ETSI EN 300 328 V1.9.1 (2015-02)

TEST REPORT

For

Advanced Technologies SRL

Ion Heliade Radulescu nr 26, Bucharest 021255, ROMANIA

Tested Model: Xylo Q
Multiple Model: Xylo X

Report Type:	**Product Type:**
Original Report	Smartphone Xylo

Test Engineer: Sonia Zhou

Report Number: RSZ160309002-22A

Report Date: 2016-03-30

Reviewed By: Rocky Kang
RF Engineer

Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen)
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Advanced Technologies SRL*'s product, model number: *Xylo Q* or the "EUT" in this report was a *Smartphone Xylo*, which was measured approximately: 126.9 mm (L) × 64.1 mm (W)× 10.35 mm (H), rated with input voltage: DC 3.7V rechargeable Li-ion battery.

Note: The series product, model Xylo X and Xylo Q. Model Xylo Q was selected for fully testing, which was explained detailedly in the attached product similarity declaration letter.

**All measurement and test data in this report was gathered from production sample serial number: 1601567 (Assigned by BACL, Shenzhen).The EUT supplied by the applicant was received on 2016-03-09.*

Objective

This report is prepared on behalf of *Advanced Technologies SRL* in accordance with ETSI EN 300 328 V1.9.1 (2015-02), Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2, 4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

The objective is to determine the compliance of EUT with ETSI EN 300 328 V1.9.1 (2015-02).

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 328 V1.9.1 (2015-02).

Measurement uncertainty with radiated emission is 5.81 dB for 30MHz-1GHz and 4.88 dB for above 1GHz, 1.95dB for conducted measurement.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode.

EUT Exercise Software

No exercise software.

Special Accessories

No special accessory.

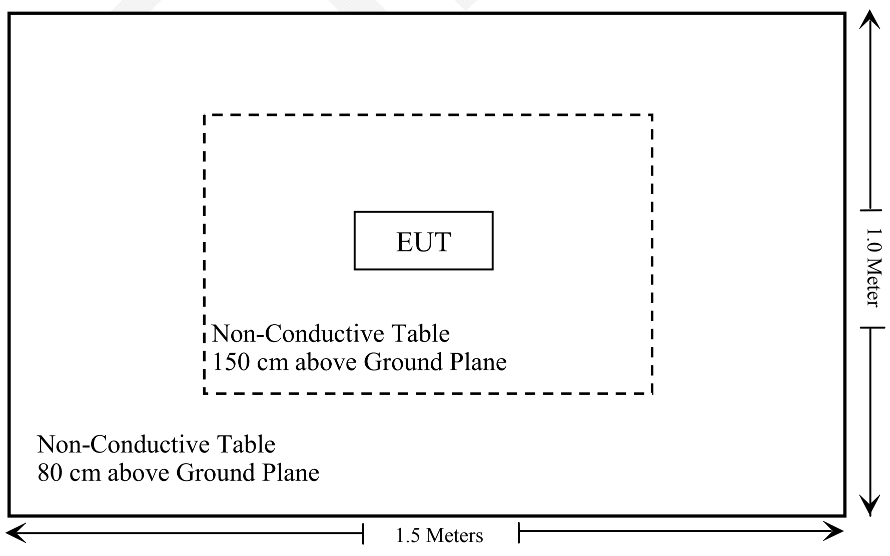
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	N/A	N/A	N/A

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

ETSI EN 300 328 V1.9.1 (2015-02)	Description of Test	Test Result
§ 4.3.1.2	RF output power	Compliance
§ 4.3.1.3	Duty Cycle, Tx-sequence, Tx-gap	Not Applicable
§ 4.3.1.4	Accumulated Transmit Time, Frequency Occupation and Hopping Sequence	Compliance
§ 4.3.1.5	Hopping Frequency Separation	Compliance
§ 4.3.1.6	Medium Utilisation (MU) factor	Not Applicable
§ 4.3.1.7	Adaptivity (Adaptive Frequency Hopping)	Not Applicable*
§ 4.3.1.8	Occupied Channel Bandwidth	Compliance
§ 4.3.1.9	Transmitter unwanted emissions in the out-of-band domain	Compliance
§ 4.3.1.10	Transmitter unwanted emissions in the spurious domain	Compliance
§ 4.3.1.11	Receiver spurious emissions	Compliance
§ 4.3.1.12	Receiver Blocking	Not Applicable*
§ 4.3.1.13	Geo-location capability	Not Applicable**

Note:

The supplier declared that the equipment is adaptive equipment
Not Applicable – This item only for non-adaptive mode
Not Applicable* – The test item was not required for adaptive frequency hopping equipment of the output power less than 10mW (e.i.r.p).
Not Applicable** –The supplier declared that the equipment has no this function.

ETSI EN 300 328 V1.9.1 (2015-02) §4.3.1.2 – RF OUTPUT POWER

Applicable Standard

The RF output power is defined as the mean equivalent isotropically radiated power (e.i.r.p.) of the equipment during a transmission burst.

Limit

The maximum RF output power for adaptive Frequency Hopping equipment shall be equal to or less than 20 dBm.

The maximum RF output power for non-adaptive Frequency Hopping equipment, shall be declared by the supplier. See clause 5.3.1 m). The maximum RF output power for this equipment shall be equal to or less than the value declared by the supplier. This declared value shall be equal to or less than 20 dBm.

This limit shall apply for any combination of power level and intended antenna assembly.

Test Procedure

The test procedure shall be as follows:

Step 1:

- Use a fast power sensor suitable for 2,4 GHz and capable of 1 MS/s.
- Use the following settings:
  - Sample speed 1 MS/s or faster.
  - The samples must represent the power of the signal.
  - Measurement duration: For non-adaptive equipment: equal to the observation period defined in clauses 4.3.1.3.2 or clause 4.3.2.4.2. For adaptive equipment, the measurement duration shall be long enough to ensure a minimum number of bursts (at least 10) are captured.

NOTE 1: For adaptive equipment, to increase the measurement accuracy, a higher number of bursts may be used.

Step 2:

- For conducted measurements on devices with one transmit chain:
  - Connect the power sensor to the transmit port, sample the transmit signal and store the raw data.Use these stored samples in all following steps.
- For conducted measurements on devices with multiple transmit chains:
  - Connect one power sensor to each transmit port for a synchronous measurement on all transmit ports.
  - Trigger the power sensors so that they start sampling at the same time. Make sure the time difference between the samples of all sensors is less than 500 ns.
  - For each instant in time, sum the power of the individual samples of all ports and store them. Use these stored samples in all following steps.

Step 3:

- Find the start and stop times of each burst in the stored measurement samples.
  The start and stop times are defined as the points where the power is at least 30 dB below the highest value of the stored samples in step 2.

  NOTE 2: In case of insufficient dynamic range, the value of 30 dB may need to be reduced appropriately.

Step 4:

• Between the start and stop times of each individual burst calculate the RMS power over the burst. Save these P_{burst} values, as well as the start and stop times for each burst.

$$P_{burst} = \frac{1}{k}\sum_{n=1}^{k} P_{sample}(n)$$

With 'k' being the total number of samples and 'n' the actual sample number

Step 5:

• The highest of all P_{burst} values (value "A" in dBm) will be used for maximum e.i.r.p. calculations.

Step 6:

• Add the (stated) antenna assembly gain "G" in dBi of the individual antenna.
• If applicable, add the additional beamforming gain "Y" in dB.
• If more than one antenna assembly is intended for this power setting, the maximum overall antenna gain (G or G + Y) shall be used.
• The RF Output Power (P) shall be calculated using the formula below:

P = A + G + Y

• This value, which shall comply with the limit given in clauses 4.3.1.2.3 or clause 4.3.2.2.3, shall be recorded in the test report.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	P-Series Power Meter	N1912A	MY5000448	2015-12-18	2016-12-17
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2015-11-01	2016-10-31
Agilent	Wideband Power Sensor	N1921A	MY54210016	2015-12-18	2016-12-17

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	21 ℃
Relative Humidity:	50 %
ATM Pressure:	101 kPa

The testing was performed by Sonia Zhou on 2016-03-21.

Please refer to the following tables and plots:

Test Mode: Transmitting

BDR Mode (GFSK):

Test Condition			Reading (dBm)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)
Channel	**Temperature (℃)**	**Power (V_{DC})**				
Low	-20	3.7	5.11	1.00	6.11	20
	+25	3.7	5.13	1.00	6.13	20
	+55	3.7	5.14	1.00	6.14	20
Middle	-20	3.7	5.55	1.00	6.55	20
	+25	3.7	5.53	1.00	6.53	20
	+55	3.7	5.53	1.00	6.53	20
High	-20	3.7	5.38	1.00	6.38	20
	+25	3.7	5.41	1.00	6.41	20
	+55	3.7	5.38	1.00	6.38	20

EDR Mode (π/4-DQPSK):

Test Condition			Reading (dBm)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)
Channel	**Temperature (℃)**	**Power (V_{DC})**				
Low	-20	3.7	4.20	1.00	5.20	20
	+25	3.7	4.21	1.00	5.21	20
	+55	3.7	4.22	1.00	5.22	20
Middle	-20	3.7	4.57	1.00	5.57	20
	+25	3.7	4.56	1.00	5.56	20
	+55	3.7	4.57	1.00	5.57	20
High	-20	3.7	4.39	1.00	5.39	20
	+25	3.7	4.39	1.00	5.39	20
	+55	3.7	4.40	1.00	5.40	20

EDR Mode (8DPSK):

Test Condition			Reading (dBm)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)
Channel	**Temperature (℃)**	**Power (V_{DC})**				
Low	-20	3.7	4.19	1.00	5.19	20
	+25	3.7	4.19	1.00	5.19	20
	+55	3.7	4.21	1.00	5.21	20
Middle	-20	3.7	4.54	1.00	5.54	20
	+25	3.7	4.55	1.00	5.55	20
	+55	3.7	4.54	1.00	5.54	20
High	-20	3.7	4.36	1.00	5.36	20
	+25	3.7	4.36	1.00	5.36	20
	+55	3.7	4.39	1.00	5.39	20

ETSI EN 300 328 V1.9.1 (2015-02) §4.3.1.4 –ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE

Applicable Standard

The Accumulated Transmit Time is the total of the transmitter 'on' times, during an observation period, on a particular hopping frequency.

The Frequency Occupation is the number of times that each hopping frequency is occupied within a given period. A hopping frequency is considered to be occupied when the equipment selects that frequency from the hopping sequence.The equipment may be transmitting, receiving or stay idle during the Accumulated Transmit Time spent on that hopping frequency.

The Hopping Sequence of a frequency hopping equipment is the unrepeated pattern of the hopping frequencies used by the equipment.

Limit:

For Non-adaptive frequency hopping systems:

The Accumulated Transmit Time on any hopping frequency shall not be greater than 15 ms within any period of 15 ms multiplied by the minimum number of hopping frequencies (N) that have to be used.

Non-adaptive medical devices requiring reverse compatibility with other medical devices placed on the market that are compliant with version 1.7.1 or earlier versions of ETSI EN 300 328, are allowed to have an operating mode in which the maximum Accumulated Transmit Time is 400 ms within any observation period of 400 ms multiplied by the minimum number of hopping frequencies (N) that have to be used, only when communicating to these legacy devices already placed on the market.

In order for the equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

Option 1: Each hopping frequency of the hopping sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The occupation probability for each frequency shall be between ((1 / U) × 25 %) and 77 % where U is the number of hopping frequencies in use.

The hopping sequence(s) shall contain at least N hopping frequencies where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

For Adaptive frequency hopping systems:

Adaptive Frequency Hopping equipment shall be capable of operating over a minimum of 70 % of the band specified in clause 1.

The Accumulated Transmit Time on any hopping frequency shall not be greater than 400 ms within any observation period of 400 ms multiplied by the minimum number of hopping frequencies (N) that have to be used.

In order for the equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

Option 1: Each hopping frequency of the hopping sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The occupation probability for each frequency shall be between ((1 / U) × 25 %) and 77 % where U is the number of hopping frequencies in use.

The hopping sequence(s) shall contain at least N hopping frequencies at all times, where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

Test Procedure

The test procedure shall be as follows:

Step 1:

- The output of the transmitter shall be connected to a spectrum analyzer or equivalent.
- The analyzer shall be set as follows:
  - Centre Frequency: Equal to the hopping frequency being investigated
  - Frequency Span: 0 Hz
  - RBW: ~ 50 % of the Occupied Channel Bandwidth
  - VBW: ⩾ RBW
  - Detector Mode: RMS
  - Sweep time: Equal to the Accumulated Transmit Time × Minimum number of hopping frequencies (N) ((see clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2)
  - Number of sweep points: 30 000
  - Trace mode: Clear / Write
  - Trigger: Free Run

Step 2:

- Save the trace data to a file for further analysis by a computing device using an appropriate software application or program.

Step 3:

- Indentify the data points related to the frequency being investigated by applying a threshold.

  The data points resulting from transmissions on the hopping frequency being investigated are assumed to have much higher levels compared to data points resulting from transmissions on adjacent hopping frequencies. If a clear determination between these transmissions is not possible, the RBW in step 1 shall be further reduced. In addition, a channel filter may be used.

- Count the number of data points identified as resulting from transmissions on the frequency being investigated and multiply this number by the time difference between two consecutive data points.

Step 4:

- The result in step 3 is the Accumulated Transmit Time which shall comply with the limit provided in clauses 4.3.1.4.3.1 or clause 4.3.1.4.3.2 and which shall be recorded in the test report.

Step 5:

NOTE 1: This step is only applicable for equipment implementing Option 1 in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2 for complying with the Frequency Occupation requirement and the manufacturer decides to demonstrate compliance with this requirement via measurement.

- Make the following changes on the analyzer and repeat steps 2 and 3.

  Sweep time: 4 × Accumulated Transmit Time × Actual number of hopping frequencies in use

The hopping frequencies occupied by the system without having transmissions during the dwell time (blacklisted frequencies) should be taken into account in the actual number of hopping frequencies in use. If this number can not be determined (number of blacklisted frequencies unknown) it shall be assumed that the equipment uses the minimum number of hopping frequencies.

- The result shall be compared to the limit for the Minimum Frequency Occupation Time defined in clauses 4.3.1.4.3.1 or clause 4.3.1.4.3.2. This value shall be recorded in the test report.

Step 6:

- Make the following changes on the analyzer:
  - Start Frequency: 2 400 MHz
  - Stop Frequency: 2 483,5 MHz
  - RBW: ~ 50 % of the Occupied Channel Bandwidth (single hopping frequency)
  - VBW: ⩾ RBW
  - Detector Mode: RMS
  - Sweep time: 1 s
  - Trace Mode: Max Hold
  - Trigger: Free Run

NOTE 2: The above sweep time setting may result in long measuring times. To avoid such long measuring times, an FFT analyser could be used.

- Wait for the trace to stabilize. Identify the number of hopping frequencies used by the hopping sequence.

