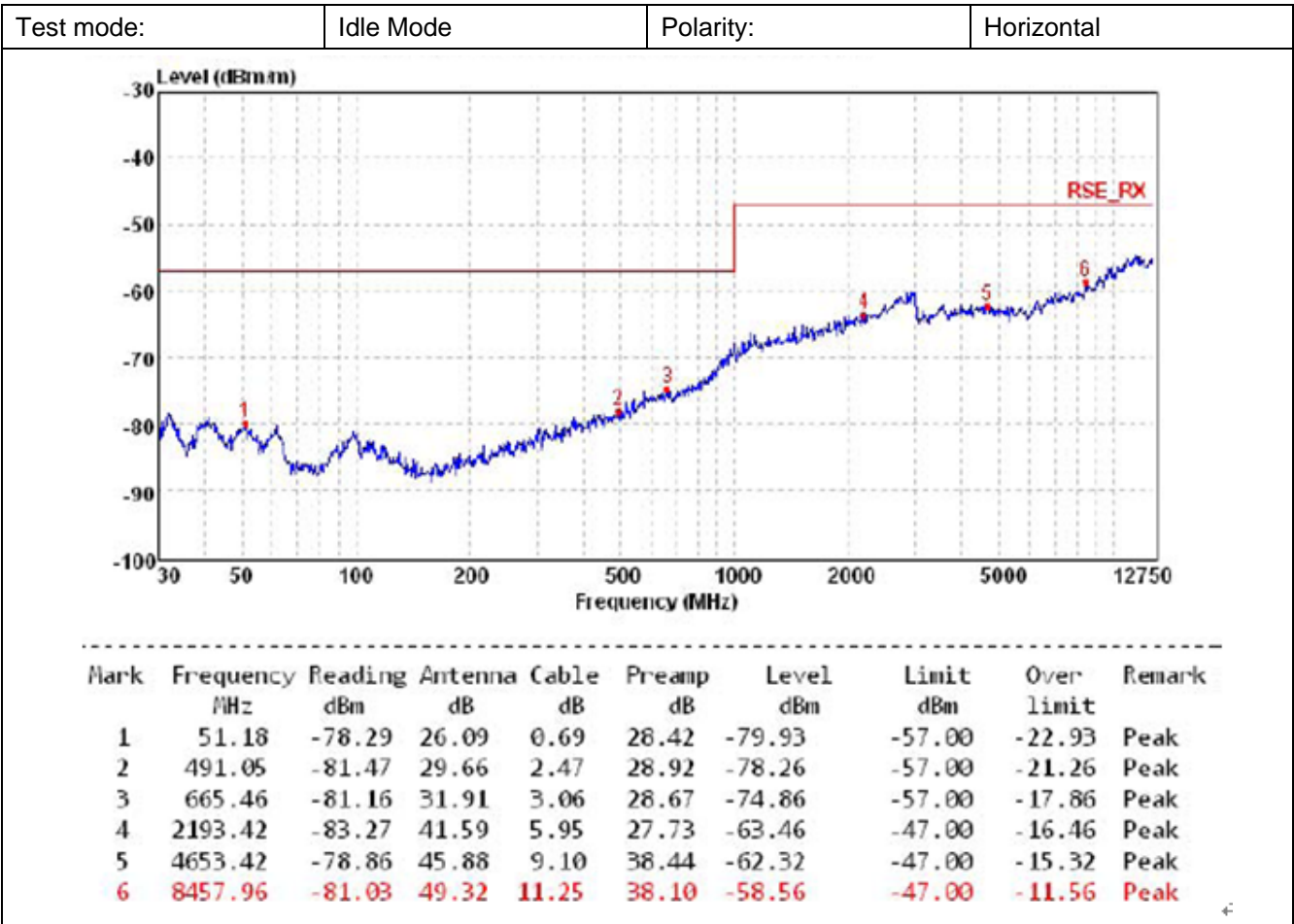


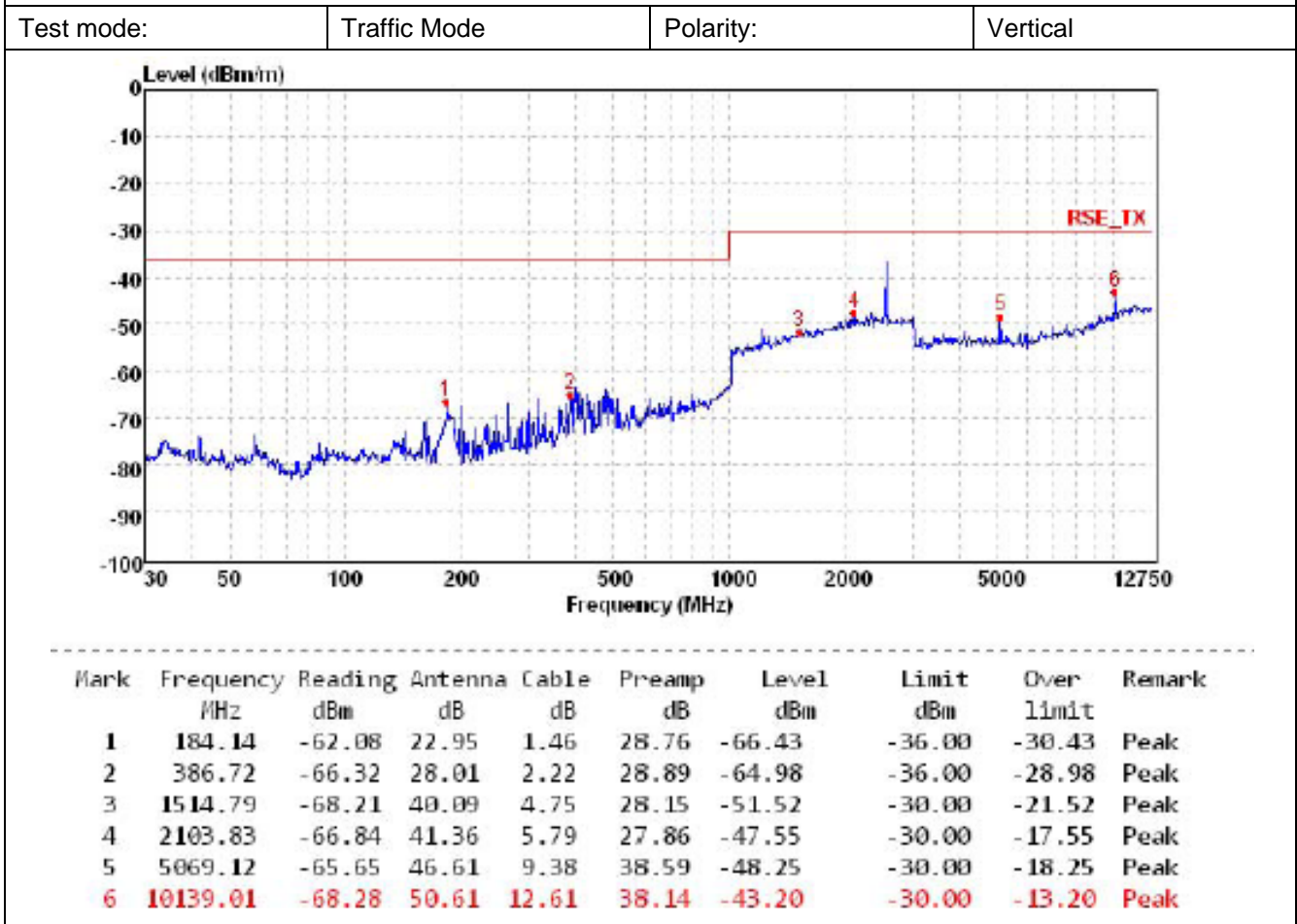
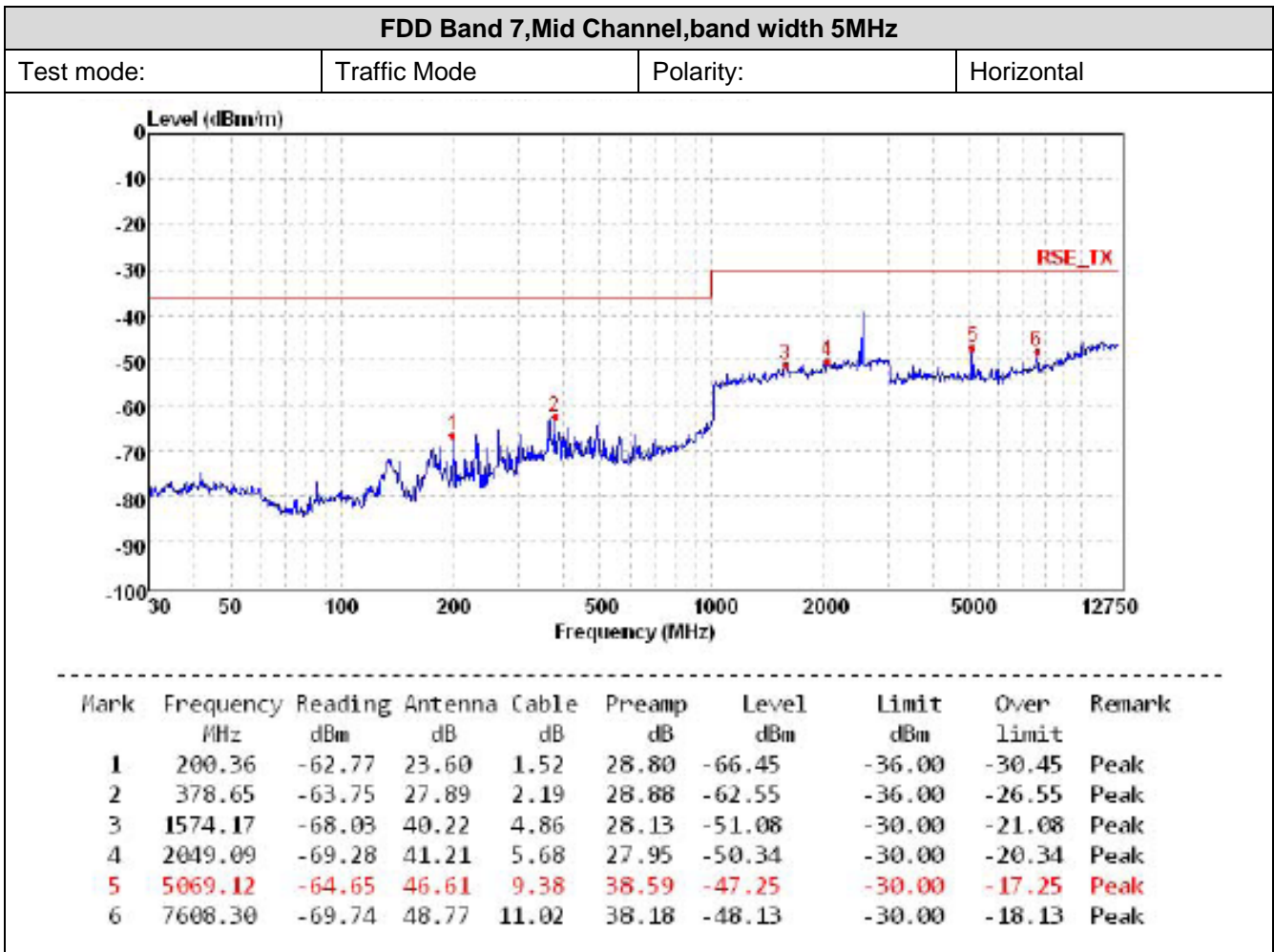
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	266.39	-64.67	25.42	1.80	28.84	-66.29	-36.00	-30.29	Peak
2	378.65	-66.75	27.89	2.19	28.88	-65.55	-36.00	-29.55	Peak
3	1256.73	-68.00	39.29	4.27	28.22	-52.66	-30.00	-22.66	Peak
4	1747.34	-55.77	40.59	5.16	28.09	-38.11	-30.00	-8.11	Peak
5	3496.99	-52.81	43.77	8.80	37.99	-38.23	-30.00	-8.23	Peak
6	5248.66	-61.54	46.60	9.49	38.45	-43.90	-30.00	-13.90	Peak

