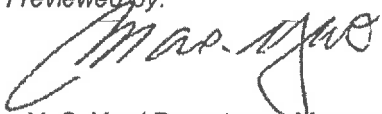


Prüfbericht-Nr.: Test Report No.:	16070909 001	Auftrags-Nr.: Order No.:	174039755	Seite 1 von 65 Page 1 of 65
Kunden-Referenz-Nr.: Client Reference No.:	440253	Auftragsdatum: Order date.:	30 Sep, 2015	
Auftraggeber: Client:	Dongguan Alllike Electronics Co., Ltd. Chuanacha Development Zone, Machong Town 523141 P.R. China			
Prüfgegenstand: Test item:	Mini Audio Shelf System With Bluetooth	FCC ID: FCC ID:	BUQMP910	
Bezeichnung / Typ-Nr.: Identification / Type No.:	DX-SH115			
Auftrags-Inhalt: Order content:	TUV Rheinland - EMC service			
Prüfgrundlage: Test specification:	FCC Part 15: 2014-10 Subpart C section 15.207, 15.209 and 15.247 ANSI C63.10: 2013			
Wareneingangsdatum: Date of receipt:	19 Sep, 2015			
Prüfmuster-Nr.: Test sample No.:	174039755-001			
Prüfzeitraum: Testing period:	Refer to test report			
Ort der Prüfung: Place of testing:	Refer to section 2.1			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Guangdong) Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
 18 Jan 2016 Amy Wang / Project Engineer		 27 Jan. 2016 Max Y. C. Yao / Department Manager		
Datum Date	Name/Stellung Name/Position	Unterschrift Signature	Datum Date	Name/Stellung Name/Position
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged:		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) Legend: 1 = very good 2 = good 3 = satisfactory P(ass) = passed a.m. test specifications(s) F(ail) = failed a.m. test specifications(s)		4 = ausreichend 5 = mangelhaft N/A = nicht anwendbar N/T = nicht getestet 4 = sufficient 5 = poor N/A = not applicable N/T = not tested		
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: *Passed*

5.1.2 PEAK OUTPUT POWER

RESULT: *Passed*

5.1.3 CONDUCTED POWER SPECTRAL DENSITY

RESULT: *Pass*

5.1.4 6dB BANDWIDTH

RESULT: *Pass*

5.1.5 20dB BANDWIDTH

RESULT: *Pass*

5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH

RESULT: *Passed*

5.1.7 SPURIOUS EMISSION

RESULT: *Passed*

5.1.8 FREQUENCY SEPARATION

RESULT: *Passed*

5.1.9 NUMBER OF HOPPING FREQUENCY

RESULT: *Passed*

5.1.10 TIME OF OCCUPANCY

RESULT: *Passed*

5.2.1 MAINS CONDUCTED EMISSIONS

RESULT: *Passed*

6.1.1 ELECTROMAGNETIC FIELDS

RESULT: *Passed*

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test result

2 Test Sites

2.1 Test Facilities

GUANGZHOU GRG METEROLOGY & TEST TECHNOLOGY CO.,LTD

163 Ping Yun Rd, West of HuangPu Ave, Guangzhou, Guangdong, P.R.China

FCC Registration No. 688188

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Type	Manufacturer	S/N	Last Cal	Calibrated Interval
Spectrum Analyzer	FSV30	Rohde & Schwarz	103246	2015/3/10	1 year
Soft Version	2.30 SP1	Rohde & Schwarz	N/A	N/A	N/A
Signal Generator	SMB100A	Rohde & Schwarz	109290	2015/4/30	1 year
Trilog-Broadband Antenna	3142C	ETS.LINDGREN	00075971	2014/4/19	2 years
Double-Ridged Waveguide Horn Antenna	BBHA9120D	Schwarzbeck	D752	2015/3/5	2 years
Loop antenna	HFH2-Z2	Rohde & Schwarz	881058	2015/4/17	1 year
Pre-amplifier	9742	Amideon	332	2015/9/15	1 years
Per-Amplifier (0.1-26.5GHz)	PAP-0126	Compliance Directions systems Inc.	25002	2016-01-03	2 years
Standard Gain Horn Antenna	BBHA9170	Schwarzbeck	411	2014/12/23	2 years
EMI Test Receiver	ESU26	Rohde & Schwarz	100526	2015/3/10	1 year
Soft Version	4.73 SP1	Rohde & Schwarz	N/A	N/A	N/A
L.I.S.N	NSLK 8127	SCHWARZBECK	8127450	2016-08-18	2 years

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

Parameter	Uncertainty
Uncertainty for Conduction emission test	2.40dB
Uncertainty for spurious emissions test (30MHz-1GHz)	4.40 dB
Uncertainty for spurious emissions test (1GHz to 18GHz)	4.40 dB
Uncertainty for radio frequency	6.4×10 ⁻⁹
Uncertainty for conducted RF Power	0.50dB
Uncertainty for radio frequency	± 0.2 °C

The reported expanded uncertainty is based on a standard uncertainty multiply by a coverage factor k=2, providing a level of confidence of approximately 95%.

2.6 Location of original data

The original copies of test data taken during actual testing were attached at Appendix 1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Guangdong) file for certification follow-up purposes.

2.7 Status of facility used for testing

GUANGZHOU GRG METEROLOGY & TEST TECHNOLOGY CO.,LTD
163 Ping Yun Rd, West of HuangPu Ave, Guangzhou, Guangdong, P.R.China
FCC Registration No. 688188

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a “Mini Audio Shelf System With Bluetooth” with Bluetooth 4.0 dual mode, which is intended to enable Bluetooth connectivity with Notebook or smart phone, and play the music from Bluetooth device.

All configurations are tested but only the worst case is reported.
For more details refer to the Technical Documentation or User manual.
All configurations are tested but only the worst case is reported.

3.2 Ratings and System Details

Table 2: Rating of EUT

Kind of Equipment	Mini Audio Shelf System With Bluetooth
Type Designation	DX-SH115
FCC ID	BUQMP910

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Table 3: Technical Specification of Bluetooth

Technical Specification	Value	
Kind of Equipment	Mini Audio Shelf System With Bluetooth	
Type Designation	DX-SH115	
Operating Frequency band	2402 – 2480 MHz	
Extreme Temperature Range	+5°C to +35°C	
Operation Voltage	AC120V, 60Hz	
Modulation	BDR mode	GFSK
	EDR mode	8DPSK, $\pi/4$ DQPSK
	Low Energy mode	GFSK
Number of Channel	BDR &EDR mode:79 channels; Low Energy mode:40 channels	
Channel Spacing	BDR &EDR mode:1MHz; Low Energy mode: 2MHz	
Bluetooth Core Version	Bluetooth 4.0 (Dual mode)	
Antenna Type	Internal Antenna, Non-User Replaceable	
Antenna Gain	0 dBi	

Table 4: RF channel and frequency of Bluetooth (BDR & EDR mode)

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402.00	20	2422.00	40	2442.00	60	2462.00
1	2403.00	21	2423.00	41	2443.00	61	2463.00
2	2404.00	22	2424.00	42	2444.00	62	2464.00
3	2405.00	23	2425.00	43	2445.00	63	2465.00
4	2406.00	24	2426.00	44	2446.00	64	2466.00
5	2407.00	25	2427.00	45	2447.00	65	2467.00
6	2408.00	26	2428.00	46	2448.00	66	2468.00
7	2409.00	27	2429.00	47	2449.00	67	2469.00
8	2410.00	28	2430.00	48	2450.00	68	2470.00
9	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	78	2480.00
19	2421.00	39	2441.00	59	2461.00	/	/

Table 5: RF channel and frequency of Bluetooth low energy

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402.00	10	2422.00	20	2442.00	30	2462.00
1	2404.00	11	2424.00	21	2444.00	31	2464.00
2	2406.00	12	2426.00	22	2446.00	32	2466.00
3	2408.00	13	2428.00	23	2448.00	33	2468.00
4	2410.00	14	2430.00	24	2450.00	34	2470.00
5	2412.00	15	2432.00	25	2452.00	35	2472.00
6	2414.00	16	2434.00	26	2454.00	36	2474.00
7	2416.00	17	2436.00	27	2456.00	37	2476.00
8	2418.00	18	2438.00	28	2458.00	38	2478.00
9	2420.00	19	2440.00	29	2460.00	39	2480.00

3.3 Independent Operation Modes

The basic operation modes are:

A. On,

1. Bluetooth mode (BDR mode)

a. Transmitting

1) Low Channel

2) Middle Channel

3) High Channel

b. Receiving

2. Bluetooth mode (EDR mode)

a. Transmitting

1) Low Channel

2) Middle Channel

3) High Channel

b. Receiving

3. Bluetooth mode (Low Energy mode)

a. Transmitting

1) Low Channel

2) Middle Channel

3) High Channel

b. Receiving

B. On, Transmitting on Hopping channel

C. Off

D. Playing form CD

E. Playing form AUX input

F. Playing form USB

G. FM

1. Low channel

2. Middle channel

3. High channel

H. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

1. Block Diagram
2. Circuit Diagram
3. Operation Description
4. PCB Layout
5. BOM
6. FCC label and location
7. User Manual
8. Internal Photos
9. External Photos
10. Application form

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level.
The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5.
All testing were performed according to the procedures in ANSI C63.10: 2014.

4.3 Special Accessories and Auxiliary Equipment

Kind of Equipment	Manufacturer	Model Name	S/N
Notebook	Lenovo	E46A	EB24320428
IPhone	Apple	A1586	/

4.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the technical document. No additional measures were employed to achieve compliance.

4.5 Test set-up

Diagram of Measurement Configuration for Radiation Test(Below 1GHz)

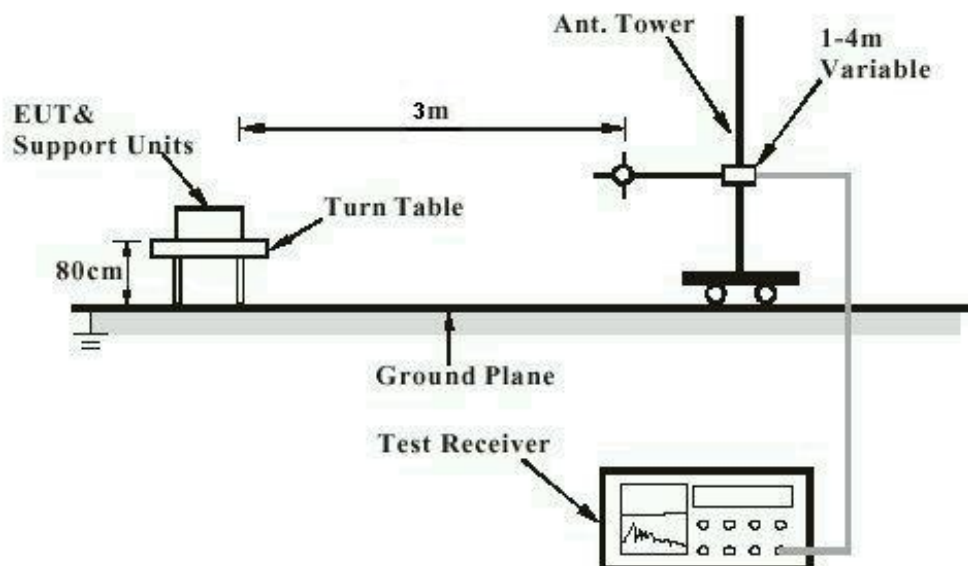


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

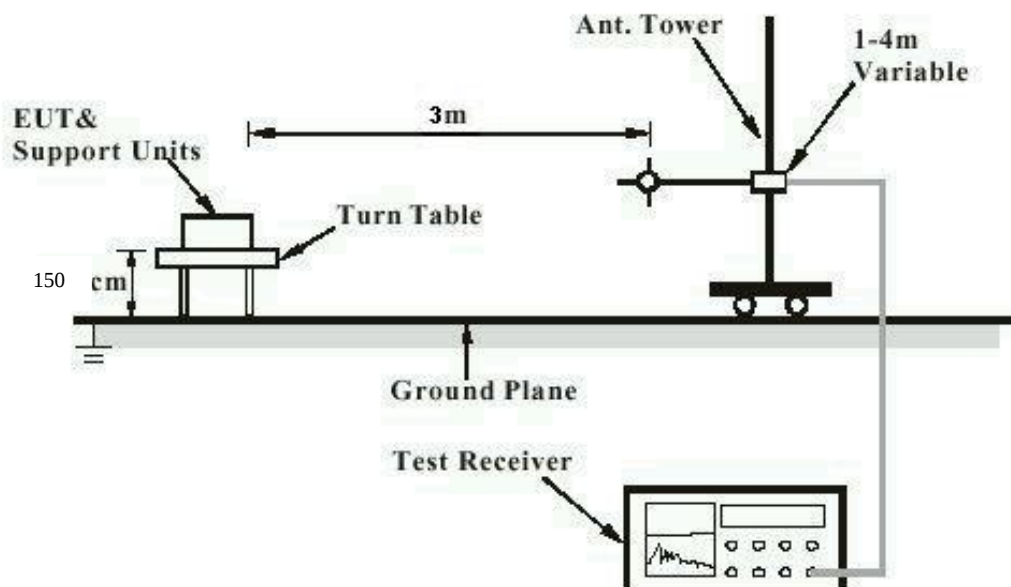


Diagram of Measurement Equipment Configuration for Conducted Transmitter Measurement

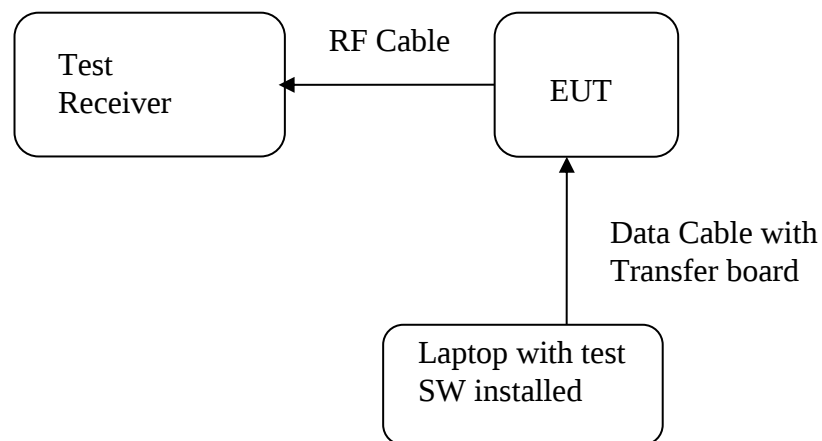
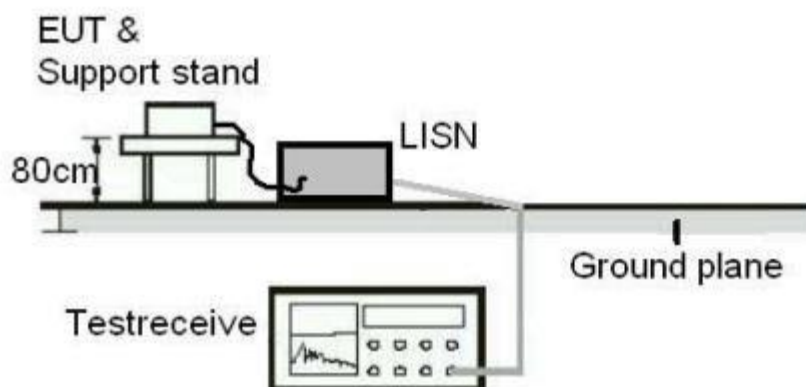


Diagram of Measurement Configuration for Mains Conduction Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:

Passed

Test Specification

Test standard	: FCC Part 15.247(b)(4) and Part 15.203
Limits	: the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement.