- The result shall be compared to the limit (value N) defined in clauses 4.3.1.4.3.1 or clause 4.3.1.4.3.2. This value shall be recorded in the test report.
  For equipment with blacklisted frequencies, it might not be possible to verify the number of hopping frequencies in use. However they shall comply with the requirement for Accumulated Transmit Time and Frequency Occupation assuming the minimum number of hopping frequencies (N) defined in clauses 4.3.1.4.3.1 or clause 4.3.1.4.3.2 are in use.

Step 7:

- For adaptive systems, using the lowest and highest -20 dB points from the total spectrum envelope obtained in step 6, it shall be verified whether the system uses 70 % of the band specified in clause 1. The result shall be recorded in the test report.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2015-06-13	2016-06-13

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Sonia Zhou on 2016-03-16.

Test Mode: Transmitting

Test Result: Compliance. Please refer to the following table:

Accumulated Transmit time:

Mode	Channel	Occupancy Time For Single Hop (ms)	Real Observed Period (s)	Hops in Observed Period	Accumulated Transmit time (s)	Limit (s)
3DH5	Low	2.891	6	28	0.081	0.4
	High	2.891	6	23	0.066	0.4
	Note:Observed Period=15*400ms=6000 ms					

Minimum Frenquency Occupation:

Mode	Channel	Occupancy Time For Single Hop (ms)	Real Observed Period (ms)	Hops in Observed Period	Minimum Frenquency Occupation Time (ms)	Limit (ms)
3DH5	Low	2.891	914	3	8.673	≥2.891
	High	2.891	914	2	5.782	≥2.891
	Note:Observed Period=Occupancy Time per hop*79*4 ms					

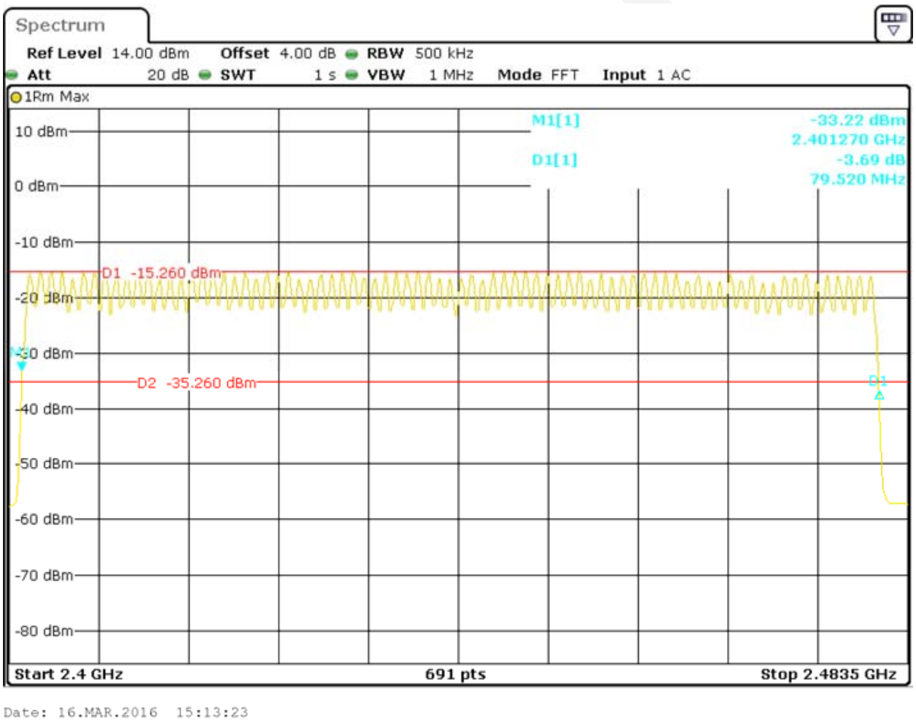
Hopping Sequence:

The frequency hopping systems operating in 2400-2483.5 MHz band employ 79 nonoverlapping channels.

Test Mode	Frequency Range (MHz)	Number of Hopping Channel	Limit	-20dB Occupied Bandwidth (MHz)	Limit (MHz)
GFSK	2400.0-2483.5	79	≥15	79.52	≥58.45
π/4-DQPSK		79		80.01	
8-DPSK		79		80.00	

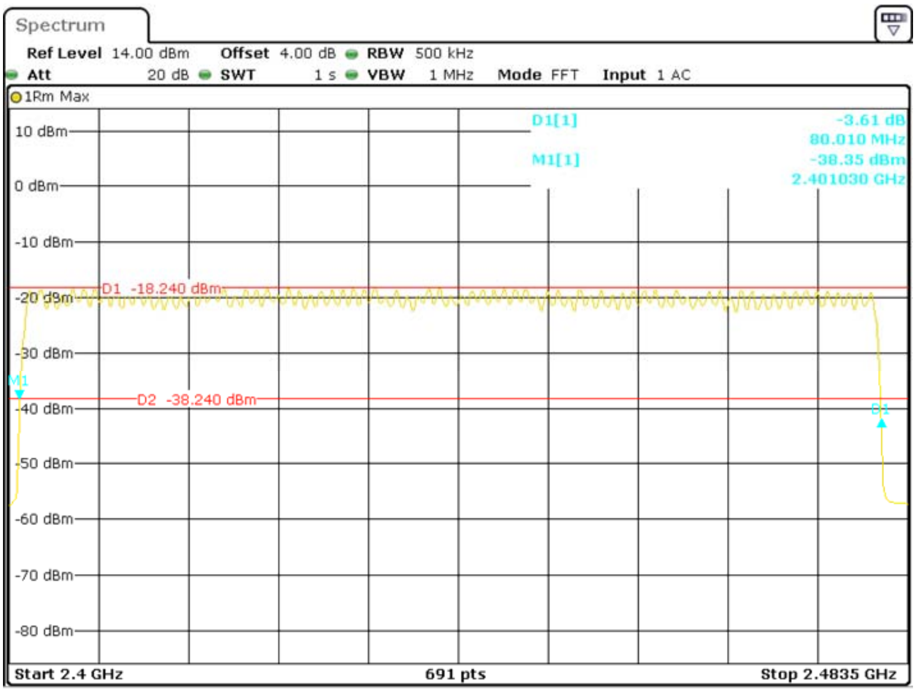
BDR Mode (GFSK):

Number of Hopping Channels



EDR Mode(π/4-DQPSK):

Number of Hopping Channels



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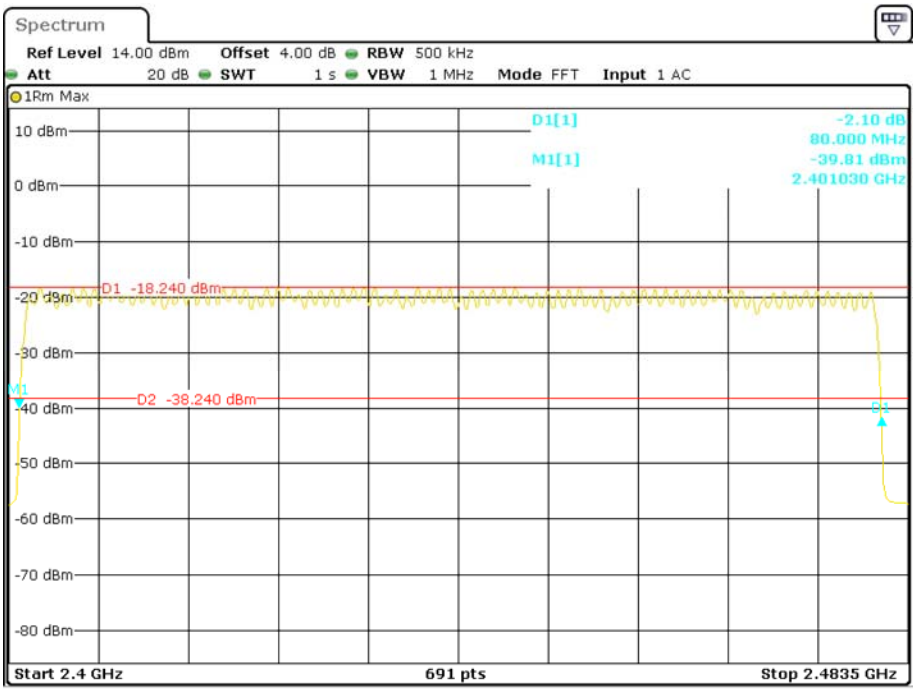
EDR Mode(8DPSK):

Number of Hopping Channels



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ETSI EN 300 328 V1.9.1 (2015-02) §4.3.1.5 – HOPPING FREQUENCY SEPARATION

Applicable Standard

The Hopping Frequency Separation is the frequency separation between two adjacent hopping frequencies.

Limit:

For Non-adaptive frequency hopping systems

For non-adaptive Frequency Hopping equipment, the Hopping Frequency Separation shall be equal or greater than the Occupied Channel Bandwidth (see clause 4.3.1.8), with a minimum separation of 100 kHz. For equipment with a maximum declared RF Output power level of less than 10 dBm e.i.r.p. or for non-adaptive Frequency Hopping equipment operating in a mode where the RF Output power is less than 10 dBm e.i.r.p. only the minimum Hopping Frequency Separation of 100 kHz applies.

For Adaptive frequency hopping systems

The minimum Hopping Frequency Separation shall be 100 kHz.

Adaptive Frequency Hopping equipment, which for one or more hopping frequencies, has switched to a non-adaptive mode because interference was detected on all these hopping positions with a level above the threshold level defined in clause 4.3.1.7.2.2 or clause 4.3.1.7.3.2, is allowed to continue to operate with a minimum Hopping Frequency Separation of 100 kHz on these hopping frequencies as long as the interference is present on these frequencies. The equipment shall continue to operate in an adaptive mode on other hopping frequencies.

Adaptive Frequency Hopping equipment which decided to operate in a non-adaptive mode on one or more hopping frequencies without the presence of interference, shall comply with the limit in clause 4.3.1.5.3.1 for these hopping frequencies as well as with all other requirements applicable to non-adaptive frequency hopping equipment.

Test Procedure

Option 1, the test procedure shall be as follows:

Step 1:

- The output of the transmitter shall be connected to a spectrum analyzer or equivalent.
- The analyzer shall be set as follows:
  - Centre Frequency: Centre of the two adjacent hopping frequencies
  - Frequency Span: Sufficient to see the complete power envelope of both hopping frequencies
  - RBW: 1 % of the Span
  - VBW: 3 × RBW
  - Detector Mode: RMS
  - Trace Mode: Max Hold
  - Sweep time: 1 s

Step 2:

- Wait for the trace to stabilize.
- Use the marker function of the analyser to define the frequencies corresponding to the lower -20 dBr point and the upper -20 dBr point for both hopping frequencies F1 and F2. This will result in $F1_L$ and $F1_H$ for hopping frequency F1 and in F2L and F2H for hopping frequency F2. These values shall be recorded in the report.

Step 3:

- Calculate the centre frequencies $F1_C$ and $F2_C$ for both hopping frequencies using the formulas below. These values shall be recorded in the report.

$$F1_C = \frac{F1_L + F1_H}{2} \quad F2_C = \frac{F2_L + F2_H}{2}$$

- Calculate the -20 dBr channel bandwidth (BW_{CHAN}) using the formula below. This value shall be recorded in the report.

$$BW_{CHAN} = F1_H - F1_L$$

- Calculate the Hopping Frequency Separation (F_{HS}) using the formula below. This value shall be recorded in the report.

$$F_{HS} = F2_C - F1_C$$

- Compare the measured Hopping Frequency Separation with the limit defined in clause 4.3.1.5.3. In addition, for non-Adaptive Frequency Hopping equipment, the Hopping Frequency Separation shall be equal to or greater than the -20 dBr channel bandwidth or:

$$F_{HS} \geq BW_{CHAN}$$

- See figure 4:

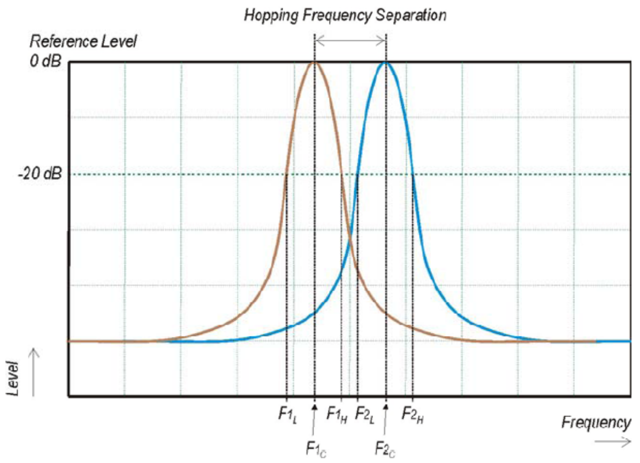


Figure 4: Hopping Frequency Separation

For adaptive systems, in case of overlapping channels which will prevent the definition of the -20 dBr reference points $F1_H$ and $F2_L$, a higher reference level (e.g. -10 dBr or - 6 dBr) may be chosen to define the reference points $F1_L$; $F1_H$; $F2_L$ and $F2_H$.

Alternatively, special test software may be used to:

- force the UUT to hop or transmit on a single Hopping Frequency by which the -20 dBr reference points can be measured separately for the two adjacent Hopping Frequencies; and/or;

- force the UUT to operate without modulation by which the centre frequencies F1C and F2C can be measured directly.

The method used to measure the Hopping Frequency Separation shall be documented in the test report.

Option 2, the test procedure shall be as follows:

Step 1:

- The output of the transmitter shall be connected to a spectrum analyzer or equivalent.
- The analyzer shall be set as follows:
  - Centre Frequency: Centre of the two adjacent hopping frequencies
  - Frequency Span: Sufficient to see the complete power envelope of both hopping frequencies
  - RBW: 1 % of the Span
  - VBW: 3 × RBW
  - Detector Mode: RMS
  - Trace Mode: Max Hold
  - Sweep Time: 1 s

NOTE: Depending on the nature of the signal (modulation), it might be required to use a much longer sweep time, e.g. in case switching transients are present in the signals to be investigated.

Step 2:

- Wait for the trace to stabilize.
- Use the marker-delta function to determine the Hopping Frequency Separation between the centres of the two adjacent hopping frequencies (e.g. by indentifying peaks or notches at the centre of the power envelope for the two adjacent signals). This value shall be compared with the limits defined in clause 4.3.1.5.3 and shall be recorded in the test report.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2015-06-13	2016-06-13

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Sonia Zhou on 2016-03-16.