Test mode: Traffic Mode Polarity: Vertical

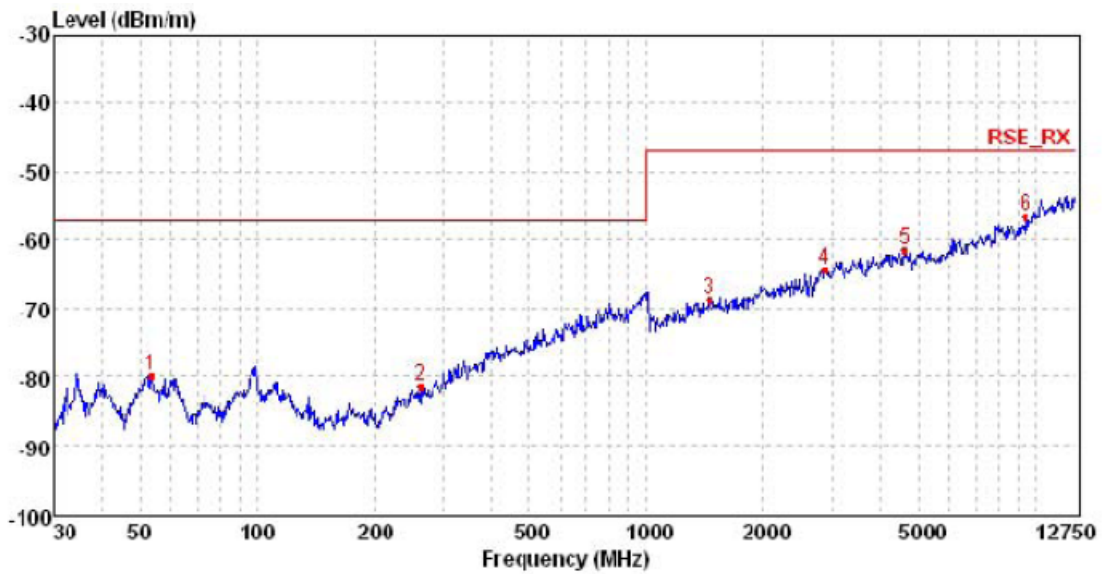


Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	184.14	-62.08	22.95	1.46	28.76	-66.43	-36.00	-30.43	Peak
2	414.90	-61.38	28.48	2.29	28.90	-59.51	-36.00	-23.51	Peak
3	1747.34	-54.02	40.59	5.16	28.09	-36.36	-30.00	-6.36	Peak
4	2335.27	-68.35	41.98	6.22	27.54	-47.69	-30.00	-17.69	Peak
5	3496.99	-49.81	43.77	8.80	37.99	-35.23	-30.00	-5.23	Peak
6	5248.66	-57.54	46.60	9.49	38.45	-39.90	-30.00	-9.90	Peak