Therefore the EUT is considered sufficient to comply with the provision.

For more details, refer to EUT photo.

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5.1.2 Peak Output Power

RESULT:

Passed

Test Specification

Test standard	: FCC Part 15.247(b)(1) & (b)(3)
Basic standard	: ANSI C63.10: 2013
Limits	: BDR/ EDR: <0.125 Watts Low Energy: <1.0 Watts
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 15 Sep, 2015
Power supply	: 120Vac, 60Hz
Operation mode	: A (See 3.3)
Test channel	: Low / Middle / High
Ambient temperature	: 22-26 °C
Relative humidity	: 50-65 %
Atmospheric pressure	: 100-103 kPa

Table 6: Test result of Peak Output Power, BDR

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-1.890	0.00065	0.125
Middle Channel	2441	-0.050	0.00099	0.125
High Channel	2480	0.990	0.00126	0.125

Table 7: Test result of Peak Output Power, EDR

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-3.910	0.00041	0.125
Middle Channel	2441	-0.870	0.00082	0.125
High Channel	2480	0.250	0.00106	0.125

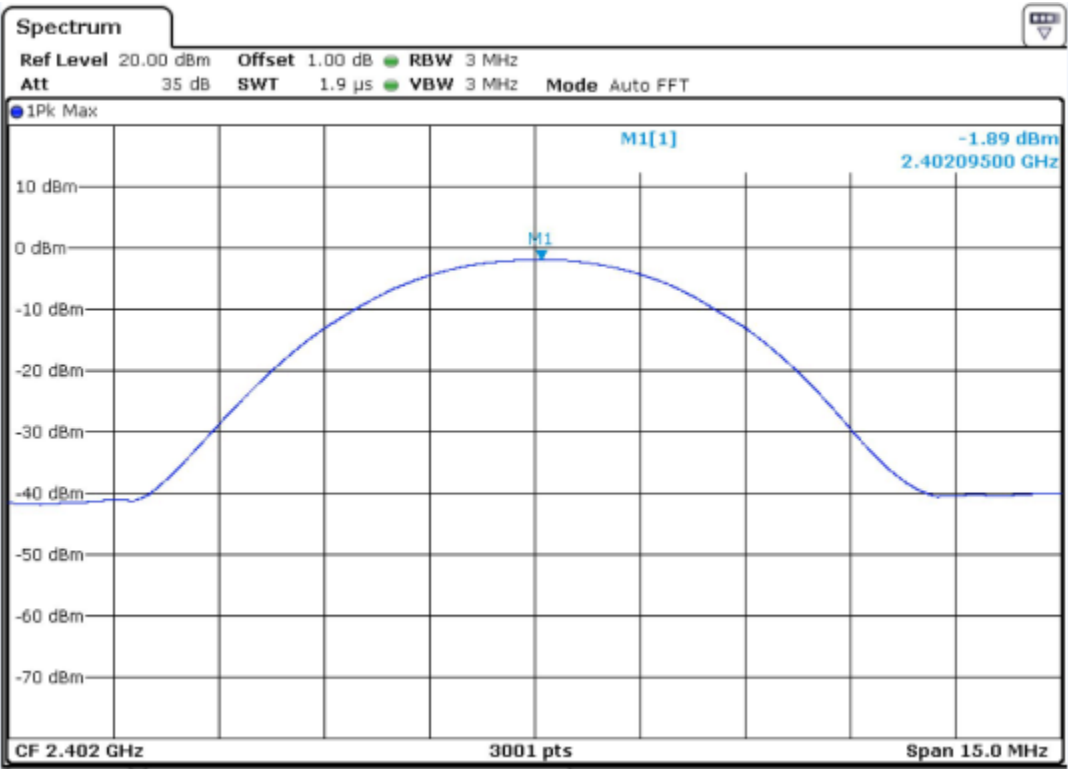
Table 8: Test result of Peak Output Power, Low Energy

Channel	Channel Frequency (MHz)	Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-1.950	0.00064	1
Middle Channel	2441	0.020	0.00100	1
High Channel	2480	0.960	0.00125	1

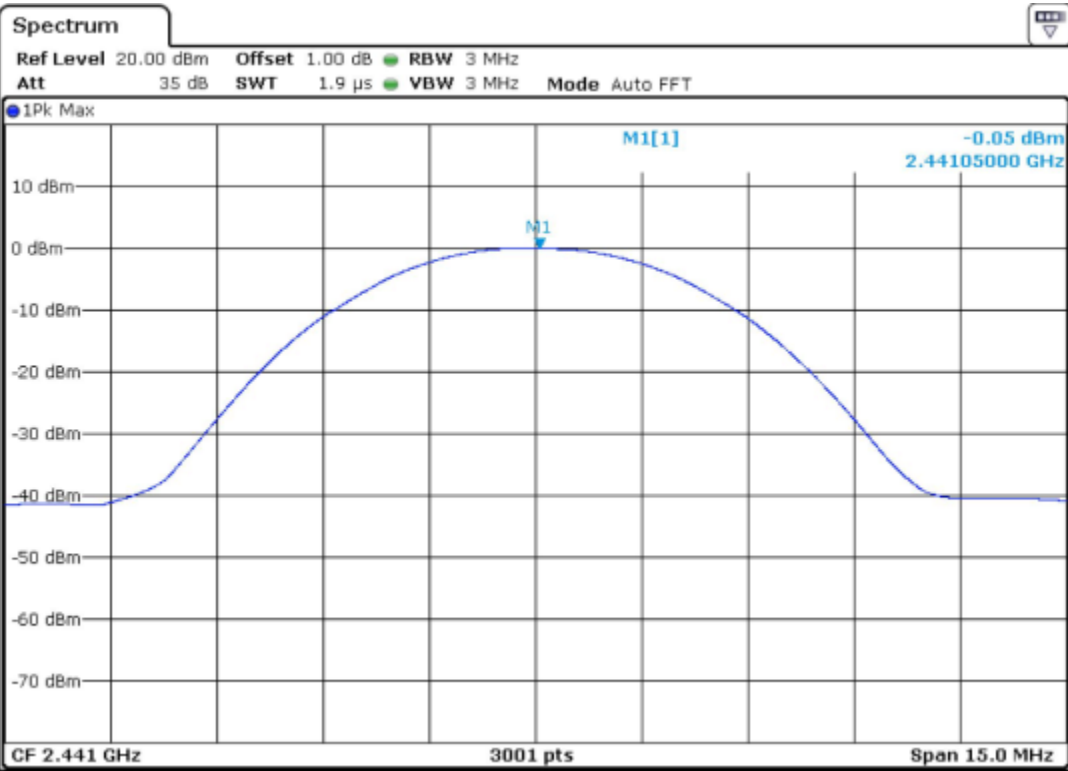
Maximum Measured Value: 0.990 dBm (0.00126W).

For the measurement records, refer to following test plot:

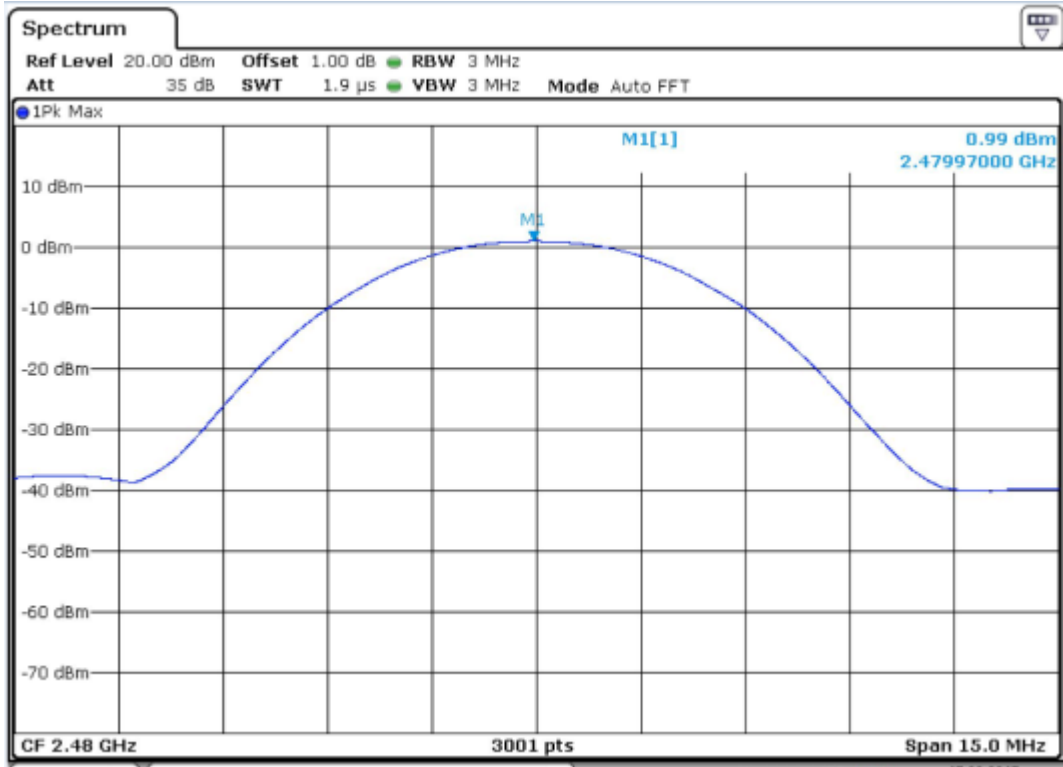
Test Plot of Peak Conducted Output Power, BDR
Low channel:



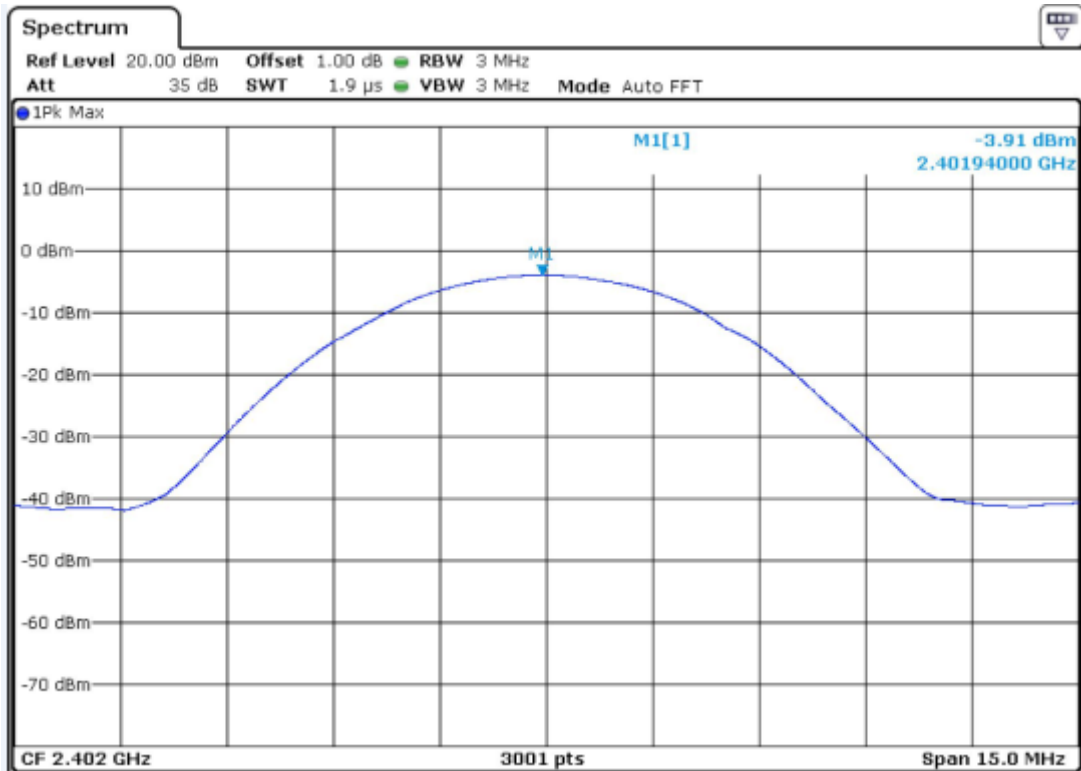
Middle channel:



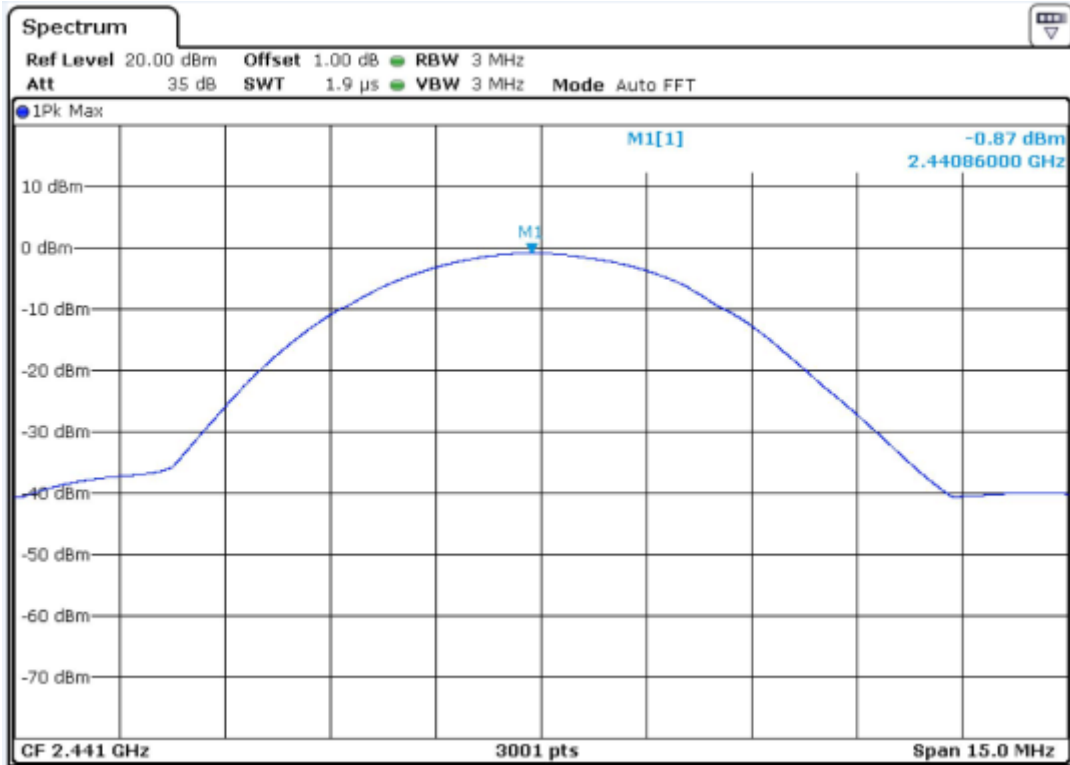
High channel:



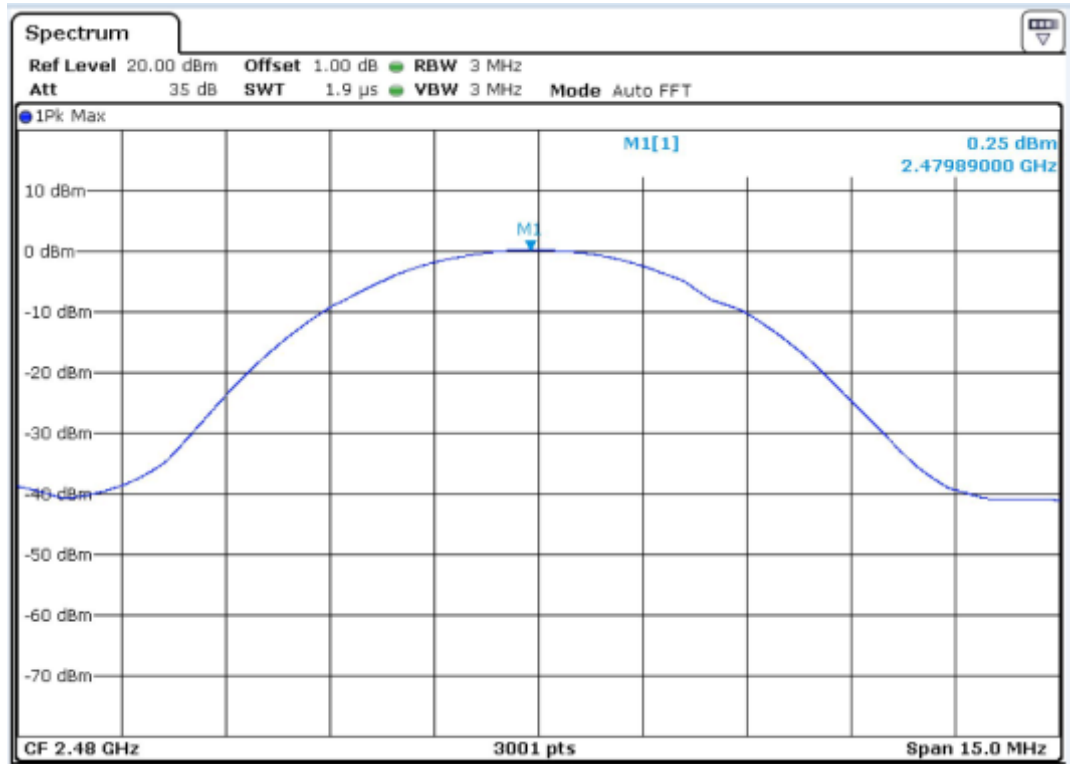
Test Plot of Peak Conducted Output Power, EDR
Low channel:



Middle channel:



High channel:

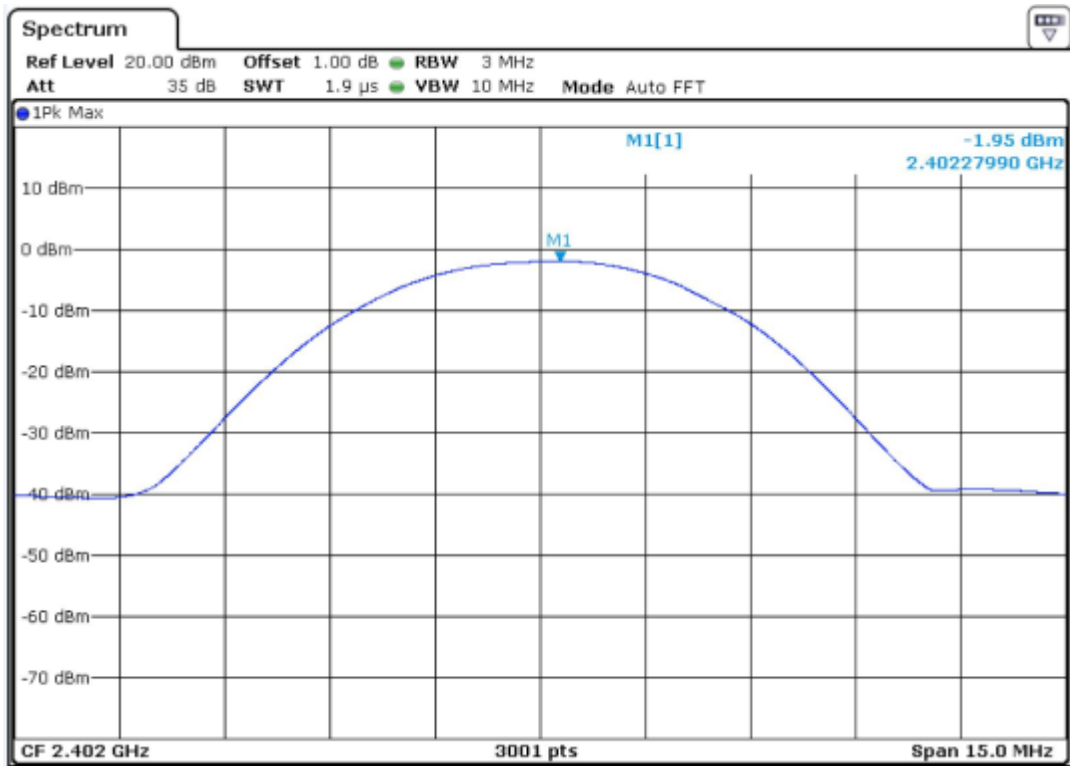


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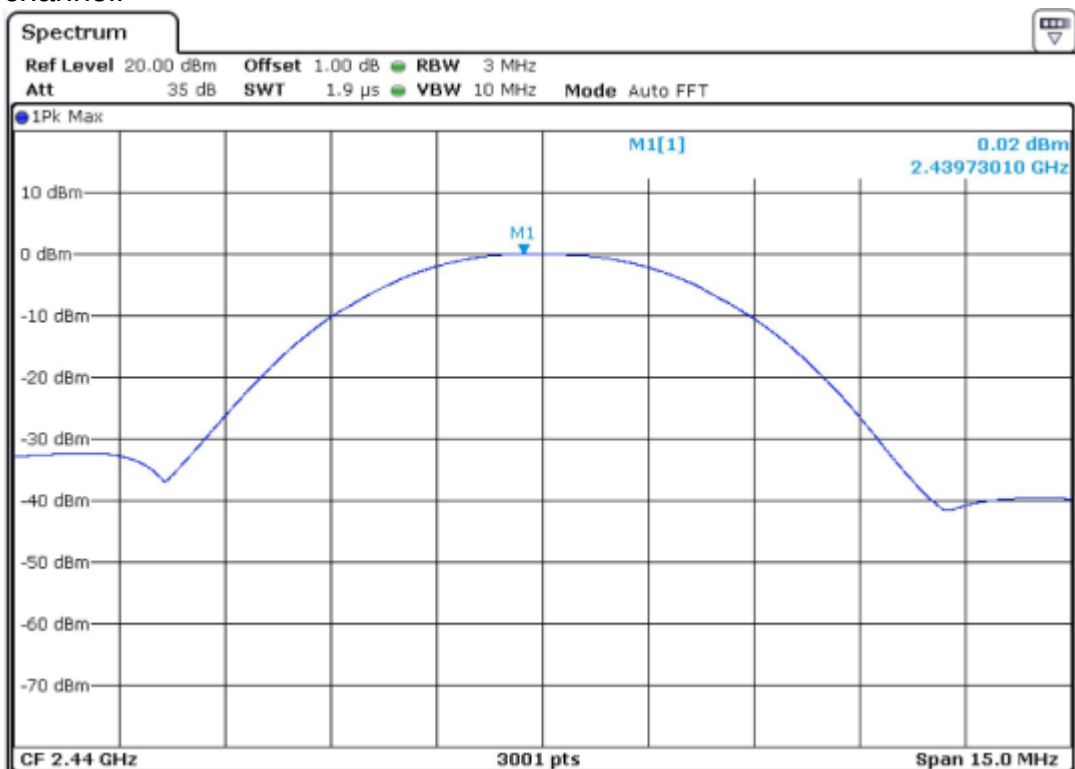
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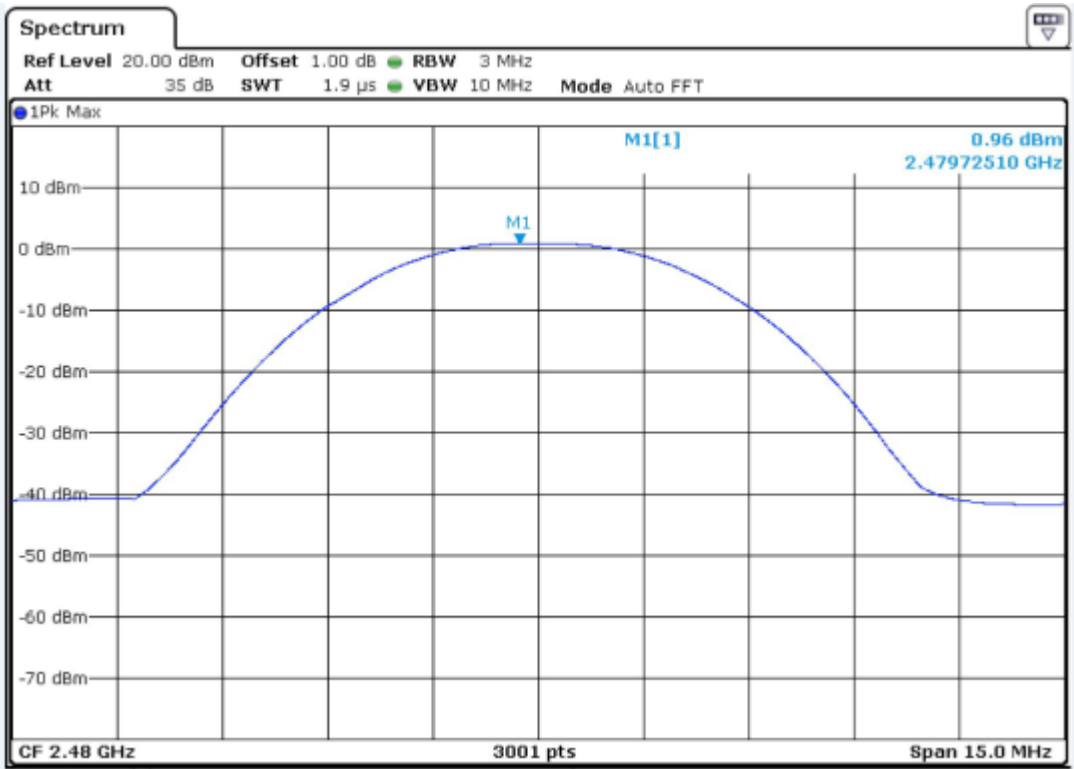
Test Plot of Peak Conducted Output Power, Low Energy
Low channel:



Middle channel:



High channel:



5.1.3 Conducted Power Spectral Density

RESULT:

Pass

Test standard : FCC Part 15.247(e)
RSS-247 Clause 5.2(2)
Basic standard : ANSI C63.10: 2013
Limit : <8dBm/3kHz
Kind of test site : Shielded room

Test setup

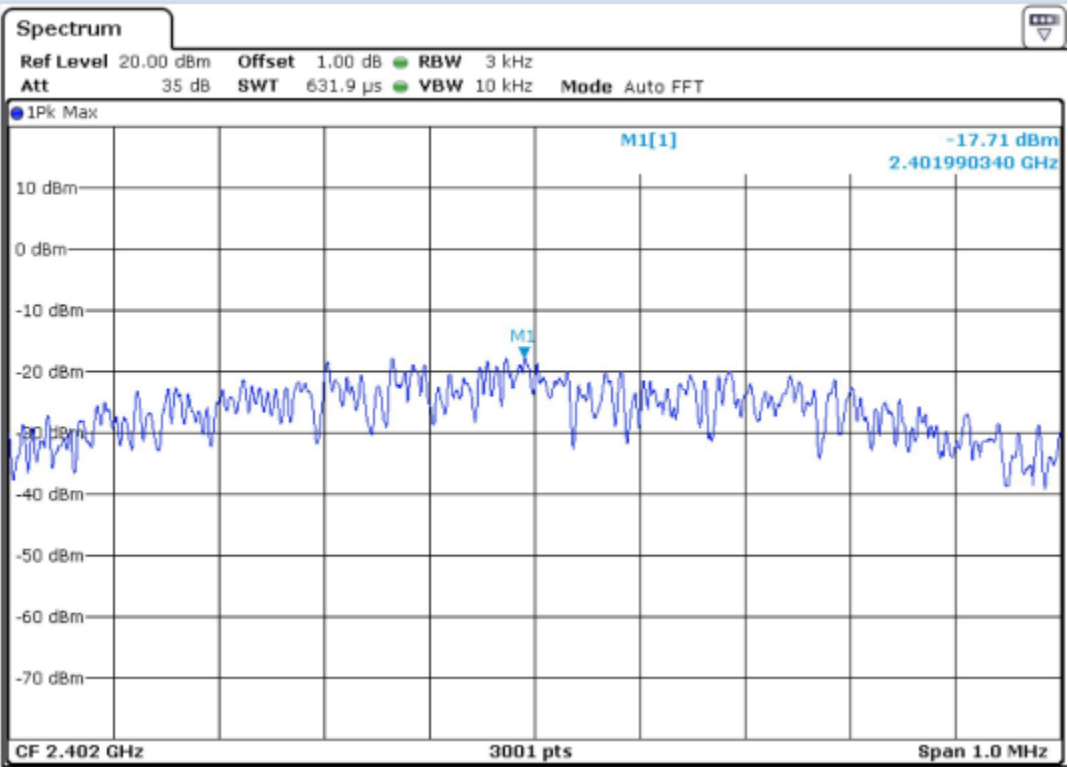
Test date : 15 Sep, 2015
Test Channel : Low/ Middle/ High
Operation Mode : A.3 (see 3.3)
Ambient temperature : 23.2°C
Relative humidity : 56.0%
Atmospheric pressure : 101 kPa