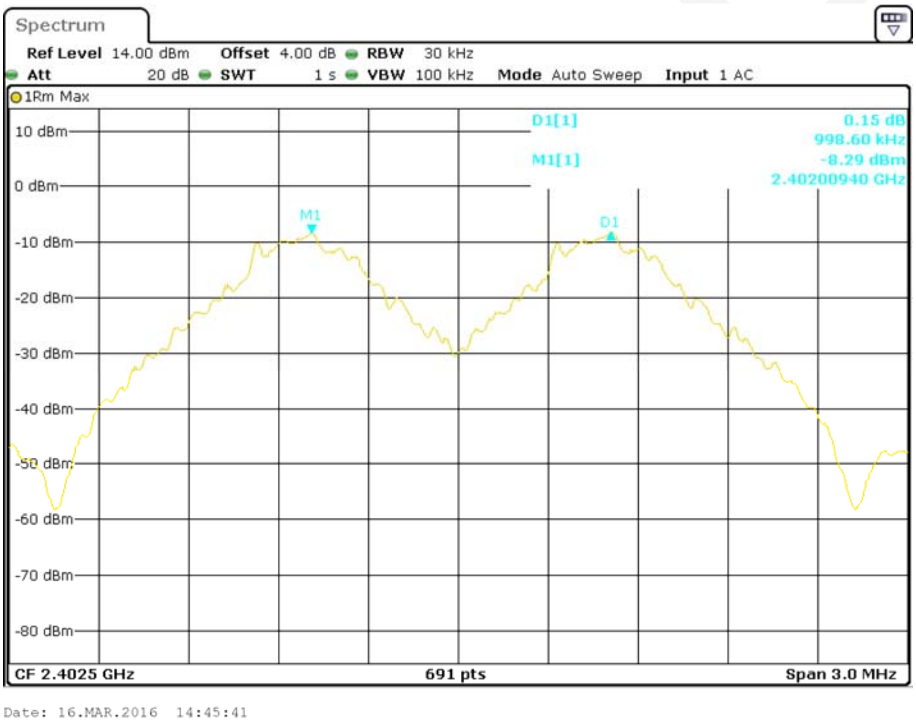
Test Mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots:

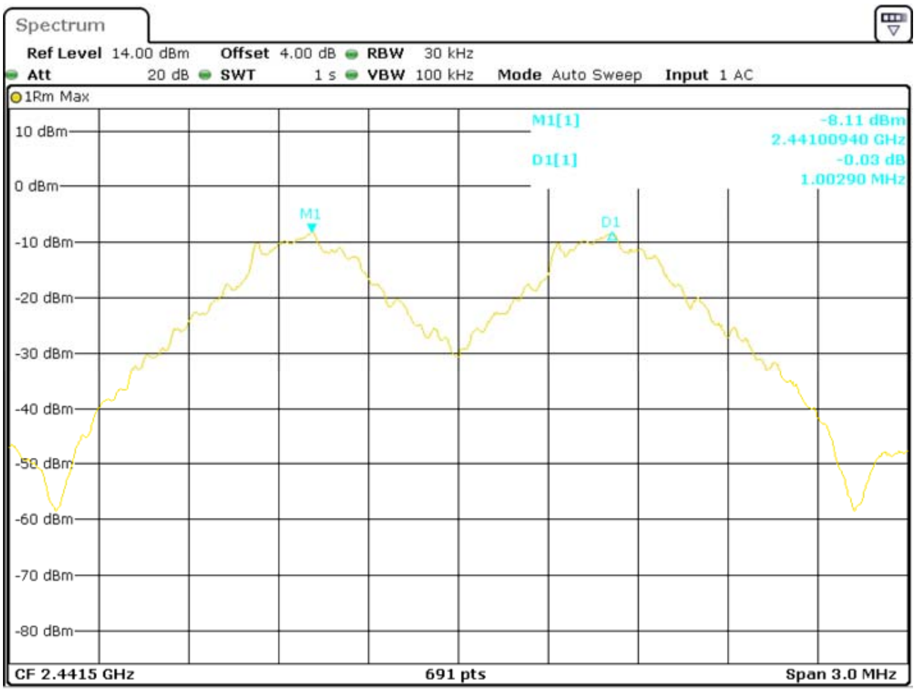
BDR Mode (GFSK):

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
Low Channel	2402	0.999	0.1	Pass
Adjacency Channel	2403			
Middle Channel	2441	1.003	0.1	Pass
Adjacency Channel	2442			
High Channel	2480	0.999	0.1	Pass
Adjacency Channel	2479			

Low Channel

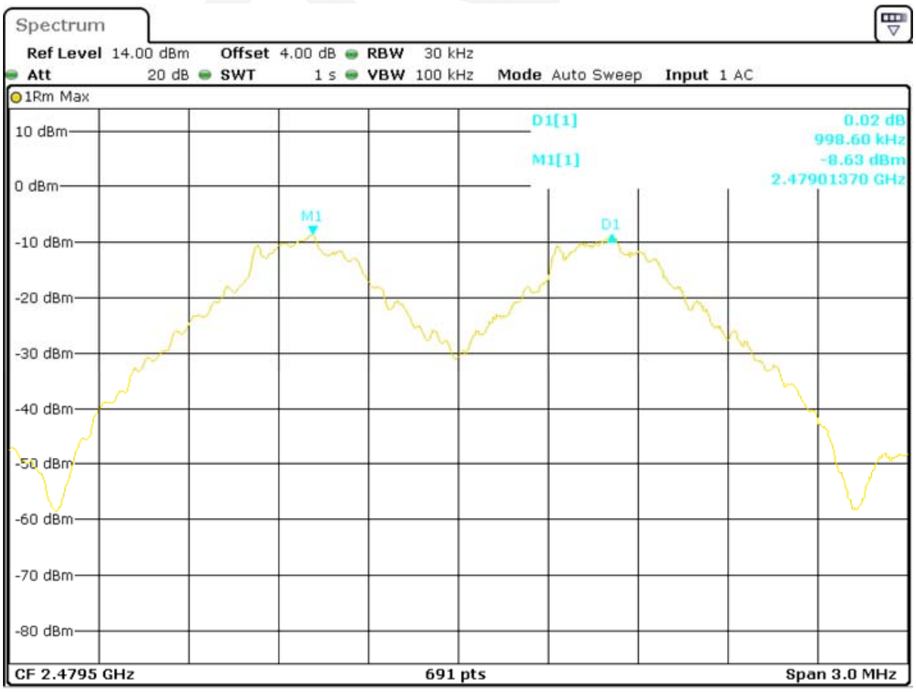


Middle Channel



Date: 16.MAR.2016 14:47:54

High Channel

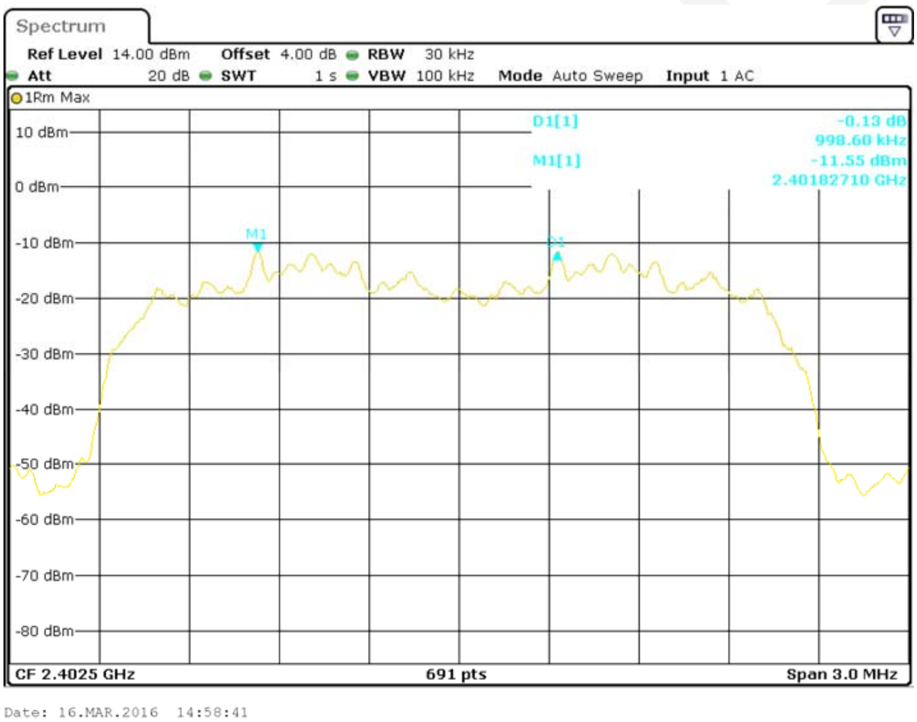


Date: 16.MAR.2016 14:50:11

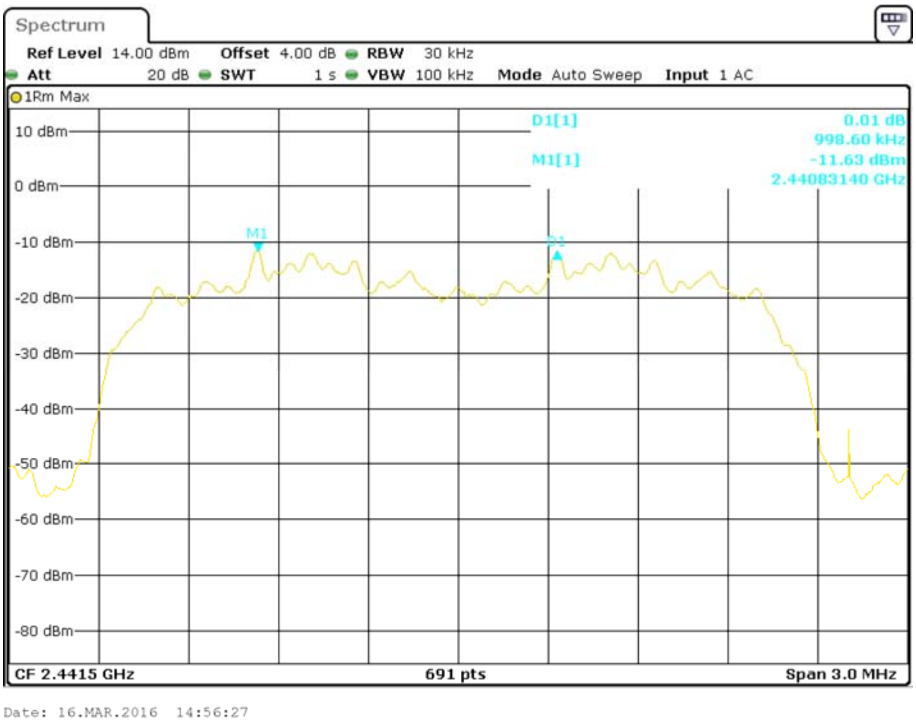
EDR Mode (π/4-DQPSK):

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
Low Channel	2402	0.999	0.1	Pass
Adjacency Channel	2403			
Middle Channel	2441	0.999	0.1	Pass
Adjacency Channel	2442			
High Channel	2480	1.003	0.1	Pass
Adjacency Channel	2479			

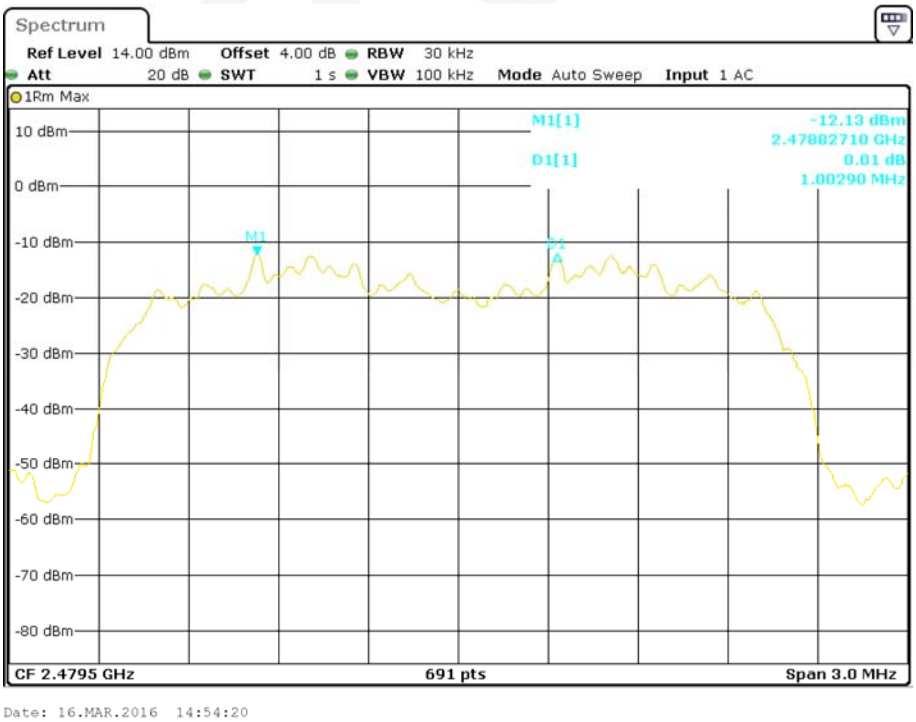
Low Channel



Middle Channel



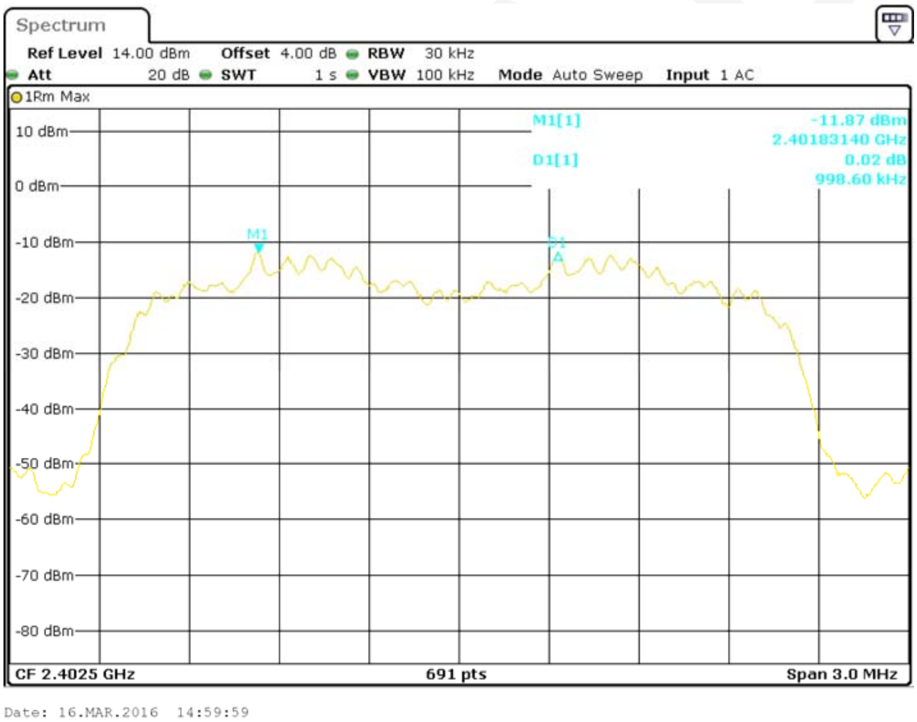
High Channel



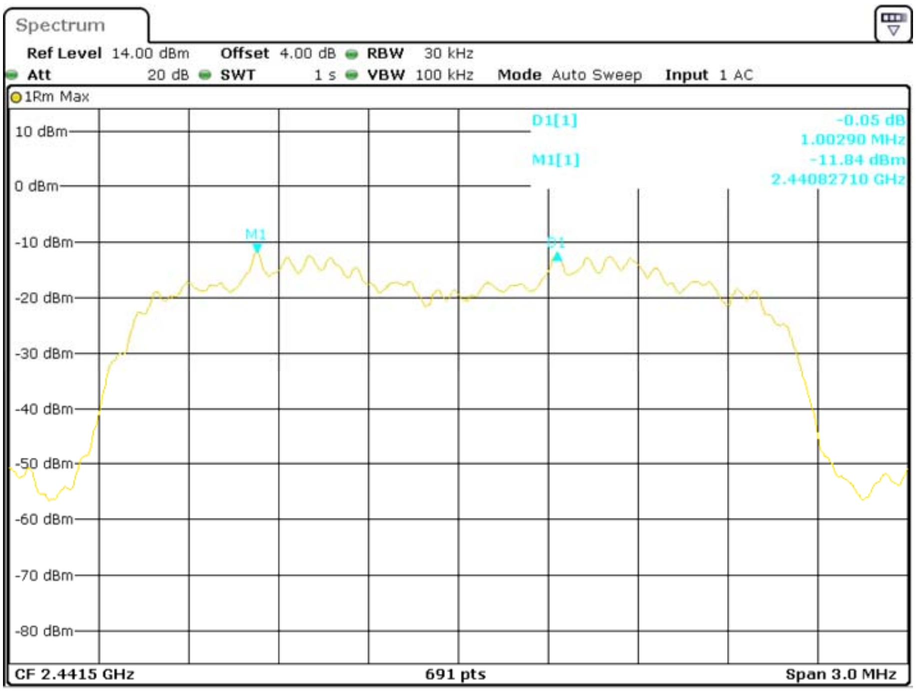
EDR Mode (8DPSK):