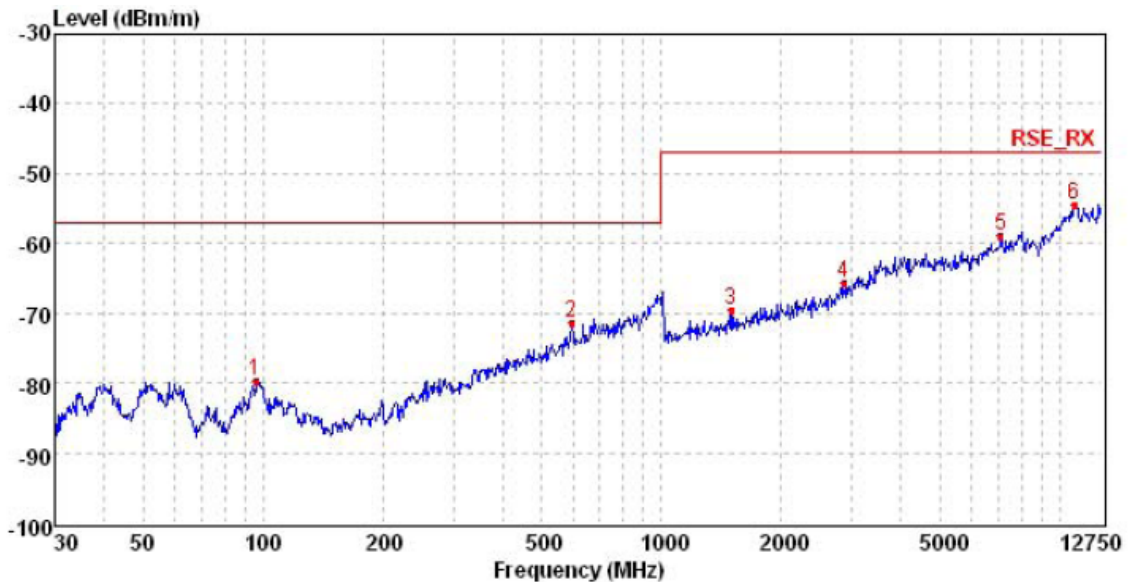


Test mode:	Idle Mode	Polarity:	Horizontal
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Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	53.22	-78.10	25.97	0.71	28.42	-79.84	-57.00	-22.84	Peak
2	261.74	-79.78	25.29	1.78	28.84	-81.55	-57.00	-24.55	Peak
3	1450.12	-85.26	39.90	4.64	28.16	-68.88	-47.00	-21.88	Peak
4	2868.67	-87.72	43.06	7.21	26.87	-64.32	-47.00	-17.32	Peak
5	4629.32	-107.40	45.88	500.00	-500.00	-61.52	-47.00	-14.52	Peak
6	9441.91	-106.63	49.96	500.00	-500.00	-56.67	-47.00	-9.67	Peak

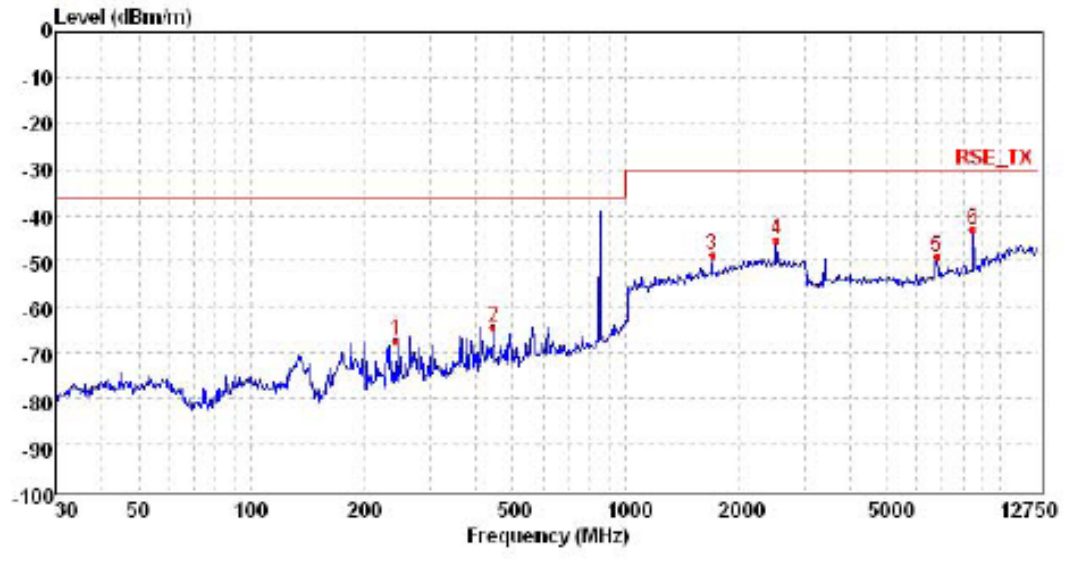
Test mode:	Idle Mode	Polarity:	Vertical
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Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	96.08	-77.86	25.61	0.97	28.46	-79.74	-57.00	-22.74	Peak
2	595.99	-76.92	31.58	2.86	28.77	-71.25	-57.00	-14.25	Peak
3	1498.91	-77.89	40.04	5.18	36.83	-69.50	-47.00	-22.50	Peak
4	2861.38	-78.75	43.03	7.87	37.91	-65.76	-47.00	-18.76	Peak
5	7099.75	-79.97	48.40	10.81	38.08	-58.84	-47.00	-11.84	Peak
6	10860.83	-81.21	51.85	13.14	38.14	-54.36	-47.00	-7.36	Peak