Table 9: Test result of Power Spectral Density, Low Energy

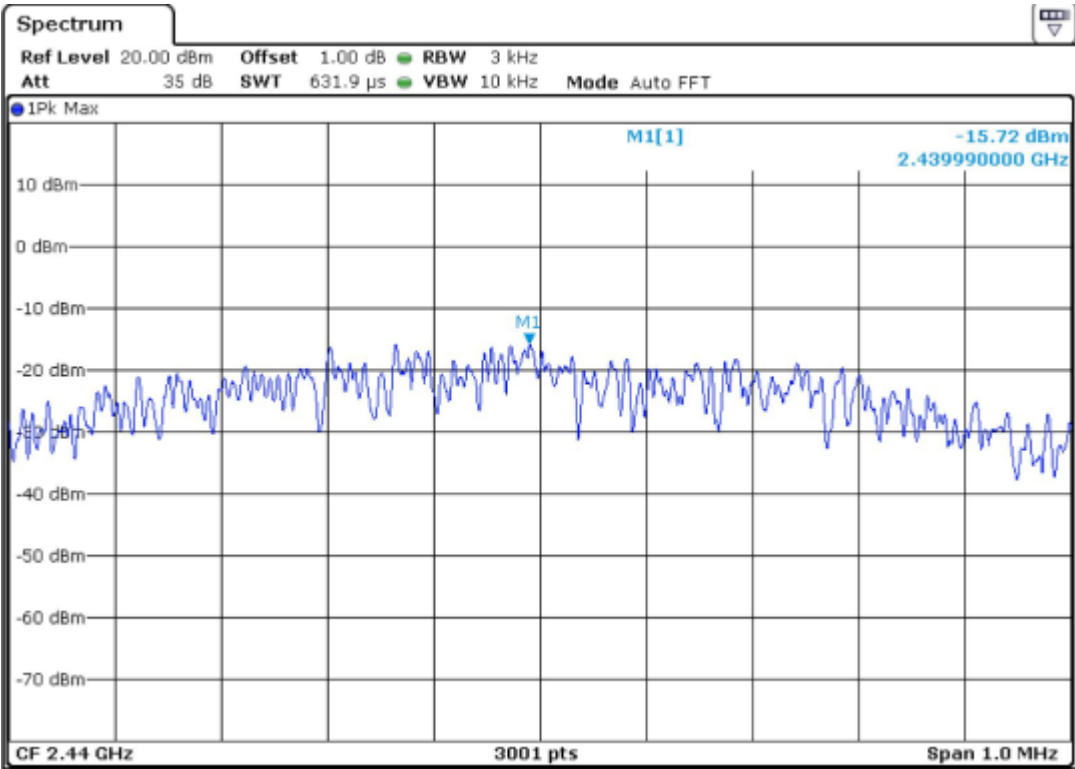
Channel	Channel Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2402	-17.71	8
Middle Channel	2440	-15.72	8
High Channel	2480	-14.65	8

For the measurement records, refer to following test plot:

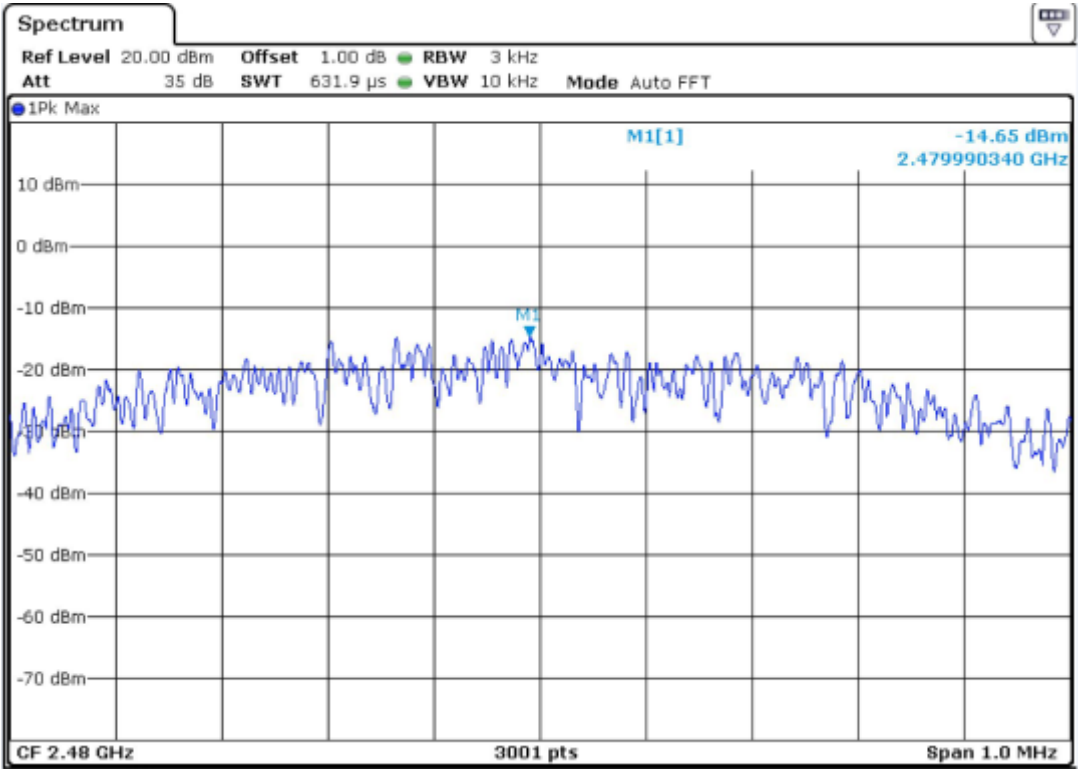
Test Plot of Power Spectral Density, Low Energy
Low channel:



Middle channel:



High channel:



5.1.4 6dB Bandwidth

RESULT:

Pass

Test standard : FCC Part 15.247(a)(2)
RSS-247 Clause 5.2(1)
Basic standard : ANSI C63.10: 2013
Kind of test site : Shielded room

Test setup

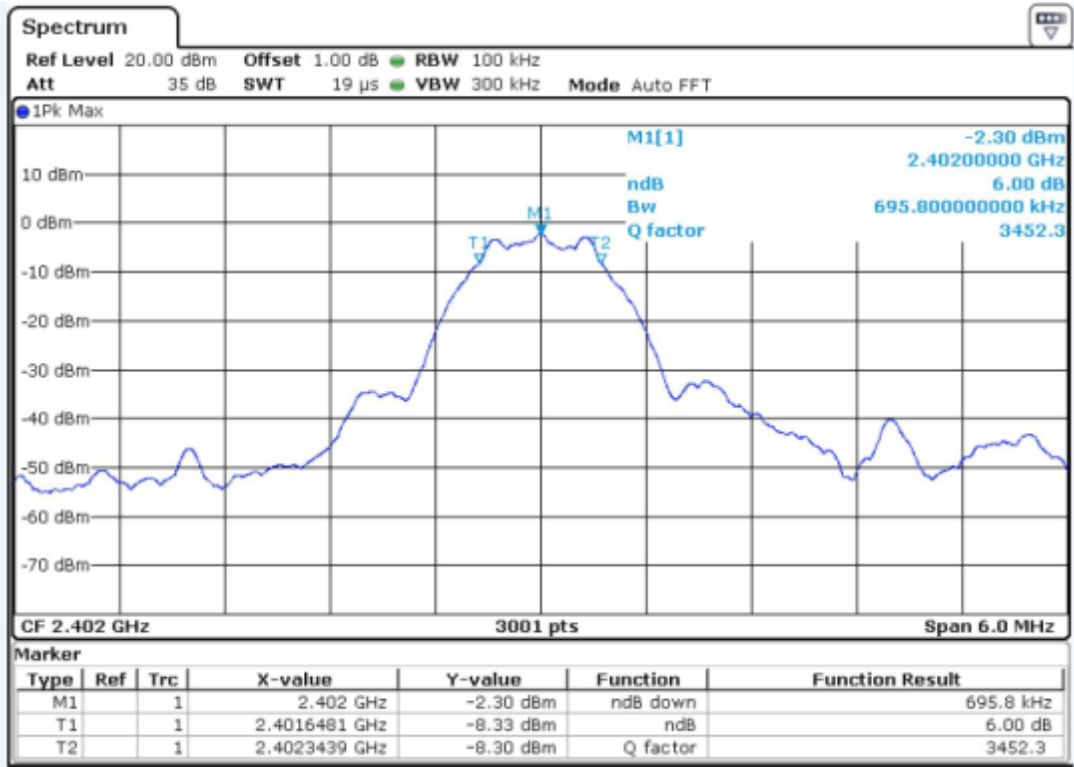
Date of testing : 15 Sep, 2015
Test Channel : Low/ Middle/ High
Operation Mode : A.3 (see 3.3)
Ambient temperature : 22-26 °C
Relative humidity : 50-65 %
Atmospheric pressure : 100-103 kPa

Table 10: Test result of 6dB Bandwidth, Low Energy

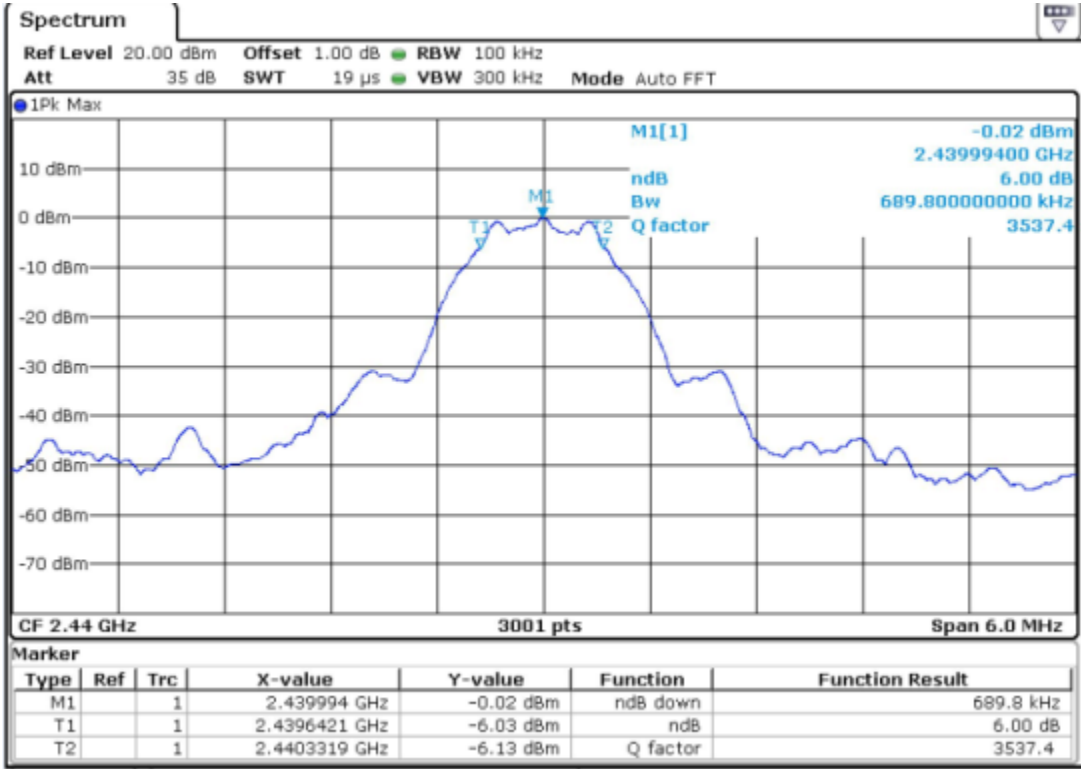
Channel	Channel Frequency (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)	Result
Low Channel	2402	696	500	Pass
Mid Channel	2440	690	500	Pass
High Channel	2480	686	500	Pass

For the measurement records, refer to following test plot:

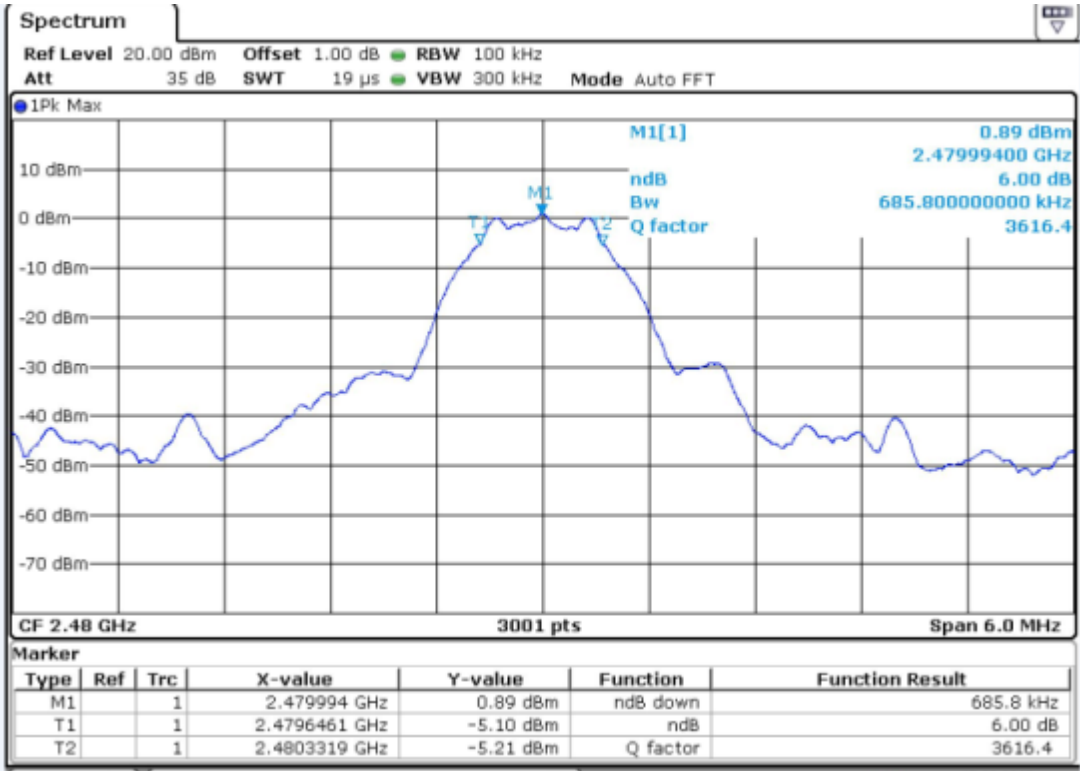
Test Plot of 6dB Bandwidth, low energy
 Low channel:



Middle channel:



High channel:



5.1.5 20dB Bandwidth

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.247(a)(1)
RSS-247, Clause 5.1(1)

Basic standard : ANSI C63.10: 2013

Kind of test site : Shielded Room

Test Setup

Date of testing : 15 Sep, 2015

Power supply : 120Vac, 60Hz

Operation mode : A.1 and A.2 (see 3.3)

Test channel : Low / Middle / High

Ambient temperature : 22-26 °C

Relative humidity : 50-65 %

Atmospheric pressure : 100-103 kPa

Table 11: Test result of 20dB Bandwidth, BDR mode

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Limit (MHz)	Result
Low Channel	2402	946.50	/	Pass
Mid Channel	2441	940.70	/	Pass
High Channel	2480	940.70	/	Pass

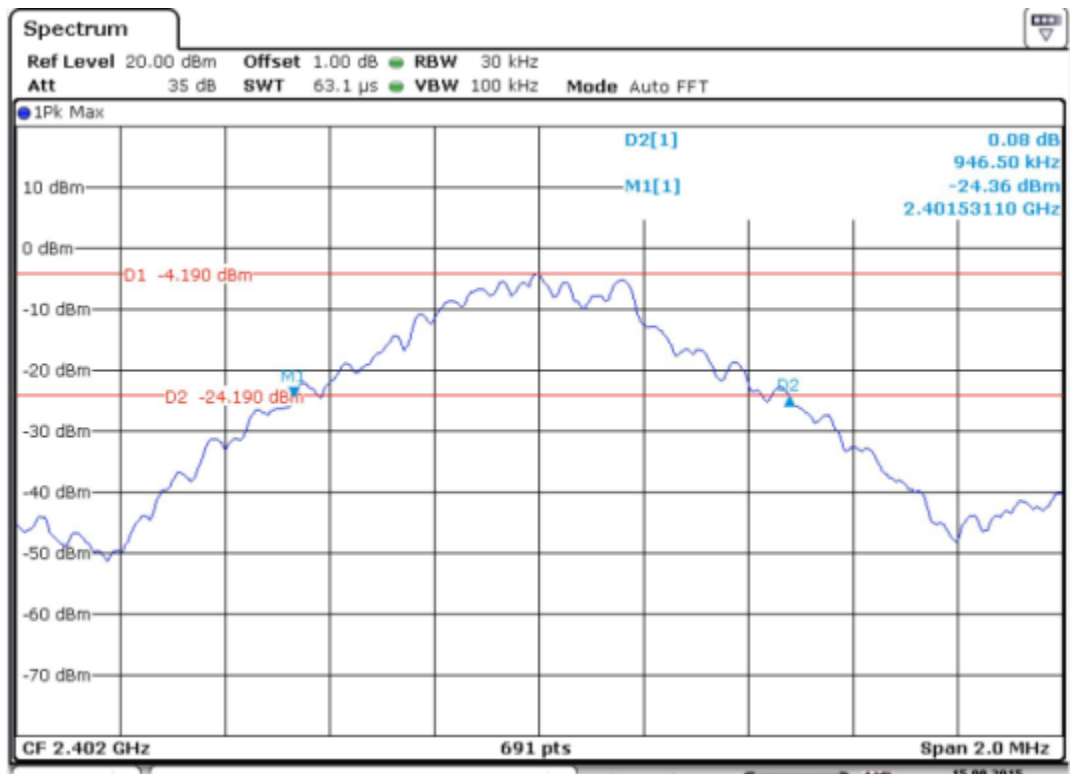
Table 12: Test result of 20dB Bandwidth, EDR mode

Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	Limit (MHz)	Result
Low Channel	2402	1273.5	/	Pass
Mid Channel	2441	1261.9	/	Pass
High Channel	2480	1267.7	/	Pass

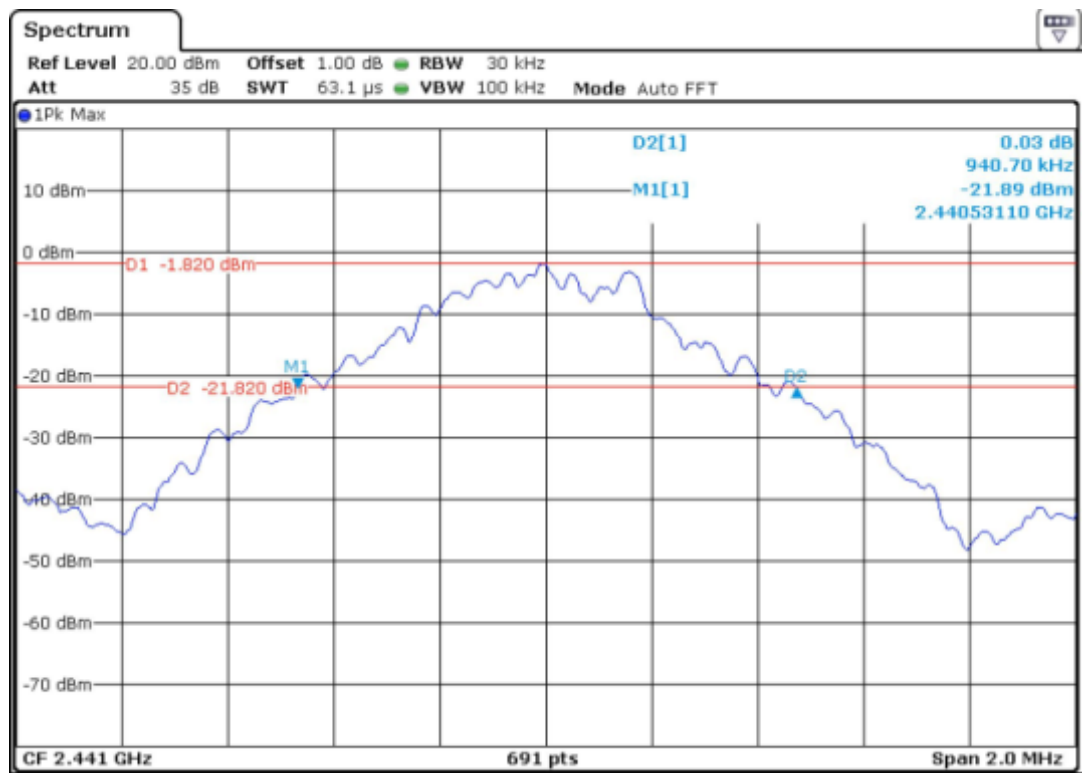
For the measurement records, refer to following test plot:

Test Plot of 20dB Bandwidth, BDR mode

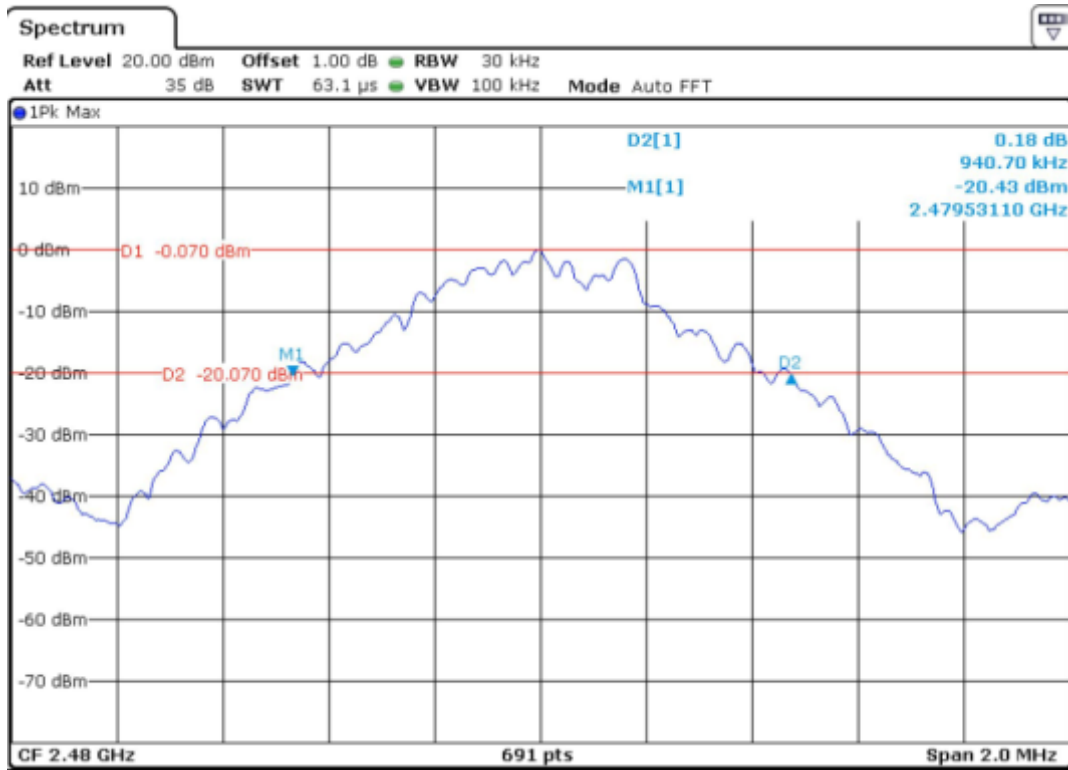
Low channel:



Middle channel:

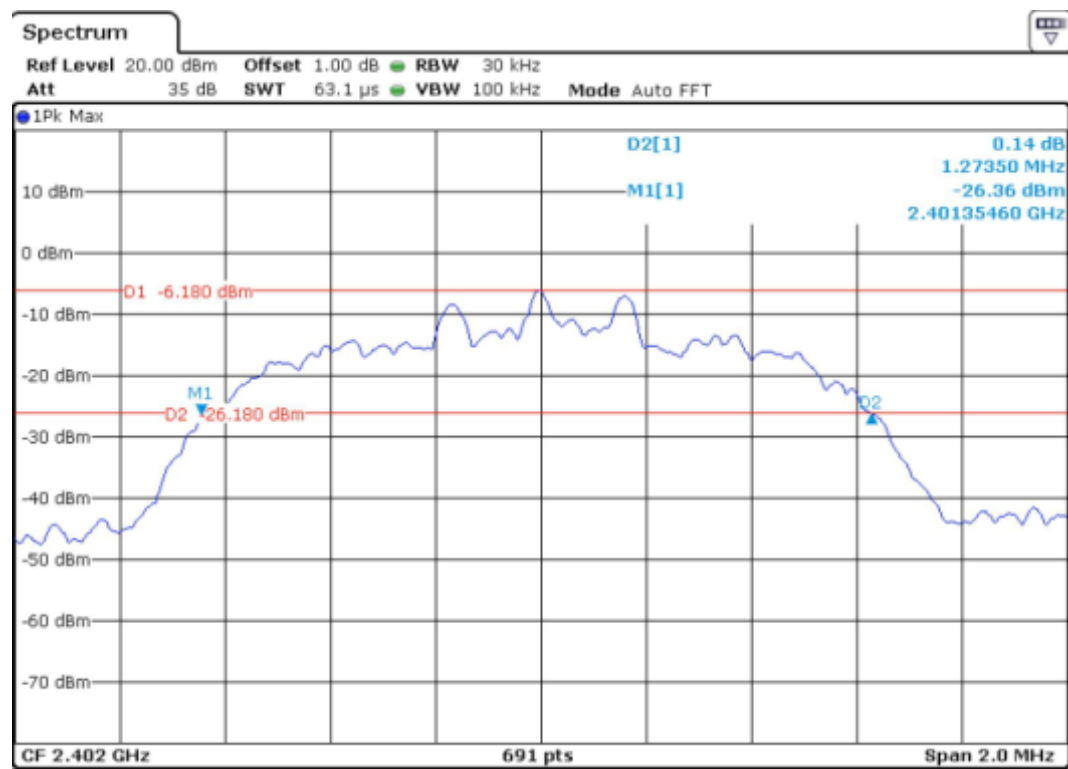


High channel:

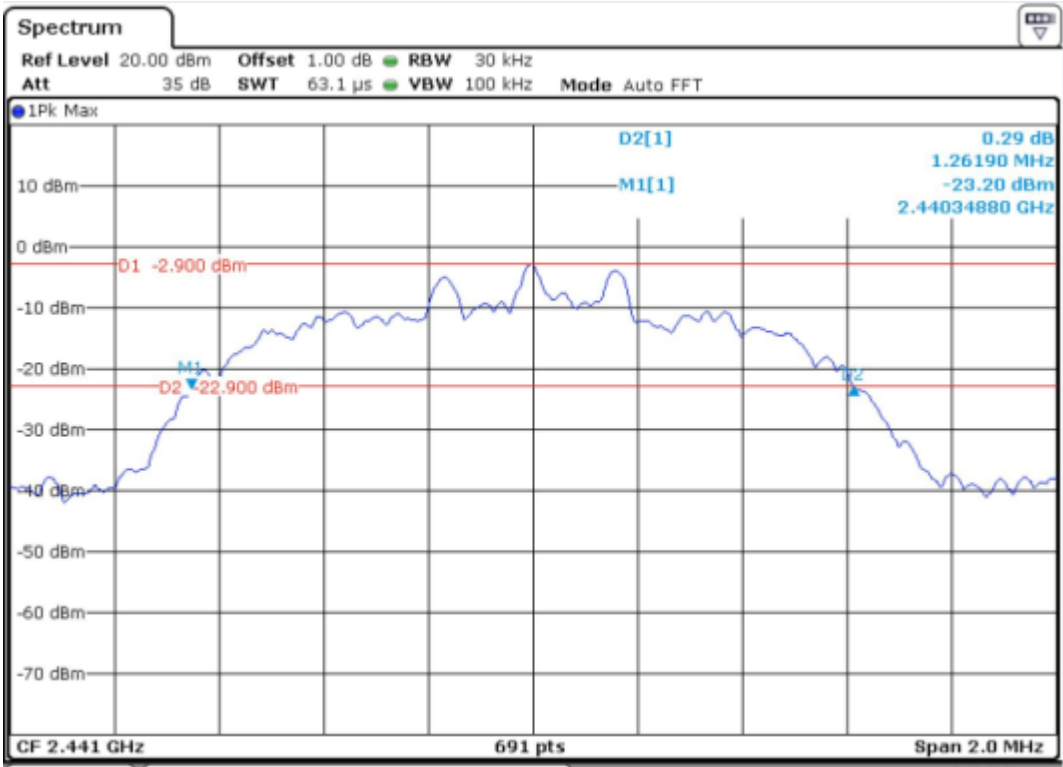


Test Plot of 20dB Bandwidth, EDR mode

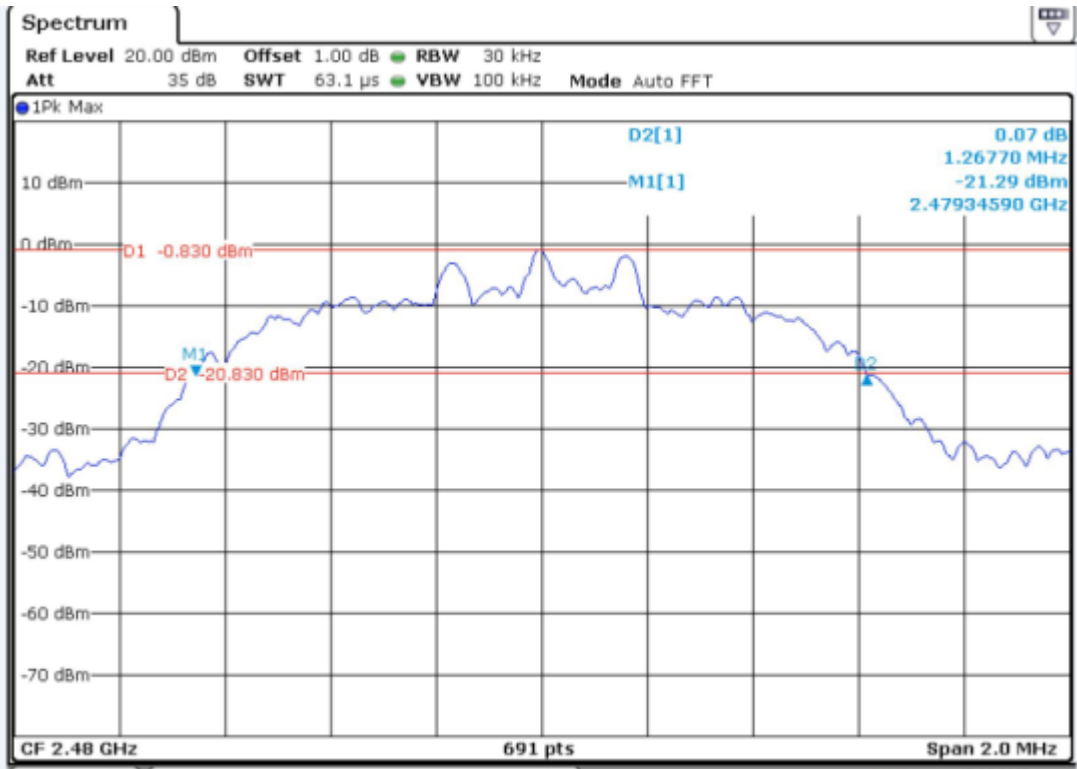
Low channel:



Middle channel:



High channel:



5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: **Passed**

Test Specification

Test standard : FCC Part 15.247(d)
Basic standard : ANSI C63.10: 2013
Limits : 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);

In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)

Kind of test site : Shielded Room

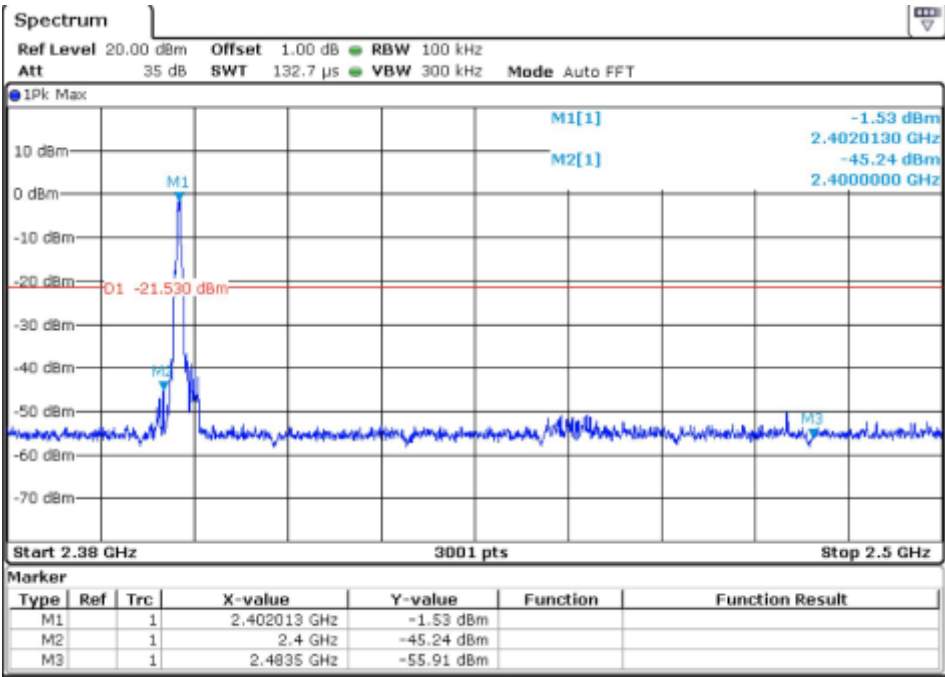
Test Setup

Date of testing : 15 Sep, 2015
Power supply : 120Vac, 60Hz
Operation mode : A(See 3.3)
Test channel : Low / Middle / High
Ambient temperature : 22-26 °C
Relative Humidity : 50-65 %
Atmospheric pressure : 100-103 kPa

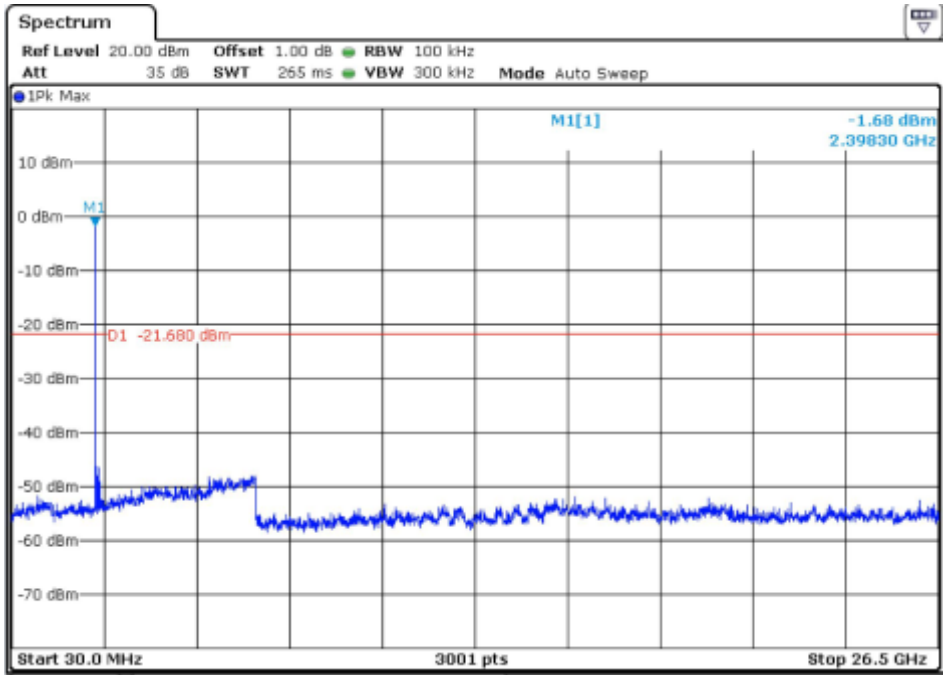
All emissions are more than 20dB below fundamental, details refer to following test plot, and compliance is achieved as well.

Due to the small size of the product and that there are no inductive components of significant size, 9kHz to 30MHz frequency range is not tested based on technical judgment.

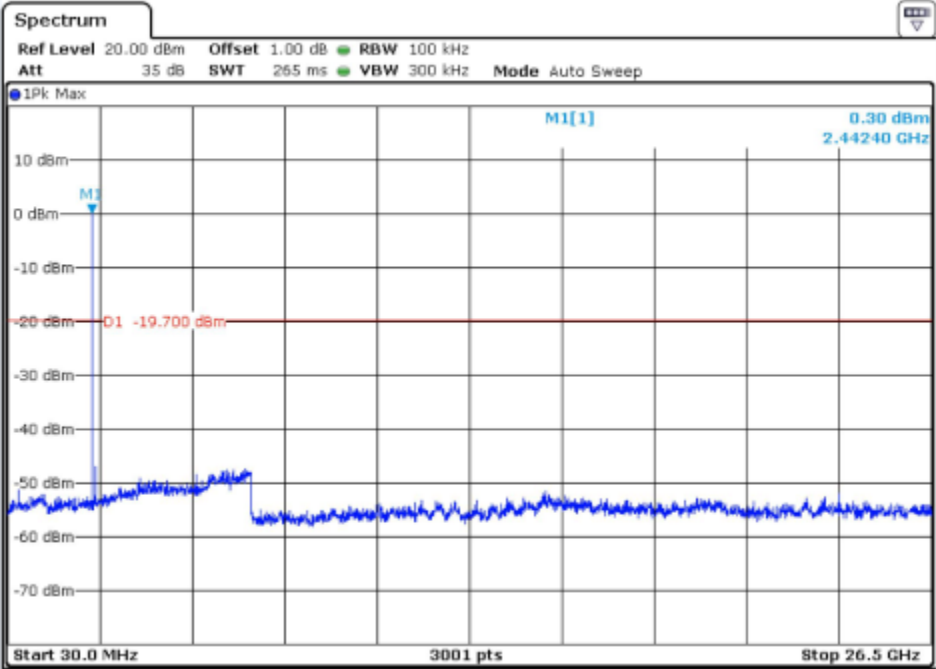
Test Plot of 100kHz Bandwidth of Frequency Band Edge
BDR mode
Low Channel, Band Edge