Channel	Channel Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)	Result
Low Channel	2402	0.999	0.1	Pass
Adjacency Channel	2403			
Middle Channel	2441	1.003	0.1	Pass
Adjacency Channel	2442			
High Channel	2480	0.999	0.1	Pass
Adjacency Channel	2479			

Low Channel

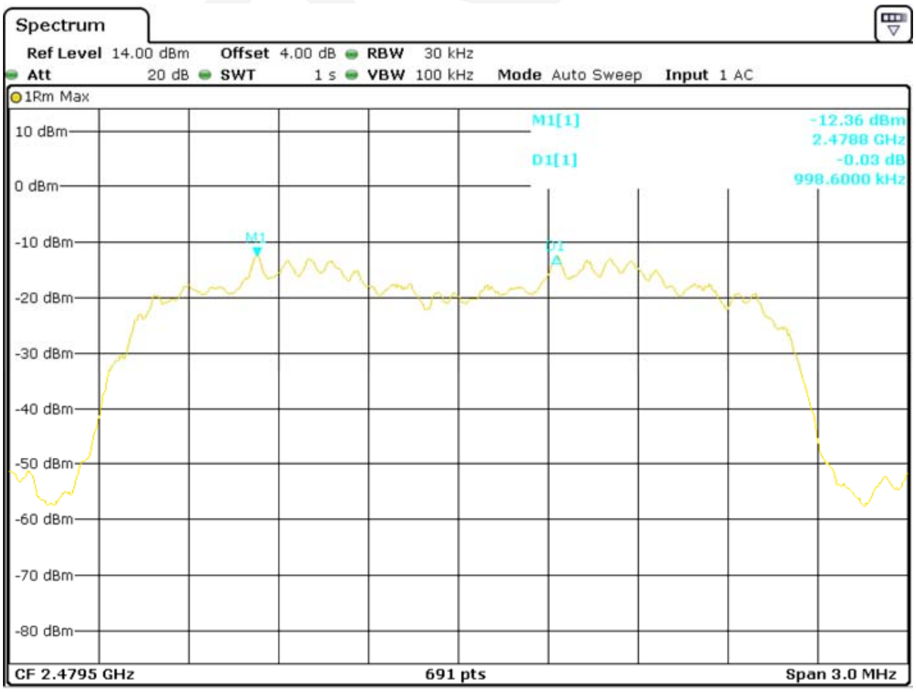


Middle Channel



Date: 16.MAR.2016 15:01:38

High Channel



Date: 16.MAR.2016 15:04:21

ETSI EN 300 328 V1.9.1 (2015-02) §4.3.1.8 – OCCUPIED CHANNEL BANDWIDTH

Applicable Standard

The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

Limit:

The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the band given in clause 1.

For non-adaptive Frequency Hopping equipment with e.i.r.p greater than 10 dBm, the Occupied Channel Bandwidth for every occupied hopping frequency shall be equal to or less than the Nominal Channel Bandwidth declared by the supplier. See clause 5.3.1 j). This declared value shall not be greater than 5 MHz.

Test Procedure

The measurement procedure shall be as follows:

Step 1:

Connect the UUT to the spectrum analyser and use the following settings:

- Centre Frequency: The centre frequency of the channel under test
- Resolution BW: ~ 1 % of the span without going below 1 %
- Video BW: 3 × RBW
- Frequency Span for frequency hopping equipment: Lowest frequency separation that is used within the hopping sequence
- Frequency Span for other types of equipment: 2 × Nominal Channel Bandwidth (e.g. 40 MHz for a 20 MHz channel)
- Detector Mode: RMS
- Trace Mode: Max Hold
- Sweep time: 1 s

Step 2:

Wait for the trace to stabilize.

Find the peak value of the trace and place the analyser marker on this peak.

Step 3:

Use the 99 % bandwidth function of the spectrum analyser to measure the Occupied Channel Bandwidth of the UUT. This value shall be recorded.

NOTE: Make sure that the power envelope is sufficiently above the noise floor of the analyser to avoid the noise signals left and right from the power envelope being taken into account by this measurement.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2015-06-13	2016-06-13

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	48 %
ATM Pressure:	101 kPa

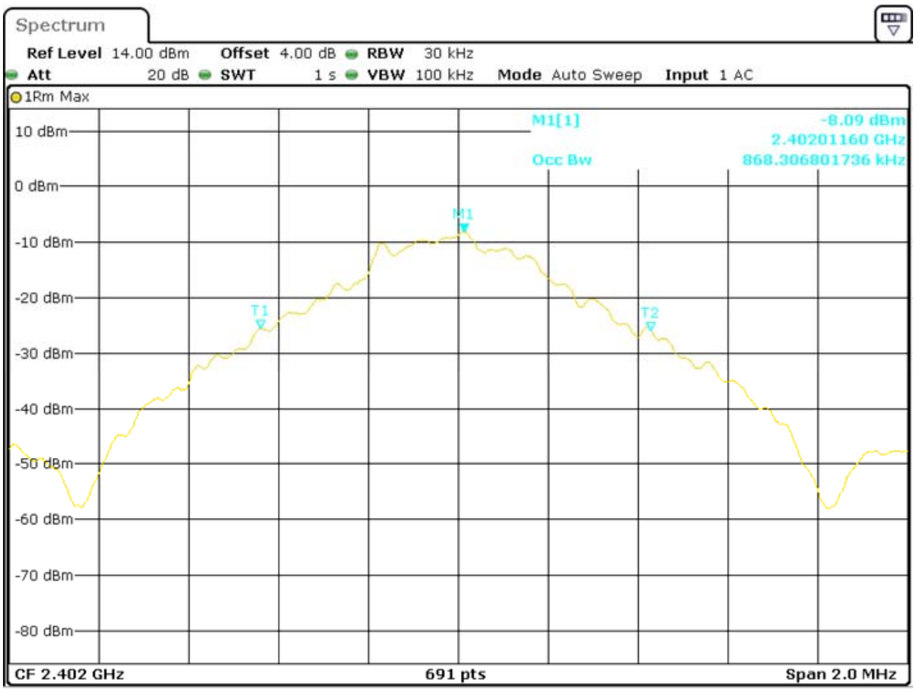
The testing was performed by Sonia Zhou on 2016-03-16.

Test Mode: Transmitting

Test mode	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
BDR Mode (GFSK)	Low	2402	0.868
	High	2480	0.871
EDR Mode (π/4-DQPSK)	Low	2402	1.161
	High	2480	1.158
EDR Mode (8DPSK)	Low	2402	1.166
	High	2480	1.164

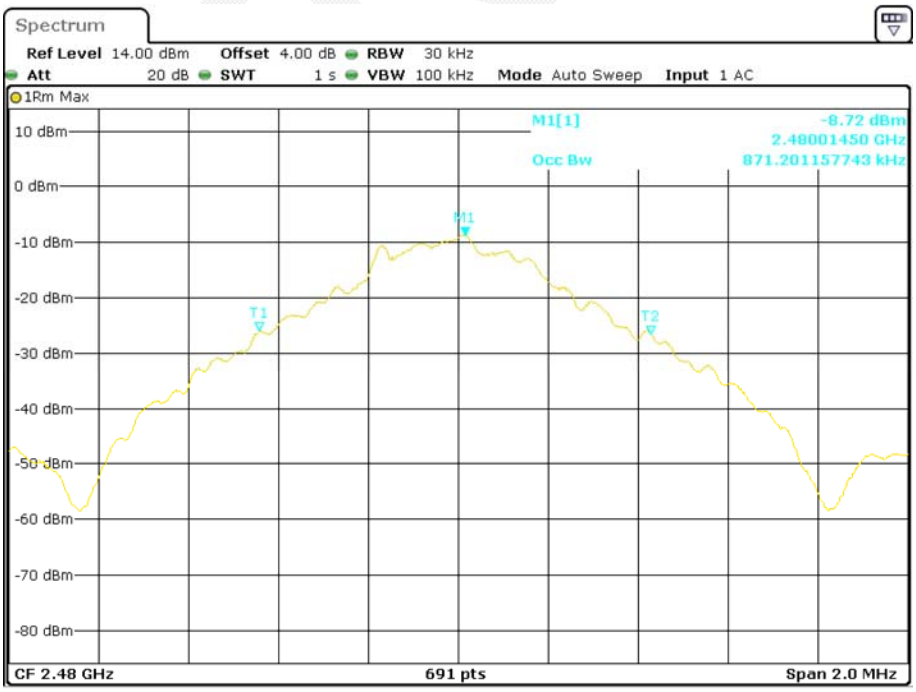
BDR Mode (GFSK):

Low Channel



Date: 16.MAR.2016 14:03:48

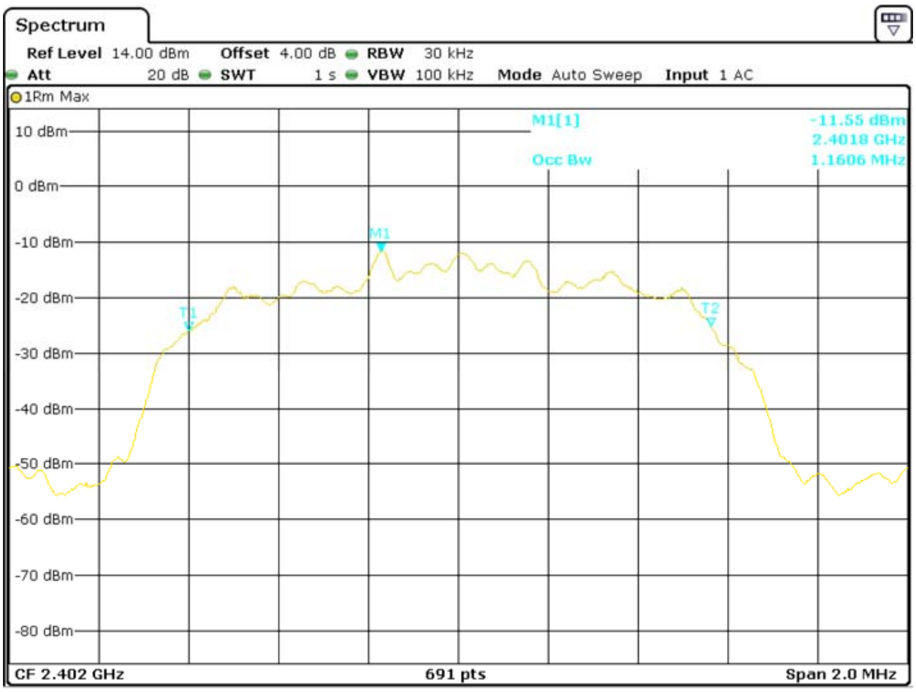
High Channel



Date: 16.MAR.2016 14:07:19

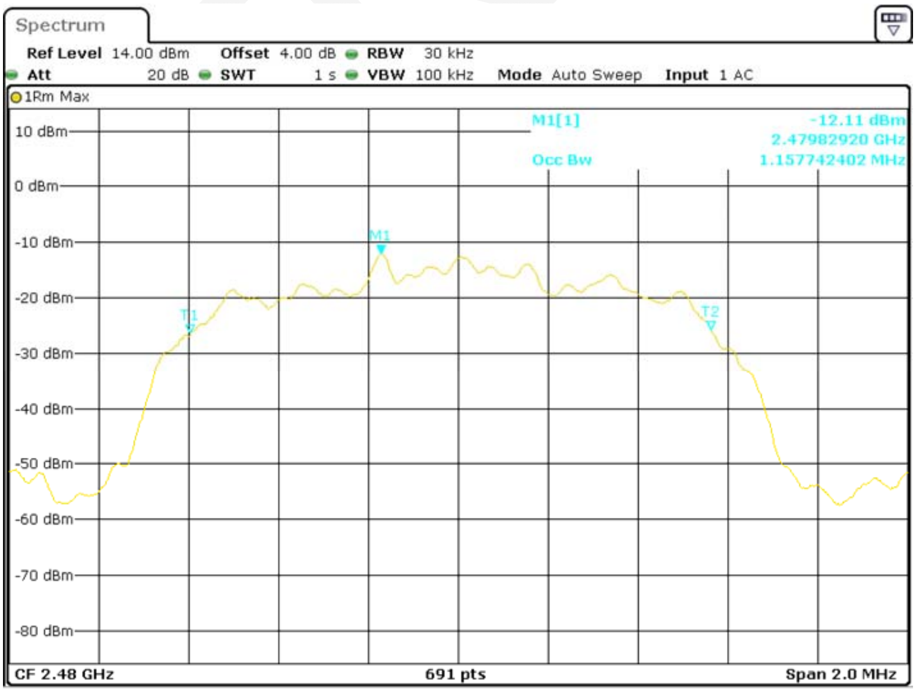
EDR Mode (π/4-DQPSK):