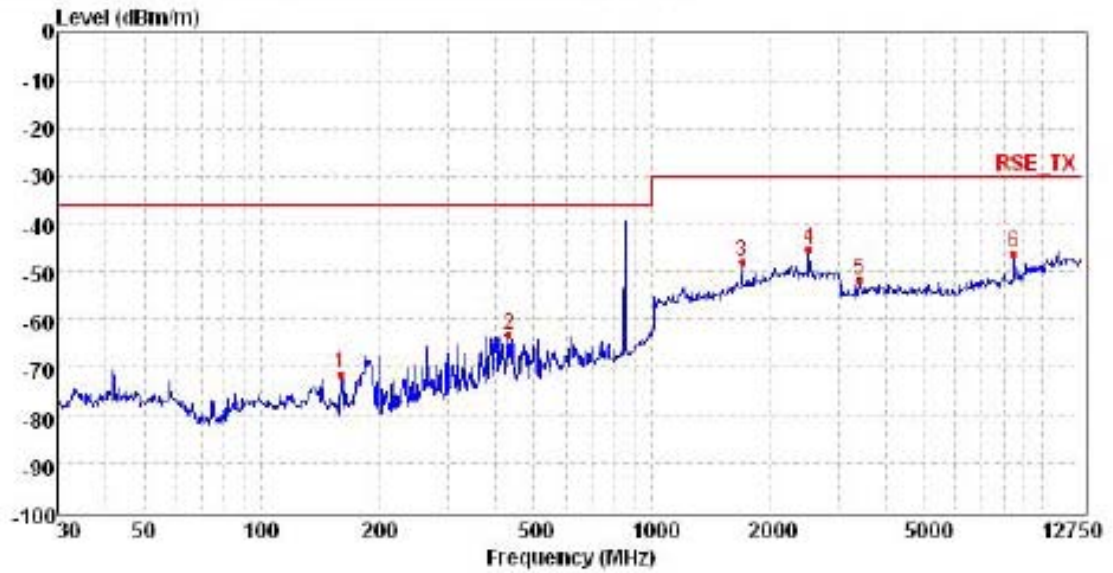
FDD Band 20, Mid Channel,bandwidth 5MHz

Test mode: Traffic Mode Polarity: Horizontal



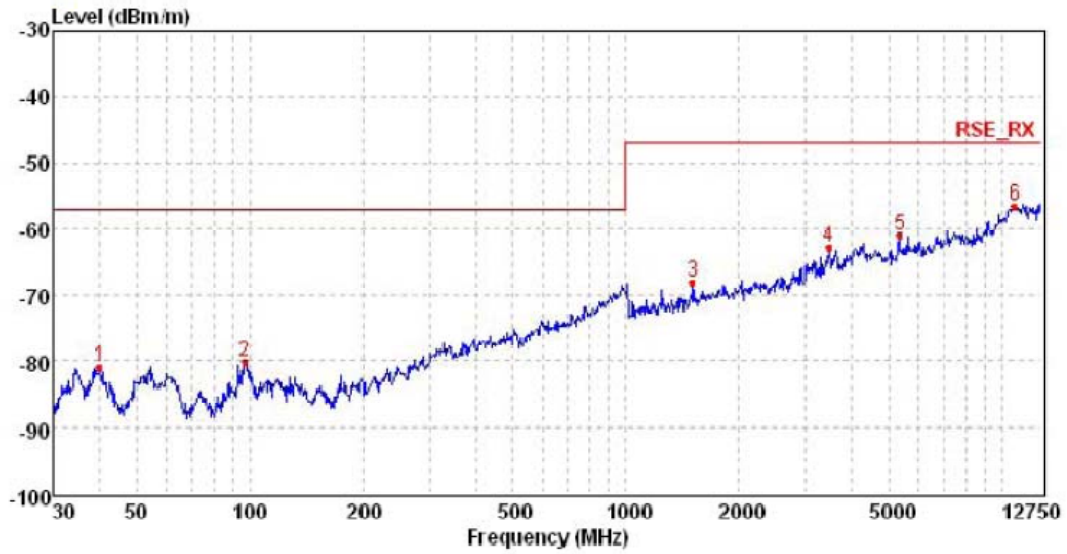
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	245.69	-64.90	24.88	1.71	28.83	-67.14	-36.00	-31.14	Peak
2	446.69	-66.85	28.98	2.37	28.91	-64.41	-36.00	-28.41	Peak
3	1694.41	-66.32	40.48	5.08	28.10	-48.86	-30.00	-18.86	Peak
4	2510.89	-67.15	42.40	6.54	27.31	-45.52	-30.00	-15.52	Peak
5	6765.04	-69.67	47.92	10.57	38.02	-49.20	-30.00	-19.20	Peak
6	8470.24	-65.77	49.32	11.25	38.10	-43.30	-30.00	-13.30	Peak