Low Channel



Date: 16.MAR.2016 14:10:46

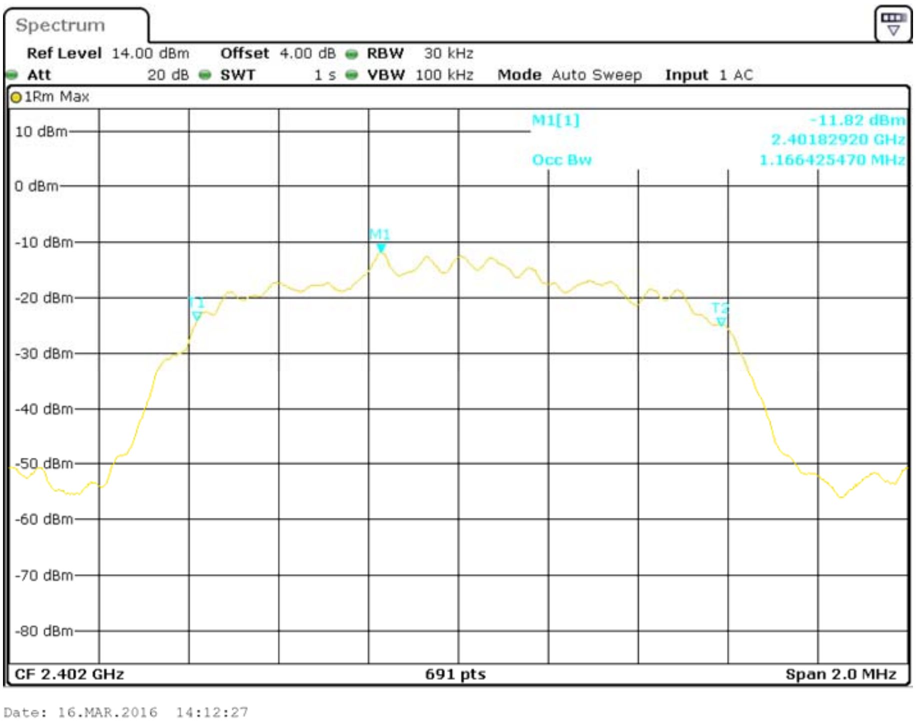
High Channel



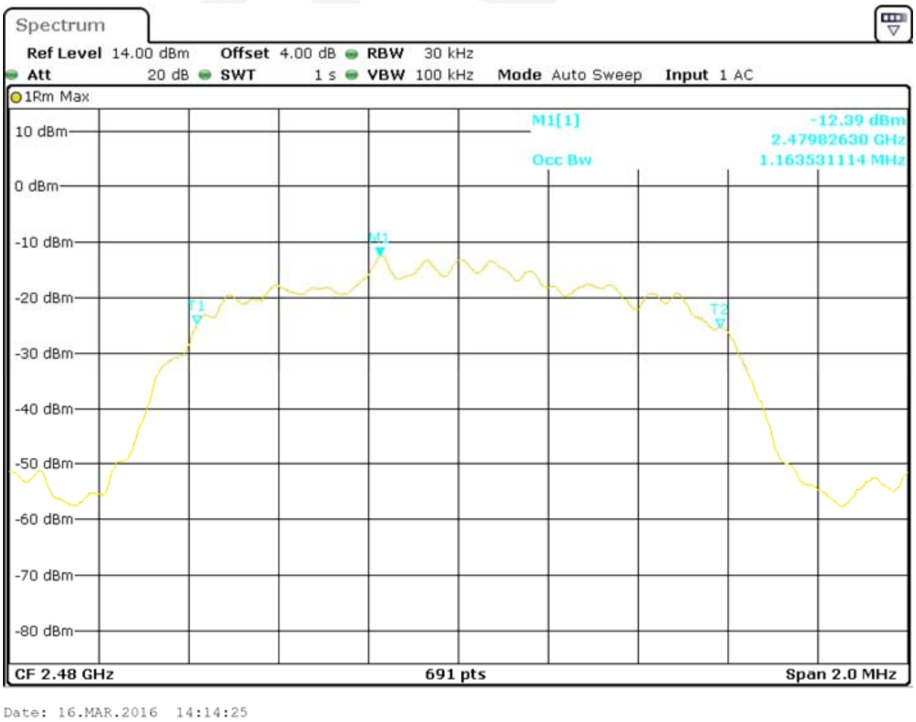
Date: 16.MAR.2016 14:08:42

EDR Mode (8DPSK):

Low Channel



High Channel



ETSI EN 300 328 V1.9.1 (2015-02) §4.3.1.9 – TRANSMITTER UNWANTED EMISSION IN THE OUT-OF-BAND DOMAIN

Applicable Standard

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious.

Limit:

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 1.

NOTE: Within the 2 400 MHz to 2 483,5 MHz band, the Out-of-band emissions are fulfilled by compliance with the Occupied Channel Bandwidth requirement in clause 4.3.1.8.

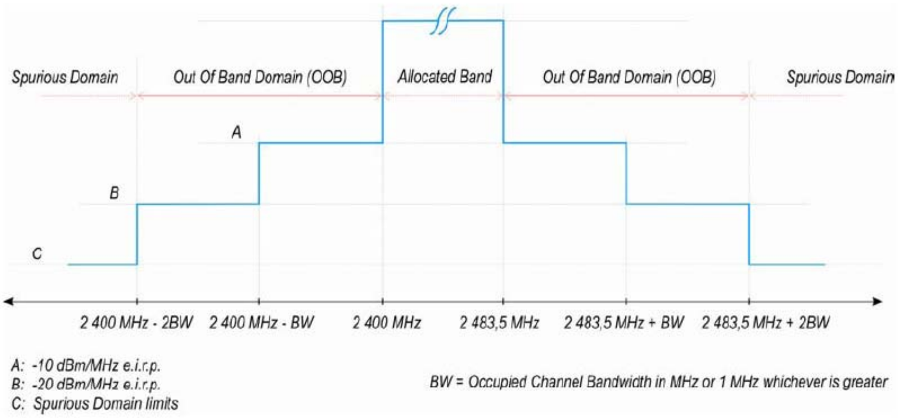


Figure 1: Transmit mask

Test Procedure

Conducted measurement:

The applicable mask is defined by the measurement results from the tests performed under clause 5.3.8 (Occupied Channel Bandwidth).

The Out-of-band emissions within the different horizontal segments of the mask provided in figures 1 and 3 shall be measured using the steps below. This method assumes the spectrum analyser is equipped with the Time Domain Power option.

Step 1:

- Connect the UUT to the spectrum analyser and use the following settings:
  - Centre Frequency: 2 484 MHz
  - Span: 0 Hz
  - Resolution BW: 1 MHz
  - Filter mode: Channel filter
  - Video BW: 3 MHz
  - Detector Mode: RMS
  - Trace Mode: Max Hold

- Sweep Mode: Continuous
- Sweep Points: Sweep Time [s] / (1 µs) or 5 000 whichever is greater
- Trigger Mode: Video trigger

NOTE 1: In case video triggering is not possible, an external trigger source may be used.
- Sweep Time: > 120 % of the duration of the longest burst detected during the measurement of the RF Output Power.

Step 2: (segment 2 483,5 MHz to 2 483,5 MHz + BW)

• Adjust the trigger level to select the transmissions with the highest power level.
• For frequency hopping equipment operating in a normal hopping mode, the different hops will result in signal bursts with different power levels. In this case the burst with the highest power level shall be selected.
• Set a window (start and stop lines) to match with the start and end of the burst and in which the RMS power shall be measured using the Time Domain Power function.
• Select RMS power to be measured within the selected window and note the result which is the RMS power within this 1 MHz segment (2 483,5 MHz to 2 484,5 MHz). Compare this value with the applicable limit provided by the mask.
• Increase the centre frequency in steps of 1 MHz and repeat this measurement for every 1 MHz segment within the range 2 483,5 MHz to 2 483,5 MHz + BW. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + BW - 0,5 MHz (which means this may partly overlap with the previous 1 MHz segment).

Step 3: (segment 2 483,5 MHz + BW to 2 483,5 MHz + 2BW)

• Change the centre frequency of the analyser to 2 484 MHz + BW and perform the measurement for the first 1 MHz segment within range 2 483,5 MHz + BW to 2 483,5 MHz + 2BW. Increase the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 483,5 MHz + 2 BW - 0,5 MHz.

Step 4: (segment 2 400 MHz - BW to 2 400 MHz)

• Change the centre frequency of the analyser to 2 399,5 MHz and perform the measurement for the first 1 MHz segment within range 2 400 MHz - BW to 2 400 MHz Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - 2BW + 0,5 MHz.

Step 5: (segment 2 400 MHz - 2BW to 2 400 MHz - BW)

• Change the centre frequency of the analyser to 2 399,5 MHz - BW and perform the measurement for the first 1 MHz segment within range 2 400 MHz - 2BW to 2 400 MHz - BW. Reduce the centre frequency in 1 MHz steps and repeat the measurements to cover this whole range. The centre frequency of the last 1 MHz segment shall be set to 2 400 MHz - 2BW + 0,5 MHz.

Step 6:

• In case of conducted measurements on equipment with a single transmit chain, the declared antenna assembly gain "G" in dBi shall be added to the results for each of the 1 MHz segments and compared with the limits provided by the mask given in figures 1 or 3. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered.
• In case of conducted measurements on smart antenna systems (equipment with multiple transmit chains), the measurements need to be repeated for each of the active transmit chains. The declared antenna assembly gain "G" in dBi for a single antenna shall be added to these results. If more than one antenna assembly is intended for this power setting, the antenna with the highest gain shall be considered. Comparison with the applicable limits shall be done using any of the options given below:

- Option 1: the results for each of the transmit chains for the corresponding 1 MHz segments shall be added. The additional beamforming gain "Y" in dB shall be added as well and the resulting values compared with the limits provided by the mask given in figures 1 or 3.

- Option 2: the limits provided by the mask given in figures 1 or 3 shall be reduced by 10 x $\log_{10}(A_{ch})$ and the additional beamforming gain "Y" in dB. The results for each of the transmit chains shall be individually compared with these reduced limits.

NOTE 2: A_{ch} refers to the number of active transmit chains.

It shall be recorded whether the equipment complies with the mask provided in figures 1 or 3.

Radiated measurement:

This method shall only be used for integral antenna equipment that does not have a temporary antenna connector(s) provided.

The test set up as described in annex B and the applicable measurement procedures described in annex C shall be used. Alternatively a test fixture may be used.

The test procedure is as described under clause 5.3.9.2.1.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2015-06-13	2016-06-13

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

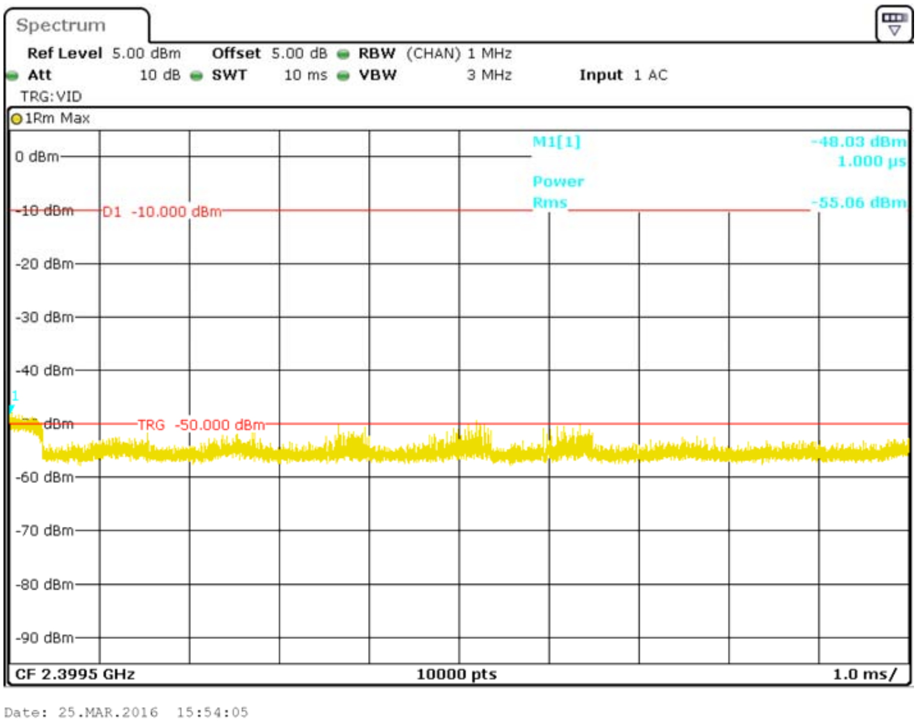
Environmental Conditions

Temperature:	21 ℃
Relative Humidity:	52 %
ATM Pressure:	101 kPa

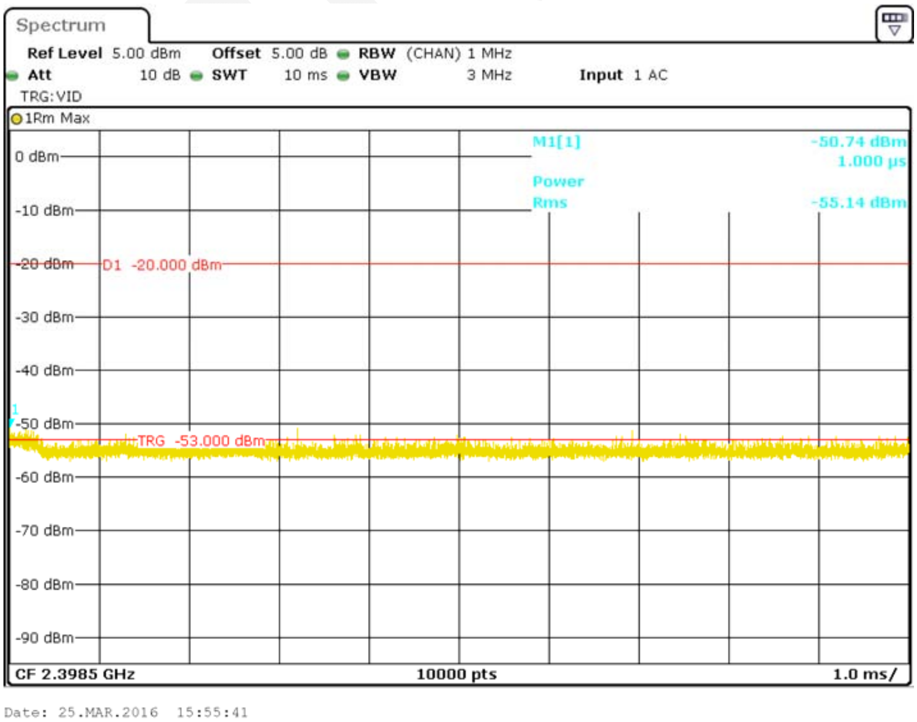
The testing was performed by Sonia Zhou on 2016-03-25.

Test Mode: Transmitting (Worst Case)

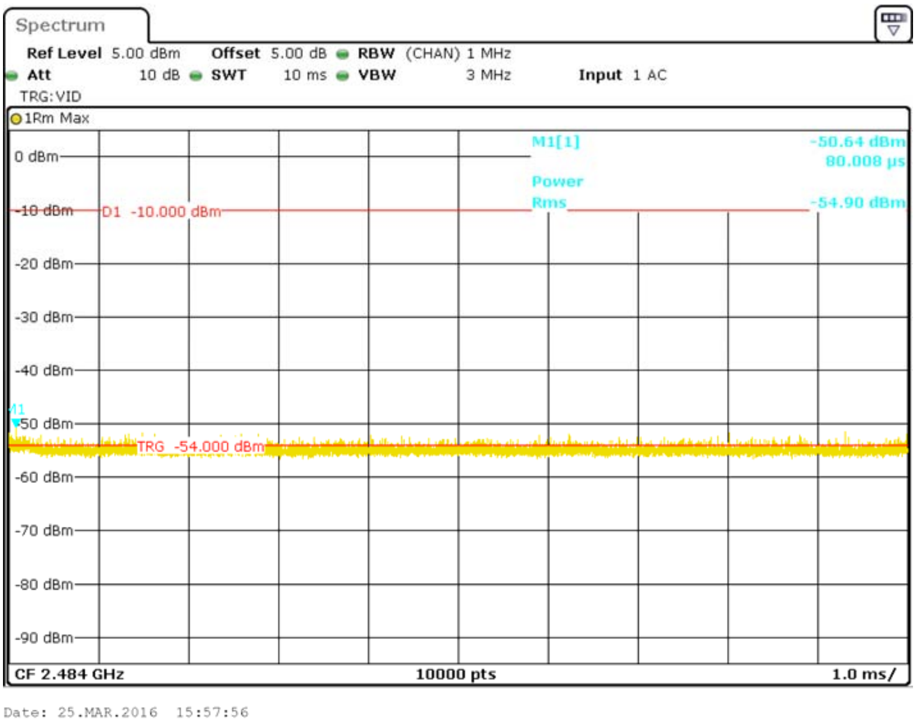
2400 MHz-BW



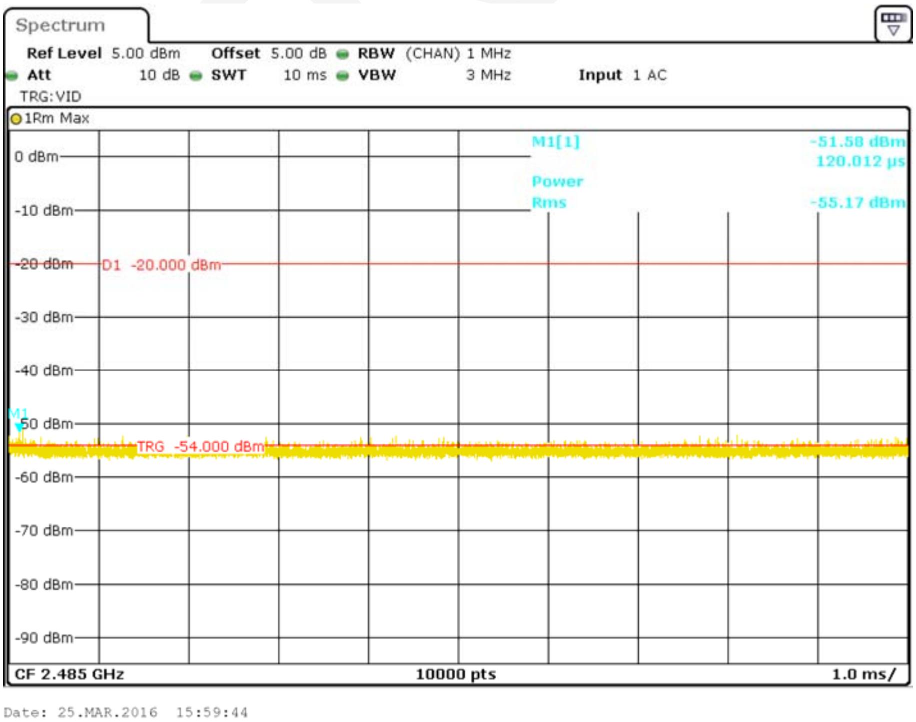
2400 MHz-2BW



2483.5 MHz+BW



2483.5 MHz+2BW



ETSI EN 300 328 V1.9.1 (2015-02) §4.3.1.10 – TRANSMITTER UNWANTED EMISSION IN THE SPURIOUS DOMAIN

Applicable Standard

Transmitter unwanted emissions in the spurious domain are emissions outside the allocated band and outside the out-of-band domain as indicated in figure 1 when the equipment is in Transmit mode.

The spurious emissions of the transmitter shall not exceed the values in following tables:

Transmitter limits for spurious emissions

Frequency Range	Maximum power e.r.p (≤ 1 GHz) e.i.r.p (> 1 GHz)	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87.5 MHz	-36 dBm	100 kHz
87.5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12.75 GHz	-30 dBm	1 MHz

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.81 dB for 30MHz-1GHz.and 4.88 dB for above 1GHz, and it will not be taken into consideration for the test data recorded in the report.

Test Procedure

Conducted measurement

In case of conducted measurements, the radio equipment shall be connected to the measuring equipment via a suitable attenuator.
The spectrum in the spurious domain (see figures 1 or 3) shall be searched for emissions that exceed the limit values given in tables 1 or 4 or that come to within 6 dB below these limits. Each occurrence shall be recorded.

The measurement procedure refer to ETSI EN 300 328 V1.9.1 (2015-02) §5.3.10.2.1

Radiated measurement:

The test site as described in annex B and applicable measurement procedures as described in annex C shall be used.

The test procedure is further as described under clause 5.3.10.2.1.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-29	2017-12-28
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Signal Generator	8657A	3217A04699	2015-12-19	2016-12-18
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
HP	Synthesized Sweeper	HP 8341B	2624A00116	2015-07-02	2016-07-01
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Sonia Zhou on 2016-03-16.

Test mode: Transmitting (worst case)

Test Result: Compliance

30 MHz ~ 12.75 GHz:

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 300 328	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Low Channel										
189.60	32.11	107	1.0	H	-64.9	0.29	0	-65.19	-54	11.19
189.60	31.99	23	1.5	V	-65.0	0.29	0	-65.29	-54	11.29
4804.00	42.41	306	1.5	H	-57.0	2.10	9.90	-49.20	-30	19.20
4804.00	43.31	69	1.9	V	-55.9	2.10	9.90	-48.10	-30	18.10
High Channel										
189.60	31.59	358	1.8	H	-65.4	0.29	0	-65.69	-54	11.69
189.60	30.52	113	2.3	V	-66.5	0.29	0	-66.79	-54	12.79
4960.00	42.49	173	1.5	H	-57.8	1.90	10.00	-49.70	-30	19.70
4960.00	43.49	299	2.2	V	-56.8	1.90	10.00	-48.70	-30	18.70

Note:
Absolute Level = SG Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

ETSI EN 300 328 V1.9.1 (2015-02) §4.3.1.11 - RECEIVER SPURIOUS EMISSIONS

Applicable Standard

Receiver spurious emissions are emissions at any frequency when the equipment is in receive mode.

Limit:

The spurious emissions of the receiver shall not exceed the values given in table 2.

Table 2: Spurious emission limits for receivers

Frequency range	Maximum power e.r.p.((≤ 1 GHz) e.i.r.p. (> 1 GHz	Measurement bandwith
30 MHz to 1GHz	-57 dBm	100 kHz
1 GHz to 12.75GHz	-47 dBm	1 MHz

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.81 dB for 30MHz-1GHz.and 4.88 dB for above 1GHz, and it will not be taken into consideration for the test data recorded in the report.

Test Procedure

In case of conducted measurements, the radio equipment shall be connected to the measuring equipment via a suitable attenuator.
The spectrum in the spurious domain (see figures 1 or 3) shall be searched for emissions that exceed the limit values given in tables 2 or 5 or that come to within 6 dB below these limits. Each occurrence shall be recorded.

Conducted measurement:

The measurement procedure refer to ETSI EN 300 328 V1.9.1 (2015-02) §5.3.11.2.1

Radiated measurement

The test site as described in annex B and applicable measurement procedures as described in annex C shall be used.

The test procedure is further as described under clause 5.3.11.2.1.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Horn Antenna	DRH-118	A052304	2014-12-29	2017-12-28
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
HP	Signal Generator	8657A	3217A04699	2015-12-19	2016-12-18
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
HP	Synthesized Sweeper	HP 8341B	2624A00116	2015-07-02	2016-07-01
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 ℃
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Sonia Zhou on 2016-03-16.

Test mode: Received (worst case)

Test Result: Compliance

30 MHz ~ 12.75 GHz

Frequency (MHz)	Receiver Reading (dBµV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	EN 300 328	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
Low Channel										
189.60	31.81	11	2.0	H	-65.2	0.29	0	-65.49	-57	8.49
189.60	31.87	3	1.9	V	-65.1	0.29	0	-65.39	-57	8.39
1442.21	41.24	12	2.2	H	-68.4	1.23	6.40	-63.23	-47	16.23
1442.21	40.66	37	2.5	V	-69.0	1.23	6.40	-63.83	-47	16.83
High Channel										
189.60	31.36	308	1.3	H	-65.6	0.29	0	-65.89	-57	8.89
189.60	32.12	156	1.5	V	-64.9	0.29	0	-65.19	-57	**8.19**
1302.47	41.82	40	1.7	H	-67.0	1.27	6.30	-61.97	-47	14.97
1302.47	40.82	30	1.6	V	-68.8	1.27	6.30	-63.77	-47	16.77

Note:
Absolute Level = SG Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

EXHIBIT A - E.1 INFORMATION AS REQUIRED BY EN 300 328 V1.9.1, CLAUSE 5.3.1

In accordance with EN 300 328, clause 5.3.1, the following information is provided by the supplier.

a) The type of modulation used by the equipment:

☒ FHSS
☐ other forms of modulation

b) In case of FHSS modulation:

In case of non-Adaptive Frequency Hopping equipment:
The number of Hopping Frequencies:_______.

In case of Adaptive Frequency Hopping Equipment:
The maximum number of Hopping Frequencies:___79___;
The minimum number of Hopping Frequencies: ___15___;
The Accumulated Transmit Time: __0.081s__;

The Minimum Channel Occupation Time: …8.673ms……..

c) Adaptive / non-adaptive equipment:

☐ non-adaptive Equipment
☒ adaptive Equipment without the possibility to switch to a non-adaptive mode
☐ adaptive Equipment which can also operate in a non-adaptive mode

d) In case of adaptive equipment:

The Channel Occupancy Time implemented by the equipment: ____ms

☐ The equipment has implemented an LBT based DAA mechanism

In case of equipment using modulation different from FHSS:

☐ The equipment is Frame Based equipment
☐ The equipment is Load Based equipment
☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment: ___μs

The value q is _______.

☐ The equipment has implemented an non-LBT based DAA mechanism
☐ The equipment can operate in more than one adaptive mode

e) In case of non-adaptive Equipment:

The maximum RF Output Power (e.i.r.p.): _______dBm
The maximum (corresponding) Duty Cycle: ________ %

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):
____.

f) The worst case operational mode for each of the following tests:

RF Output Power: 6.55dBm ;
Power Spectral Density N/A ;
Duty cycle, Tx-Sequence, Tx-gap N/A ;
Accumulated Transmit Time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment) 0.081s, 8.673ms, 79 ;
Hopping Frequency Separation (only for FHSS equipment) 1.003MHz ;
Medium Utilisation N/A ;
Adaptivity & Receiver Blocking N/A ;
Occupied Channel Bandwidth 1.166MHz ;
Transmitter unwanted emissions in the OOB domain -54.90dBm/MHz ;
Transmitter unwanted emissions in the spurious domain -65.19dBm ;
Receiver spurious emissions -65.49dBm ;

g) The different transmit operating modes (tick all that apply):

☒ Operating mode 1: Single Antenna Equipment
☒ Equipment with only 1 antenna
☐ Equipment with 2 diversity antennas but only 1 antenna active at any moment in time
☐ Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)

☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming
☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)
☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1
☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2
Note: Add more lines if more channel bandwidths are supported.

☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming
☐ Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)
☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1
☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2
Note: Add more lines if more channel bandwidths are supported.

h) In case of Smart Antenna Systems:

The number of Receive chains: ____________________;
The number of Transmit chains: ____________________;

☐ symmetrical power distribution
☐ asymmetrical power distribution

In case of beam forming, the maximum beam forming gain: N/A ;

Note: Beam forming gain does not include the basic gain of a single antenna.

i) Operating Frequency Range(s) of the equipment:

Operating Frequency Range 1: 2402 MHz to 2480 MHz

Note: Add more lines if more Frequency Ranges are supported.

j) Occupied Channel Bandwidth(s):

Occupied Channel Bandwidth 1:___0.871_ MHz
Occupied Channel Bandwidth 2:___1.161 MHz
Occupied Channel Bandwidth 3:___1.166_MHz
Occupied Channel Bandwidth 4:_______ MHz

Note: Add more lines if more channel bandwidths are supported.

k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

☒ Stand-alone
☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)
☐ Plug-in radio device (Equipment intended for a variety of host systems)
☐ Other ______________________________;

l) The extreme operating conditions that apply to the equipment:

Operating temperature range:___-20___ ° C to ___+55___ ° C
Operating voltage range:_____ V to _____ V_{DC}
Details provided are for the: ☒ stand-alone equipment
☐ combined (or host) equipment
☐ test jig

m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:

Antenna Type:

☒ Integral Antenna

Antenna Gain:__1.0__ dBi

If applicable, additional beamforming gain (excluding basic antenna gain):________ dB

☐ Temporary RF connector provided
☐ No temporary RF connector provided
☐ Dedicated Antennas (equipment with antenna connector)
☐ Single power level with corresponding antenna(s)
☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels:_______;
Power Level 1:_____ dBm

Note 1: Add more lines in case the equipment has more power levels.
Note 2: These power levels are conducted power levels (at antenna connector).

For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:

Details provided are for the: ☒stand-alone equipment
☐ combined (or host) equipment
☐ test jig

Supply Voltage ☐ AC mains State AC voltage ____ V
☒ DC State DC voltage ___3.7___ V

In case of DC, indicate the type of power source
☐ Internal Power Supply
☐ External Power Supply or AC/DC adapter
☒ Battery
☐ Other:_______________________________________.

o) Describe the test modes available which can facilitate testing:

The measurements shall be performed during continuously transmitting .

p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], proprietary, etc.):

Bluetooth® .

q) If applicable, the statistical analysis referred to in clause 5.3.1 q)

(to be provided as separate attachment)

r) If applicable, the statistical analysis referred to in clause 5.3.1 r)

(to be provided as separate attachment)

s) Geo-location capability supported by the equipment:

☐ Yes
☐ The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user.