Test mode: Traffic Mode Polarity: Vertical



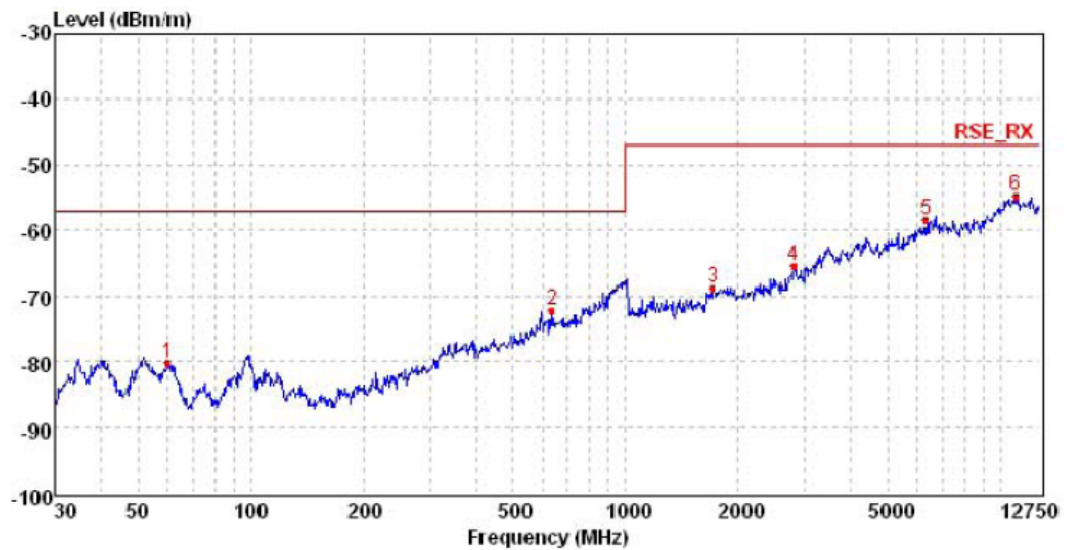
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	159.98	-65.78	21.77	1.34	28.69	-71.36	-36.00	-35.36	Peak
2	432.78	-65.31	28.75	2.34	28.90	-63.12	-36.00	-27.12	Peak
3	1694.41	-65.45	40.48	5.08	28.10	-47.99	-30.00	-17.99	Peak
4	2510.89	-67.03	42.40	6.54	27.31	-45.40	-30.00	-15.40	Peak
5	3387.17	-66.05	43.67	8.67	37.99	-51.70	-30.00	-21.70	Peak
6	8470.24	-68.69	49.32	11.25	38.10	-46.22	-30.00	-16.22	Peak

Test mode:	Idle Mode	Polarity:	Horizontal
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Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	39.89	-80.07	26.50	0.60	28.08	-81.05	-57.00	-24.05	Peak
2	97.10	-78.51	25.69	0.97	28.46	-80.31	-57.00	-23.31	Peak
3	1502.73	-84.61	40.06	4.75	28.15	-67.95	-47.00	-20.95	Peak
4	3463.29	-420.21	43.73	500.00	26.66	-62.72	-47.00	-15.72	Peak
5	5338.58	-107.52	46.60	500.00	-500.00	-60.92	-47.00	-13.92	Peak
6	10833.22	-108.32	51.85	500.00	-500.00	-56.47	-47.00	-9.47	Peak

Test mode:	Idle Mode	Polarity:	Vertical
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Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	60.19	-77.93	25.44	0.76	28.43	-80.16	-57.00	-23.16	Peak
2	634.94	-78.30	31.79	2.97	28.71	-72.25	-57.00	-15.25	Peak
3	1706.70	-77.79	40.50	5.62	37.02	-68.69	-47.00	-21.69	Peak
4	2803.70	-78.10	42.93	7.72	37.87	-65.32	-47.00	-18.32	Peak
5	6331.33	-77.80	47.17	10.14	37.96	-58.45	-47.00	-11.45	Peak
6	10971.98	-81.92	52.10	13.21	38.14	-54.75	-47.00	-7.75	Peak

Note: The radiated spurious are performed the each test mode(FDD Band 3,FDD Band 7 FDD Band 20), the datum recorded is the worst case for all the mode at FDD Band 3 bandwidth 5MHz,TDD Band40 bandwidth 5MHz mode.

5. Test Setup Photos of the EUT



6. **External and Internal Photos of the EUT**

Reference to the test report No.: TRE1603019101

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