☒ No

EXHIBIT B- CE PRODUCT LABELING

CE Label Format

CE1313

Specifications: The marking set out above must be affixed to the apparatus or to its data plate and have a minimum height of 5 mm. The elements should be easily readable and indelible. They may be placed anywhere on the apparatus case or in its battery compartment. No tool should be needed to view the marking.
1313: 4 digit notified body number

Note: The label should contain the below content

① The name of the manufacturer or the person responsible for placing the apparatus on the market
② Type
③ Batch and/or serial numbers

Proposed Label Location on EUT

Model: Xylo Q

Model: Xylo X

EXHIBIT C- EUT PHOTOGRAPHS

Model: Xylo Q

EUT – Front View

EUT – Rear View

EUT – Top View

EUT – Bottom View

EUT –Left Side View

EUT – Right Side View

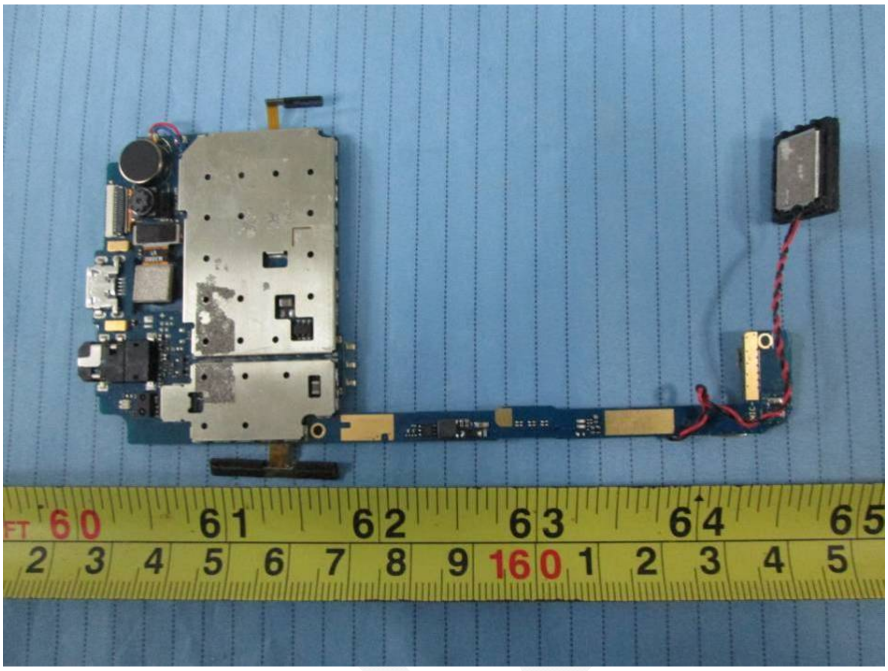
EUT –Cover off View 1

EUT –Cover off View 2

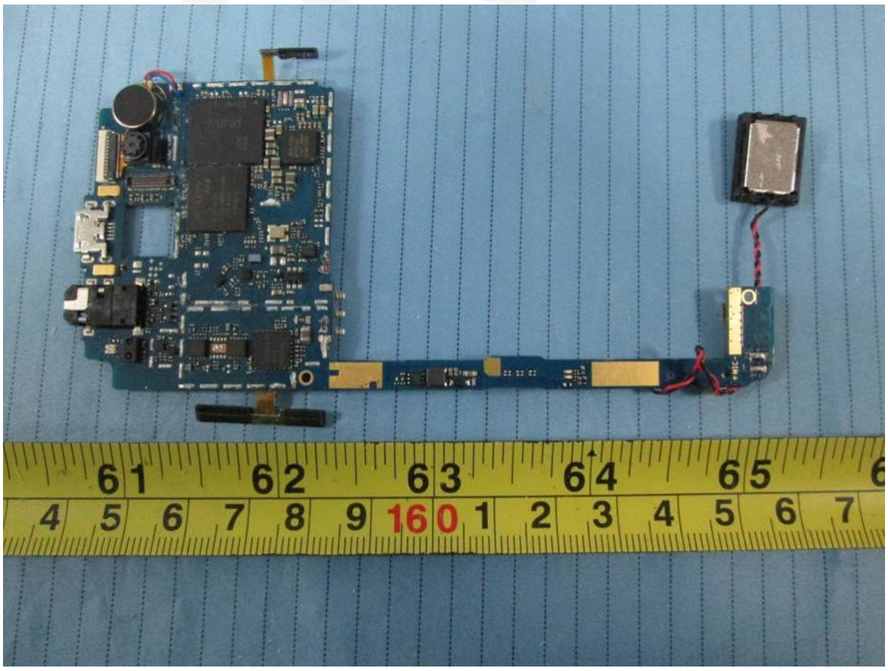
EUT –Cover off View 3

EUT –Cover off View 4

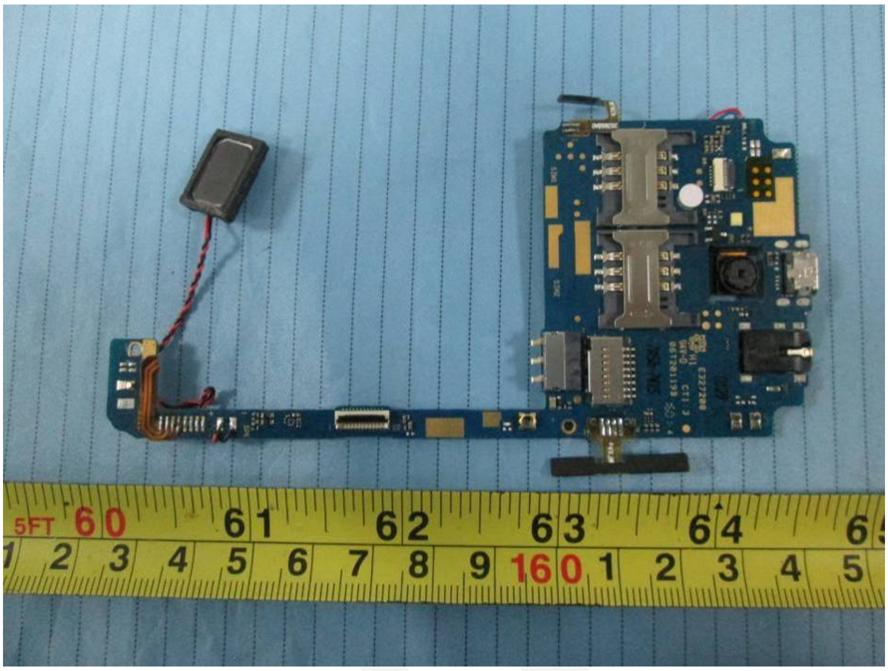
EUT – Main Board Top View



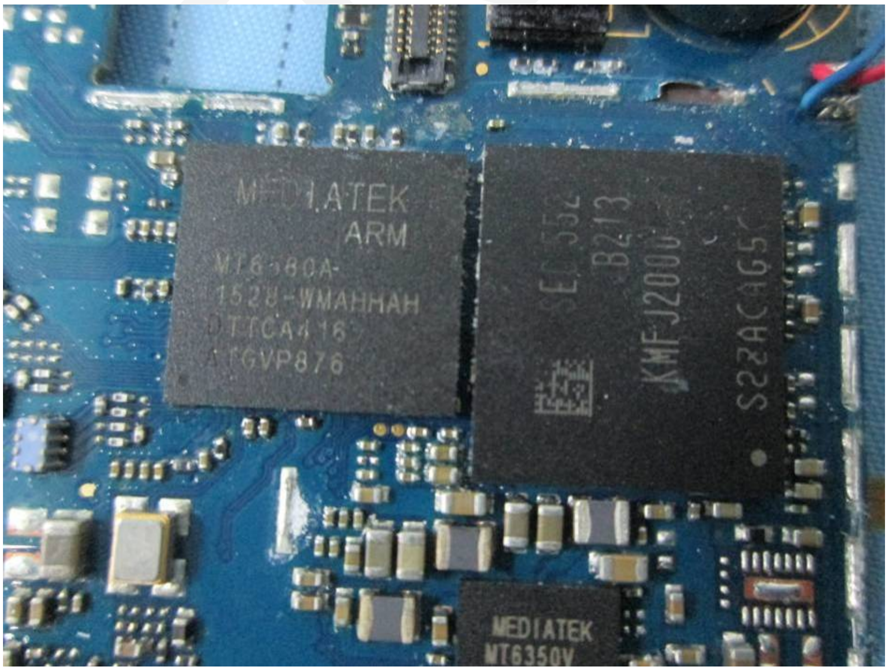
EUT – Main Board Top Shielding off View



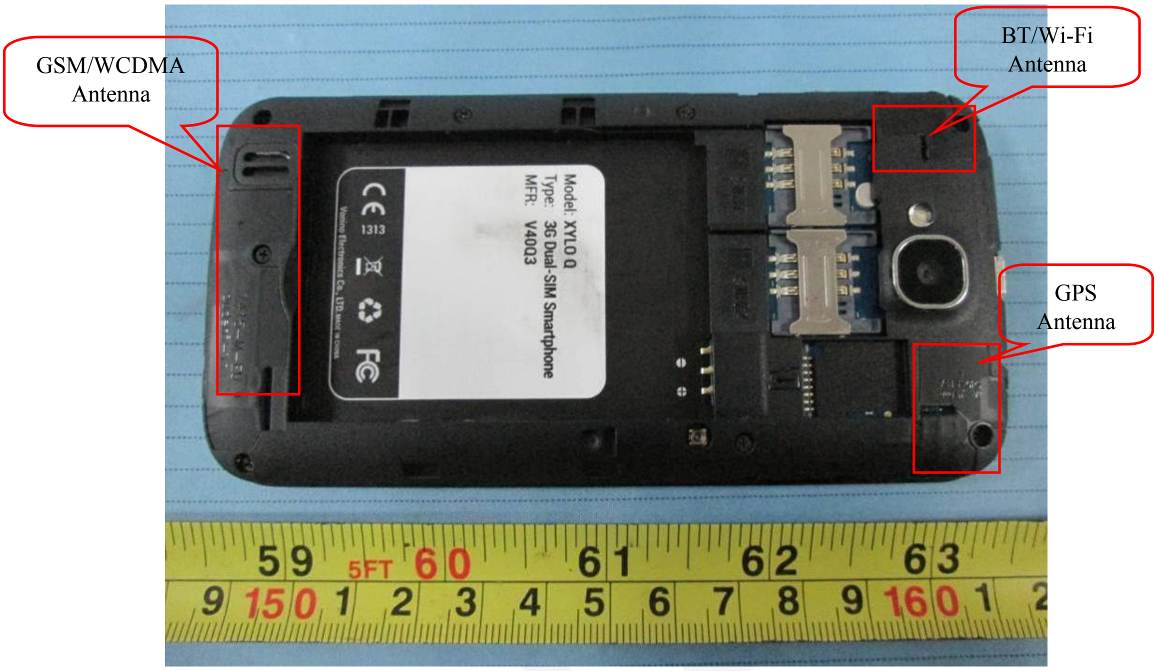
EUT – Main Board Bottom View



EUT – IC Chip View

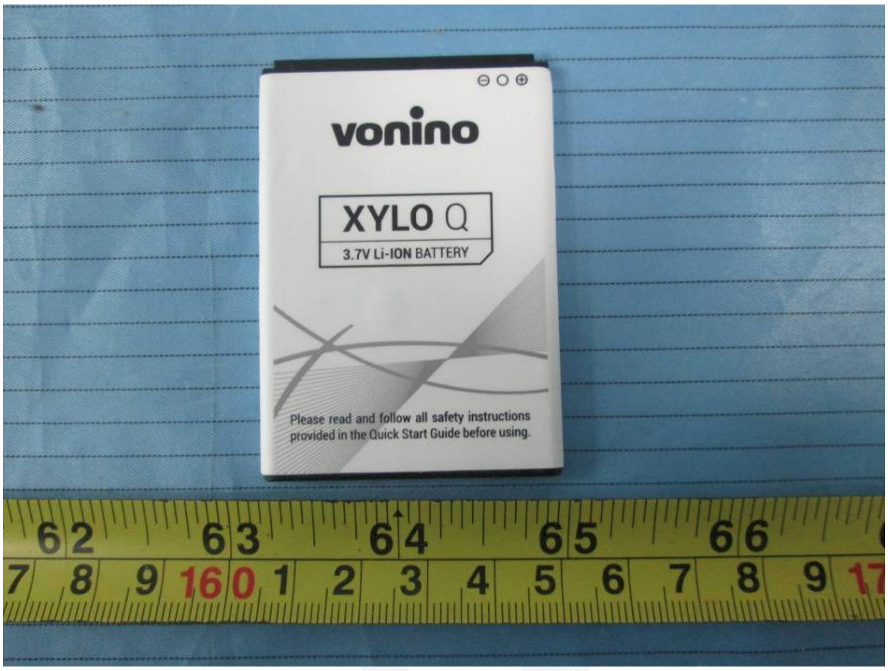


EUT – Antenna View



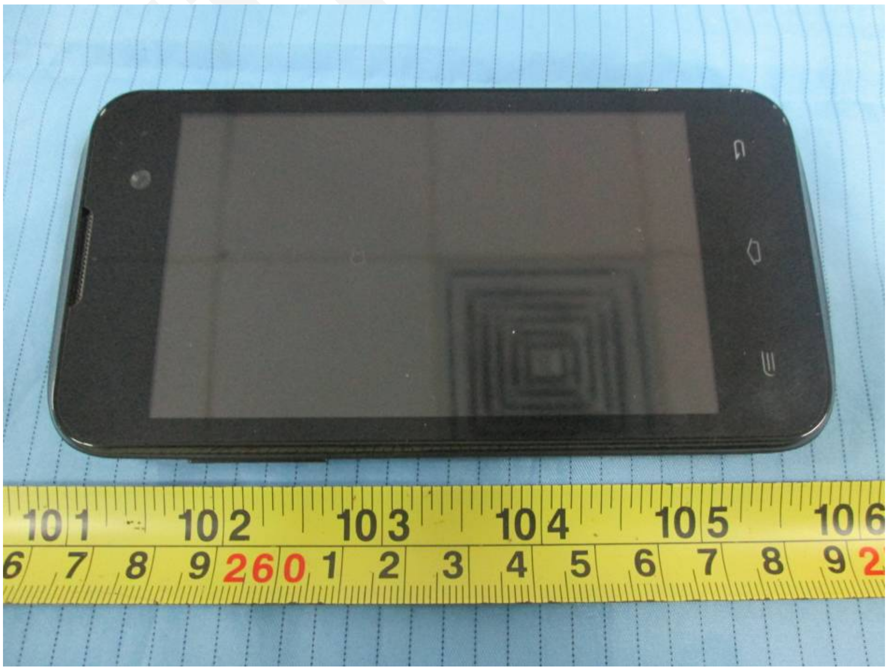
EUT – Battery Top View

EUT – Battery Bottom View



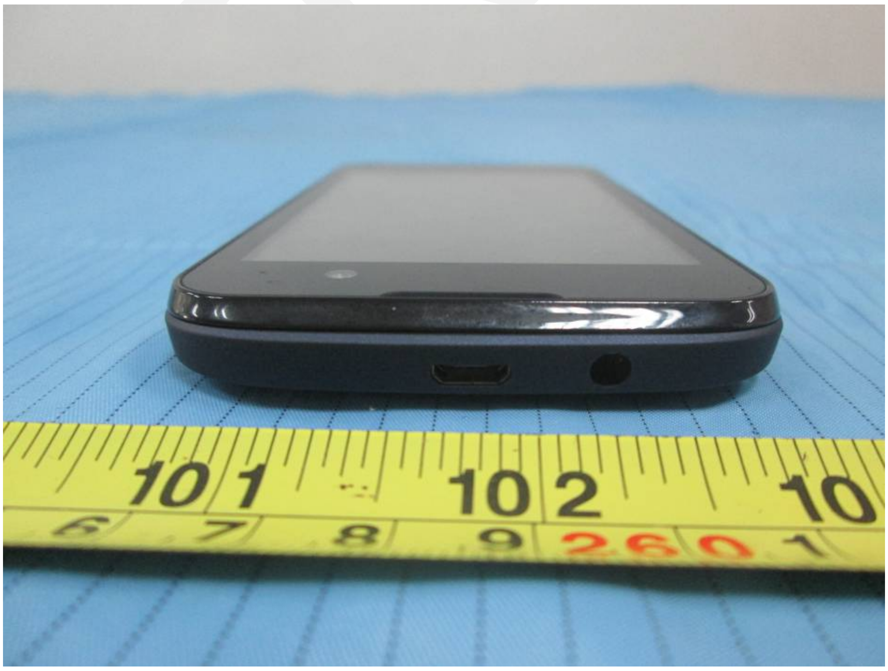
Model: Xylo X

EUT – Front View

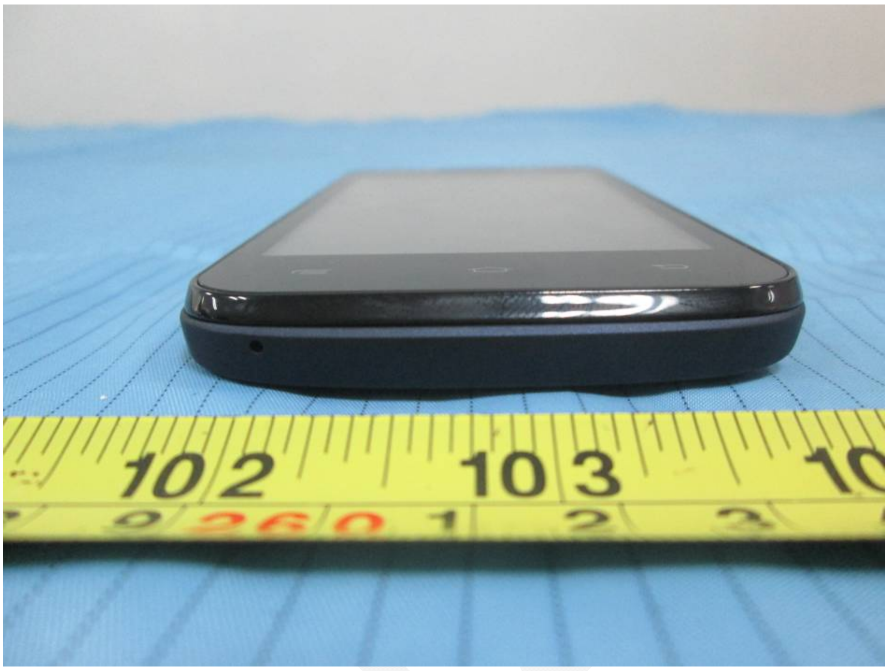


EUT – Rear View

EUT – Top View



EUT – Bottom View



EUT –Left Side View

EUT – Right Side View

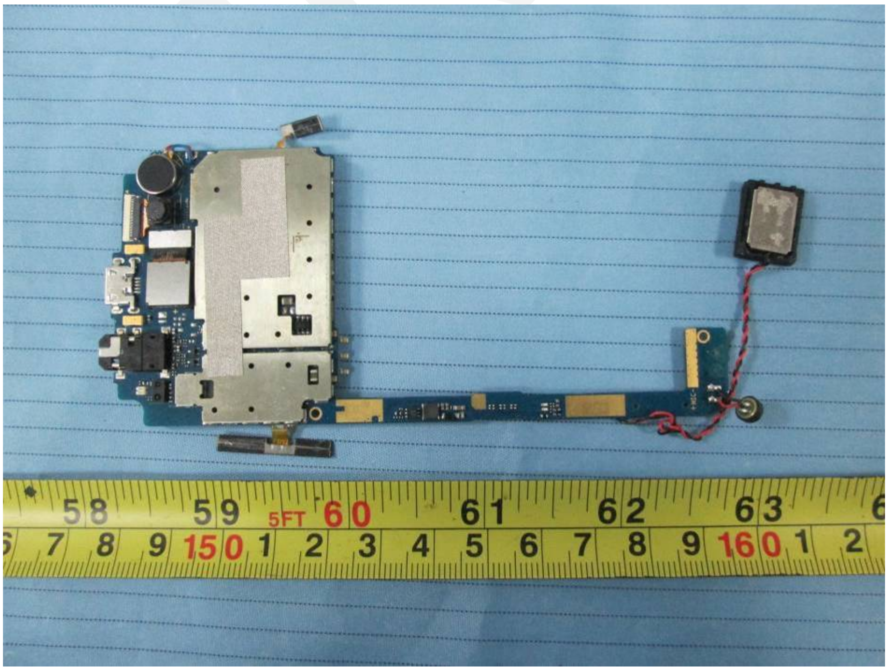
EUT –Cover off View 1

EUT –Cover off View 2

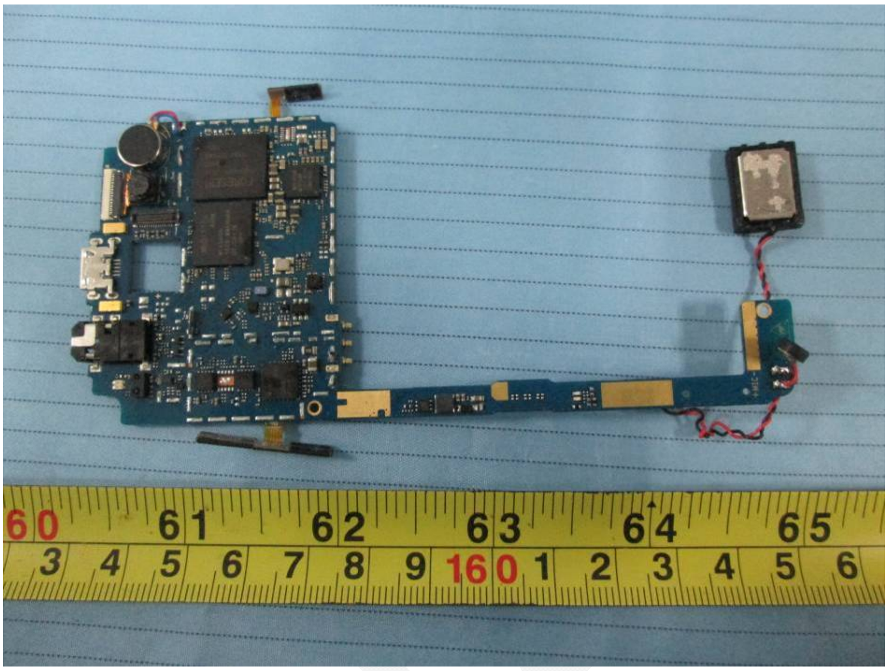
EUT –Cover off View 3

EUT –Cover off View 4

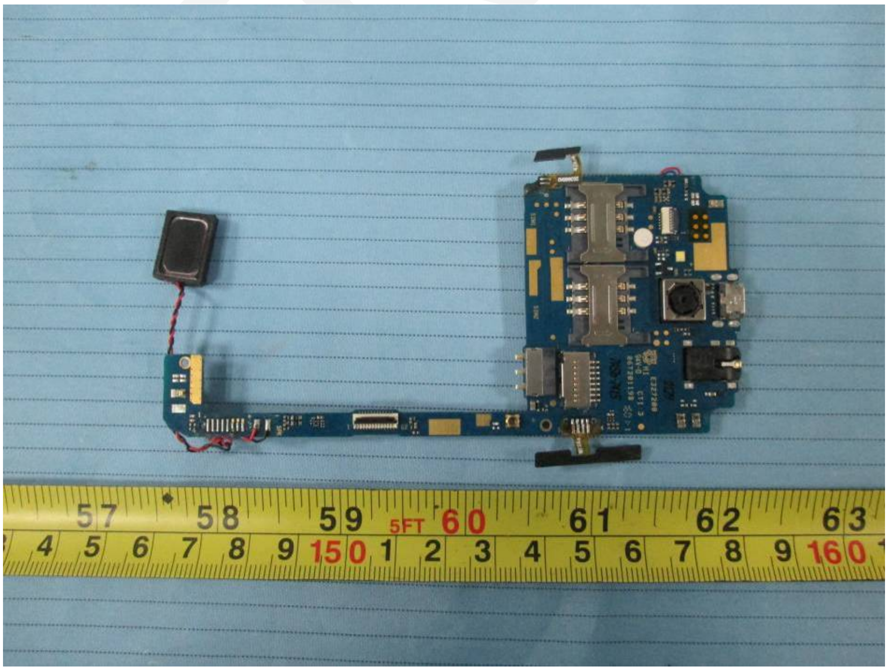
EUT – Main Board Top View



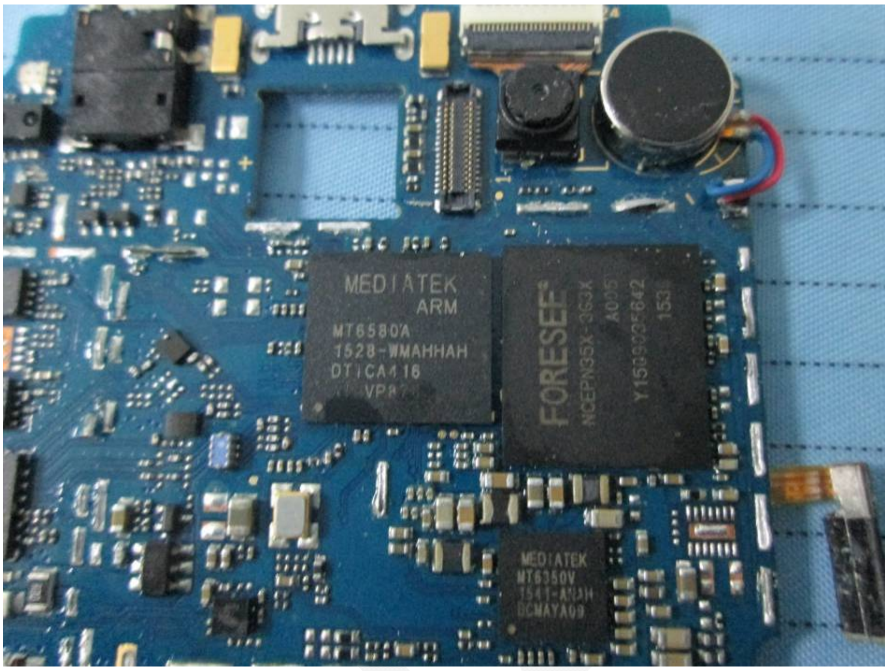
EUT – Main Board Top Shielding off View



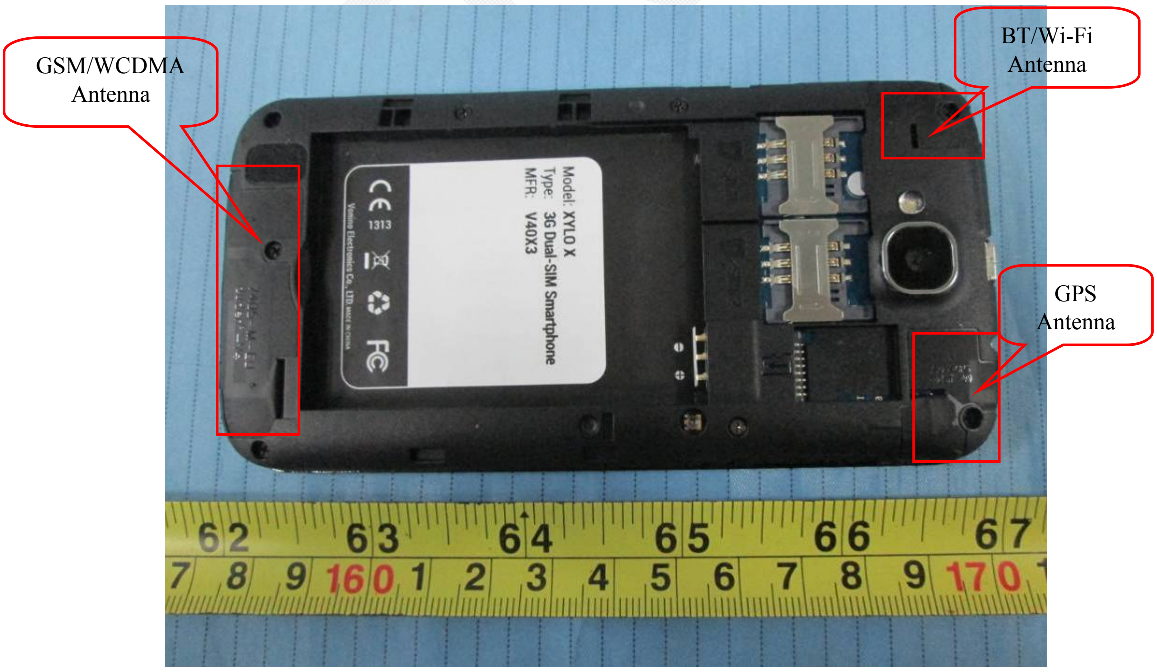
EUT – Main Board Bottom View



EUT – IC Chip View



EUT – Antenna View



EUT – Battery Top View

EUT – Battery Bottom View

EXHIBIT D– TEST SETUP PHOTOGRAPHS

Radiated Spurious Emissions View (Below 1 GHz)

Radiated Spurious Emissions View (Above 1 GHz)

PRODUCT SIMILARITY DECLARATION LETTER

Advanced Technologies SRL
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Tel: +40 (21) 569 85 33/34 Fax: +40 (31) 814 61 12
E-mail: marius.chirca@advanced.ro

2016-3-30

Product Similarity Declaration

To Whom It May Concern,

We, Advanced Technologies SRL, hereby declare that we have a product named as Smartphone Xylo (Model number: Xylo Q) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series models (Xylo X) on reports and certificate, the difference of these models is the memory of flash, since the model Xylo Q is 512M and Xylo X is 1G. The pixels of camera are different since Xylo Q is equipped with 200W and Xylo X is equipped with 500W. No other changes are made to them.
We confirm that all information above is true, and we'll be responsible for all the consequences.
Please contact me if you have any question.

Signature:
Marius
Purchasing Manager

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