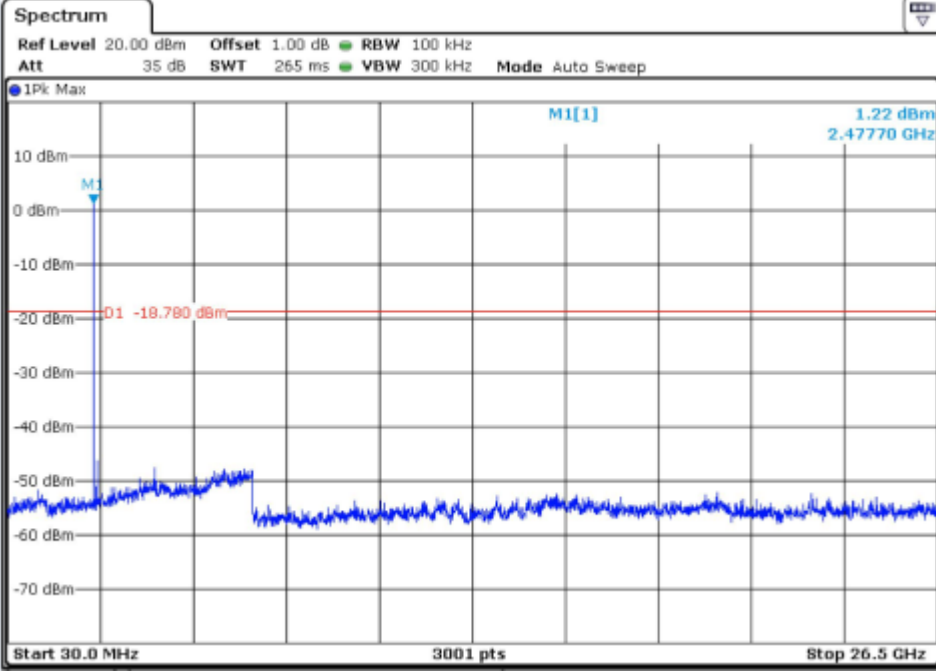
Low Channel



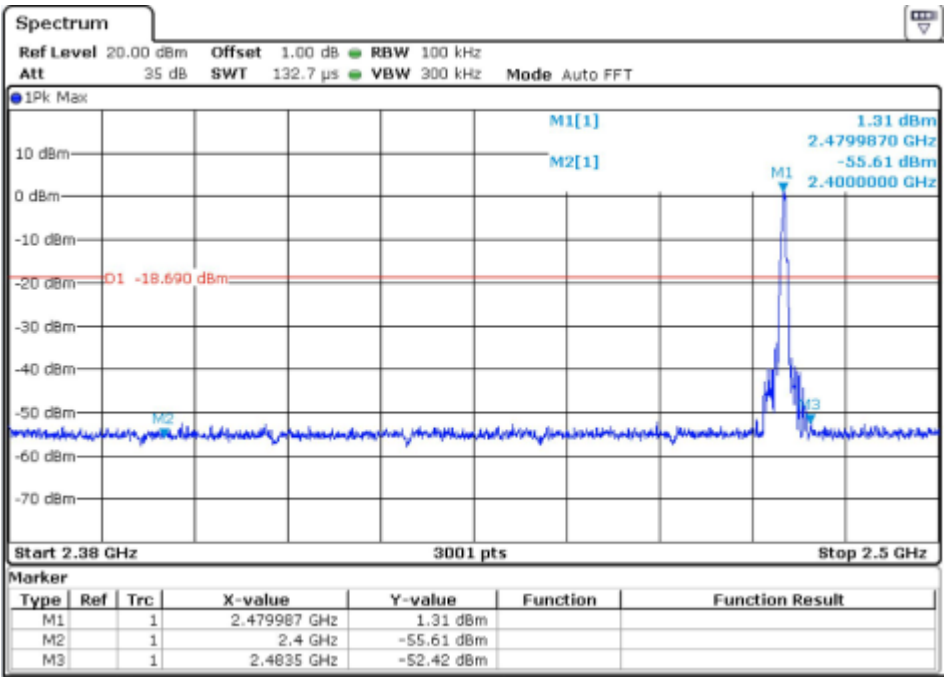
Middle Channel



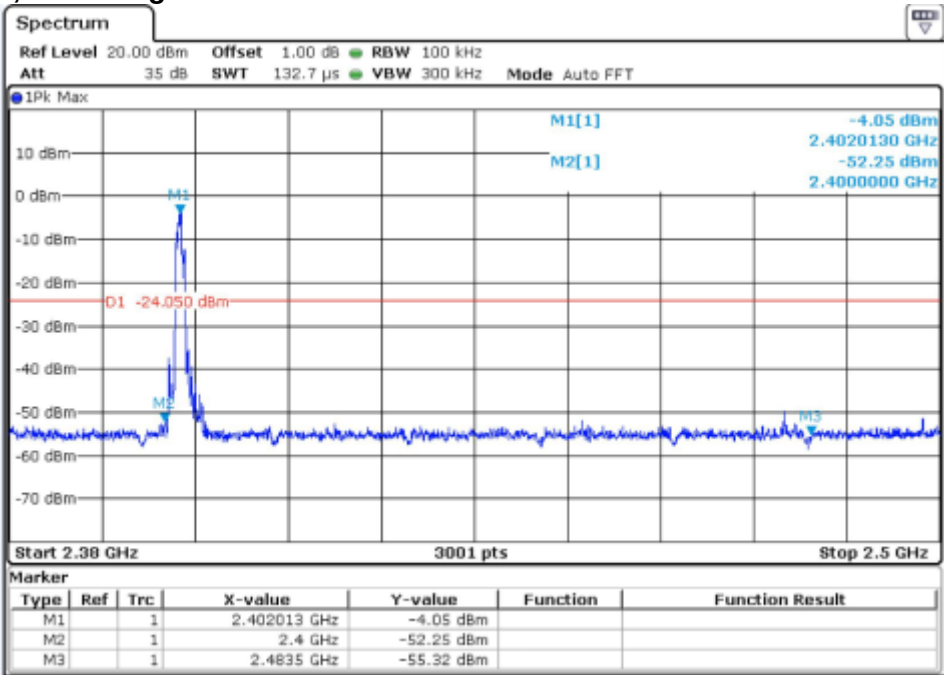
High Channel



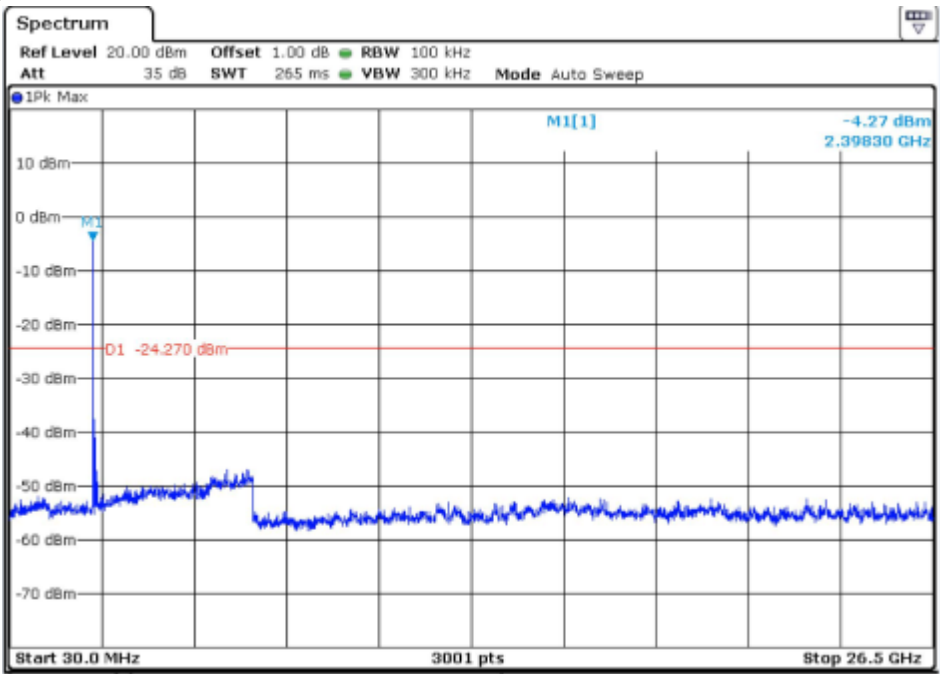
High Channel, Band Edge



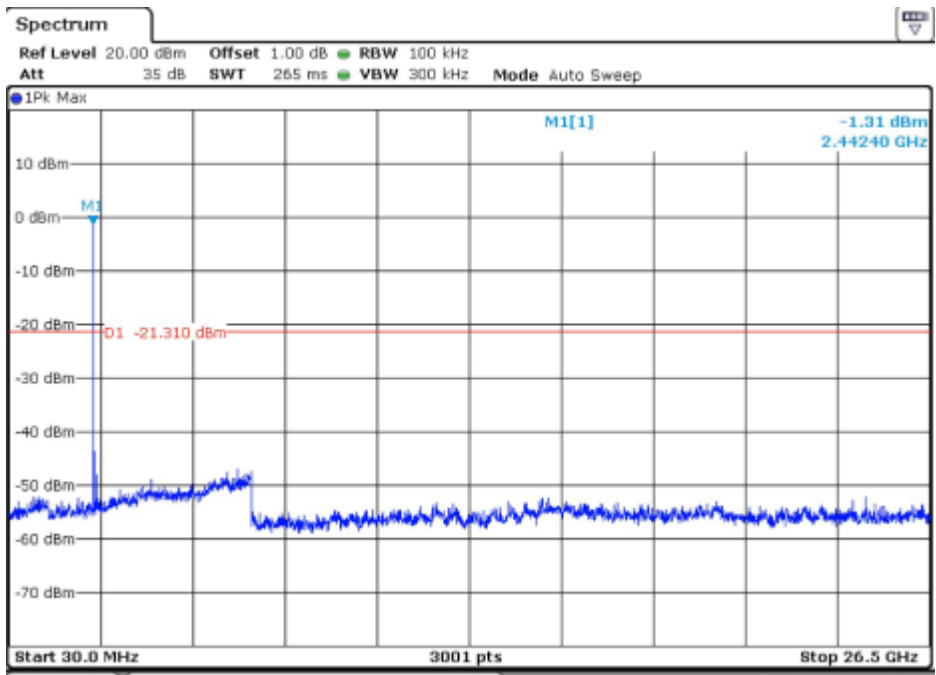
EDR mode
Low Channel, Band Edge



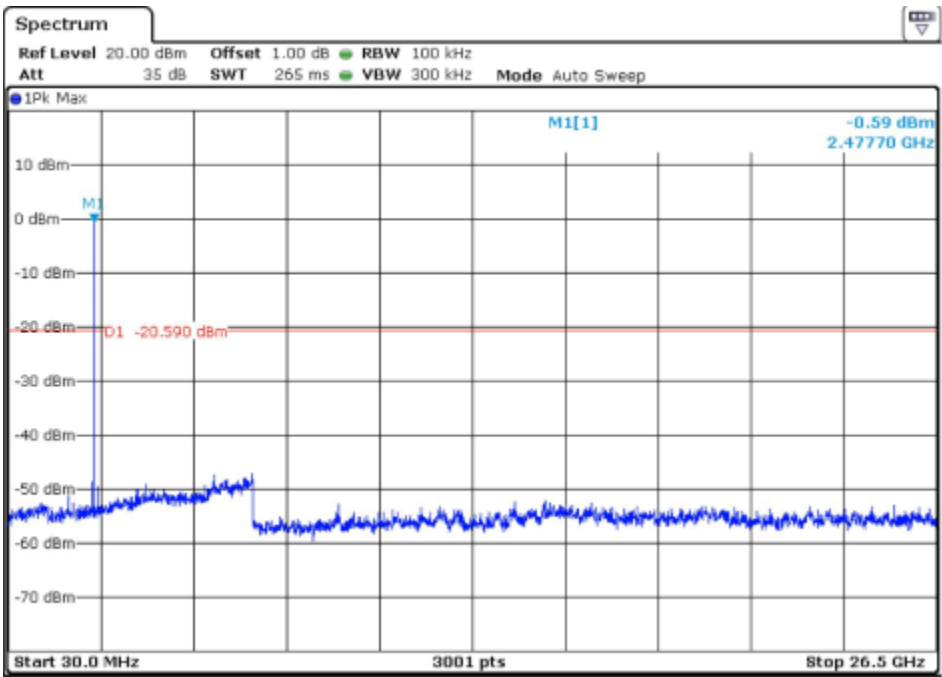
Low Channel



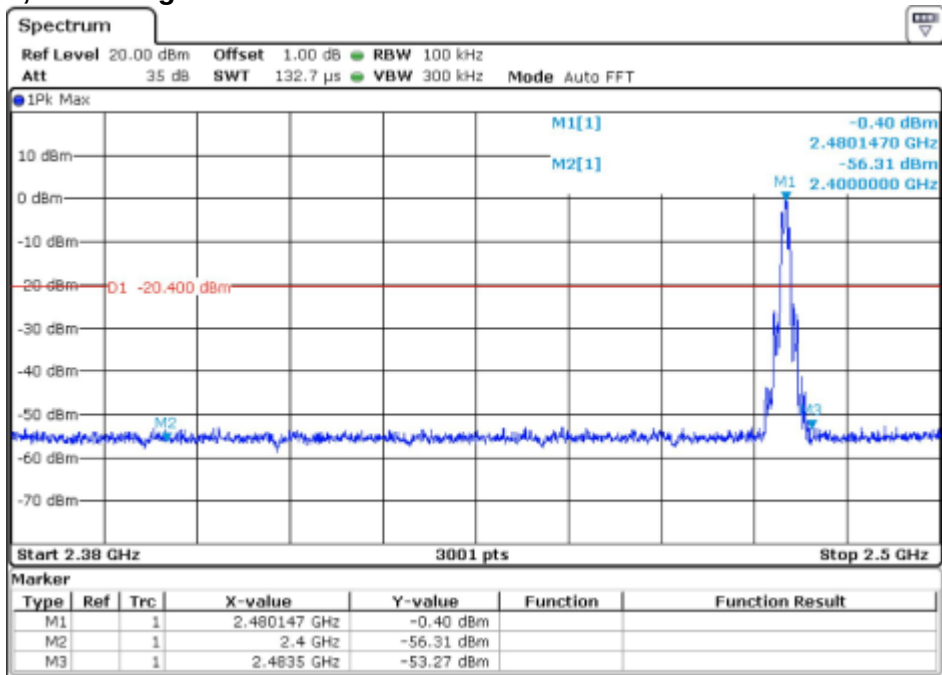
Middle Channel



High Channel

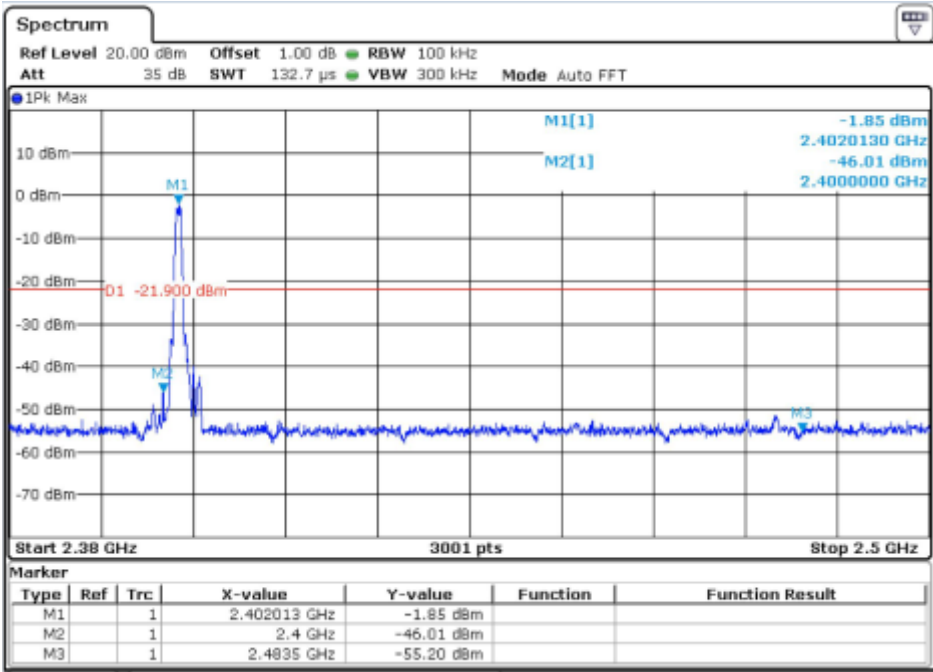


High Channel, Band Edge

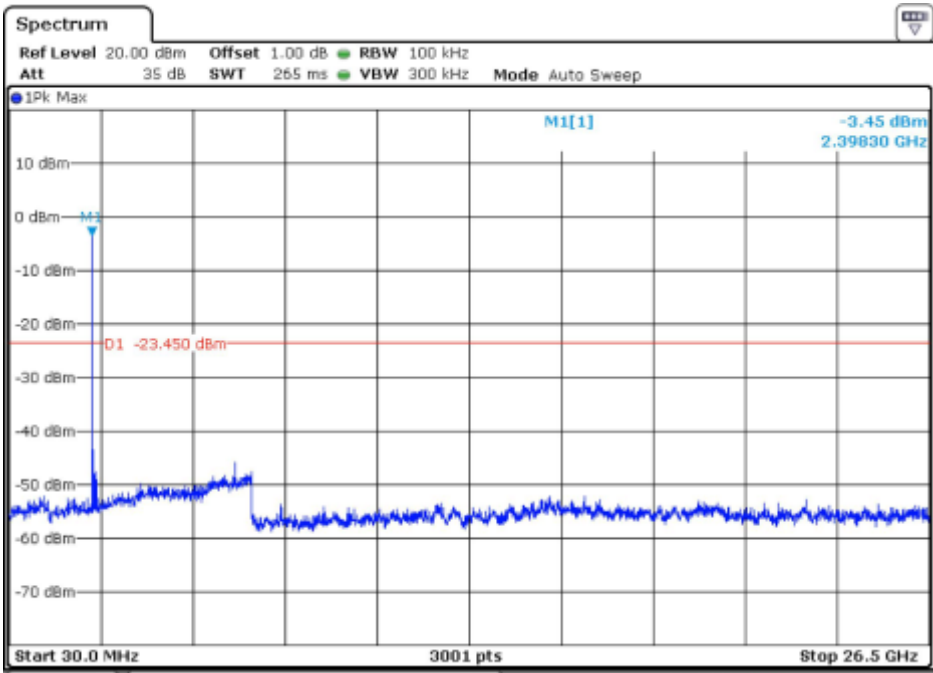


Low energy

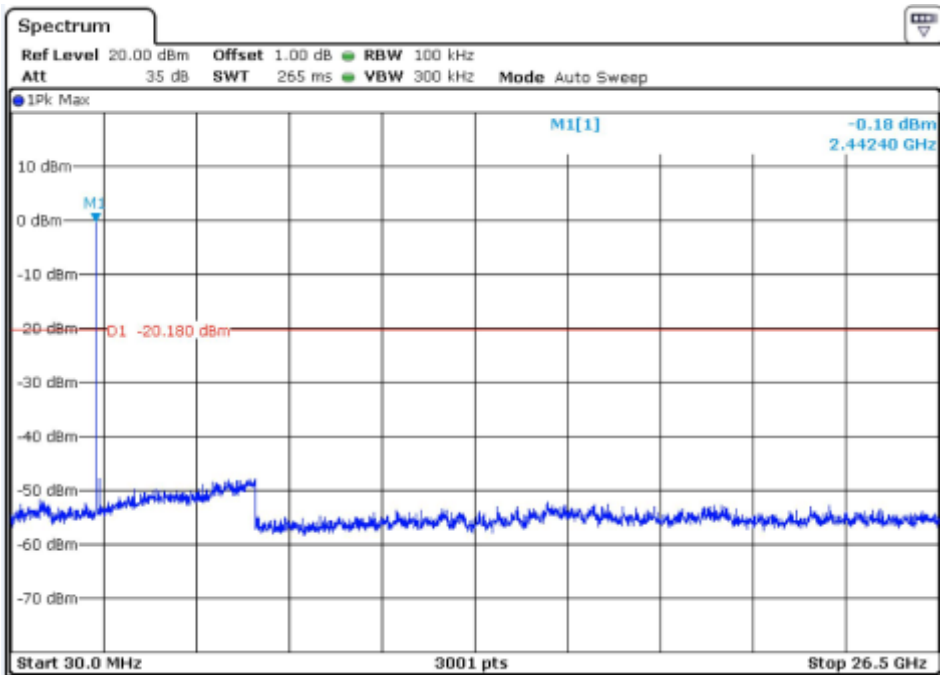
Low Channel, Band Edge



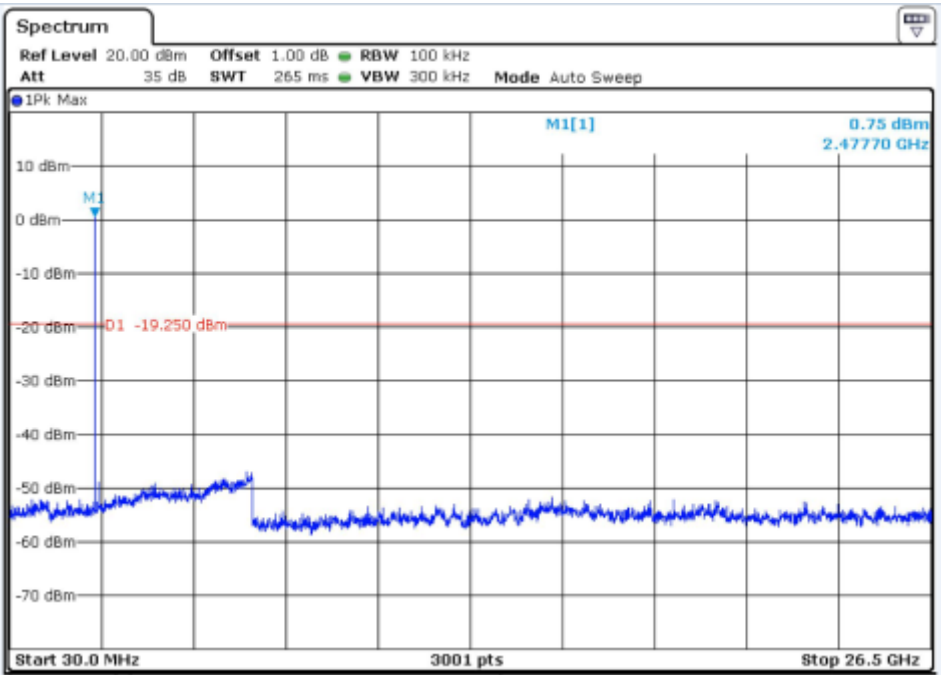
Low Channel



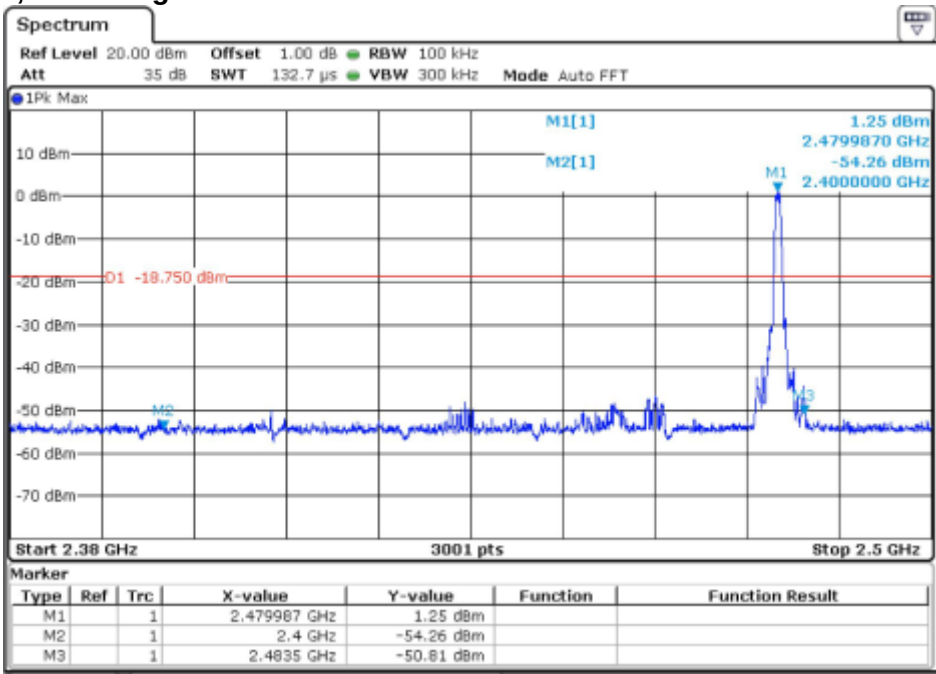
Middle Channel



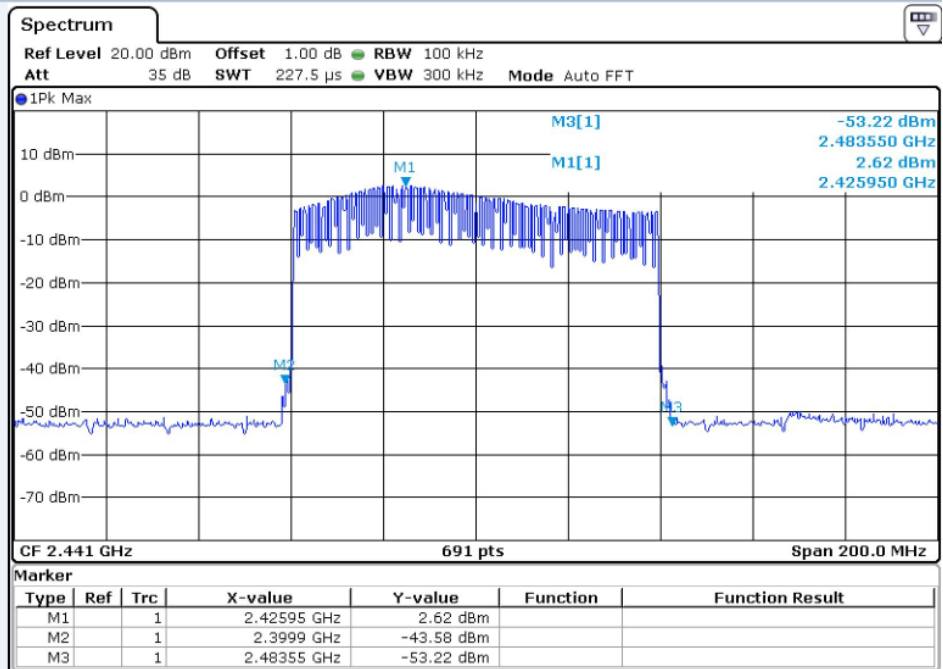
High Channel



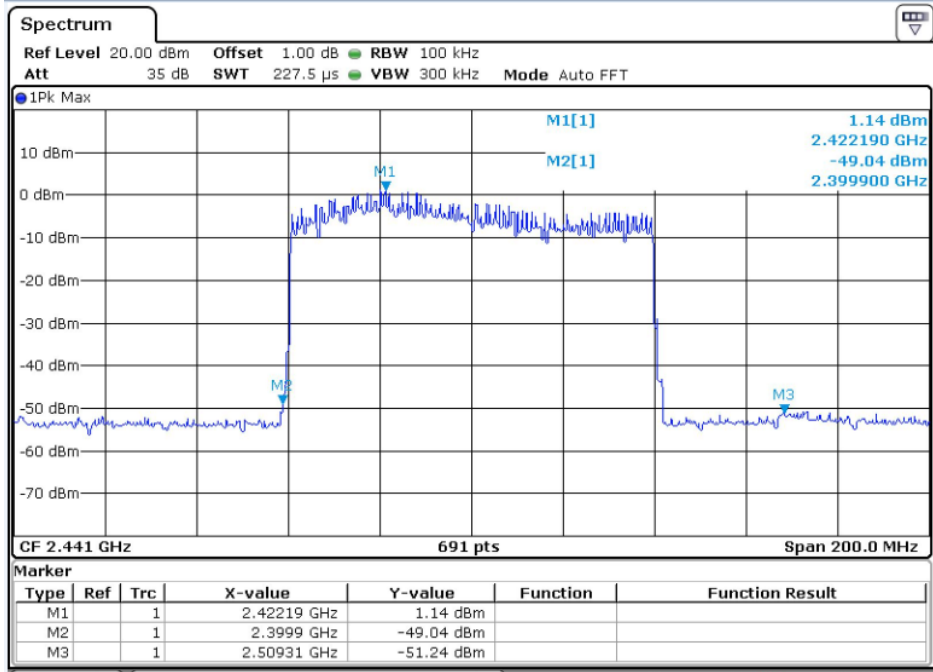
High Channel, Band Edge



Hopping On
EDR mode



BDR mode



5.1.7 Spurious Emission

RESULT:

Passed

Test Specification

Test standard	: FCC Part 15.247(d), FCC Part 15.205
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	: 3m Semi-anechoic chamber

Test Setup

Date of testing	: Refer to the appendix 1.
Power supply	: 120Vac, 60Hz
Operation mode	: A (See 3.3)
Test channel	: Low / Middle / High
Ambient temperature	: Refer to the appendix 1.
Relative Humidity	: Refer to the appendix 1.
Atmospheric pressure	: Refer to the appendix 1.

Remark:

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions. After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation shown in the test setup photos.

Testing was carried out within frequency range 9kHz to the tenth harmonics.

For the measurement records, refer to the appendix 1.

5.1.8 Frequency Separation

RESULT:

Passed

Test Specification

Test standard : FCC Part 15.247(a)(1)
Basic standard : ANSI C63.10: 2013
Limits : $\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth, whichever is greater
Kind of test site : Shielded Room

Test Setup

Date of testing : 15 Sep, 2015
Power supply : 120Vac, 60Hz
Operation mode : A (See 3.3)
Test channel : Low / Middle / High
Ambient temperature : 22-26 °C
Relative humidity : 50-65 %
Atmospheric pressure : 100-103 kPa

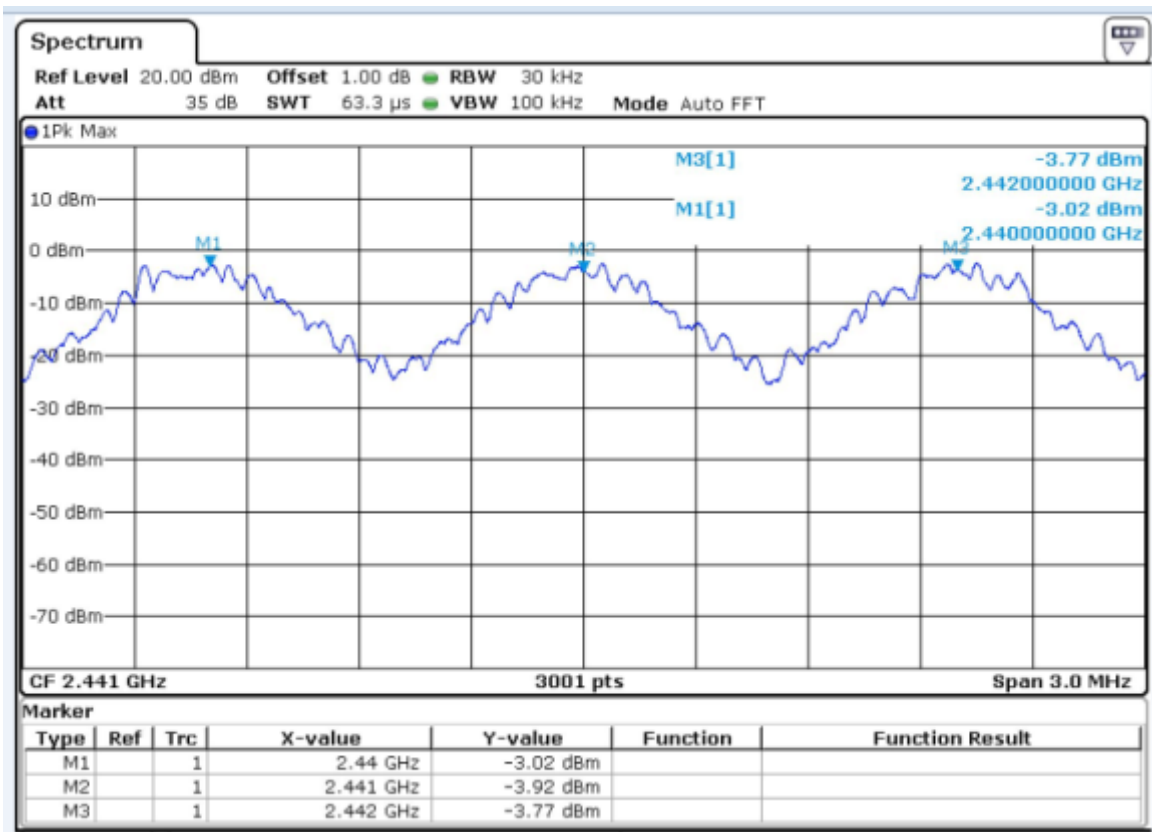
Table 13: Test result of Frequency Separation

Channel	Channel Frequency (MHz)	Measured Channel Separation (MHz)	Limit (kHz)	Result
Record Channel	2440	1	$\geq 25\text{kHz}$ or $2/3$ of 20dB bandwidth	Pass
Record Channel adj 1	2441			
Record Channel adj 2	2442			

Note:

The limit is maximum $2/3$ of 20dB bandwidth: 849 KHz.
For the measurement records, refer to following test plot:

Test Plot of Frequency Separation



5.1.9 Number of Hopping Frequency

RESULT:

Passed

Test Specification

Test standard : FCC part 15.247(a)(1)(iii)
Basic standard : ANSI C63.10: 2013
Limits : ≥ 15 non-overlapping channels
Kind of test site : Shielded Room

Test Setup

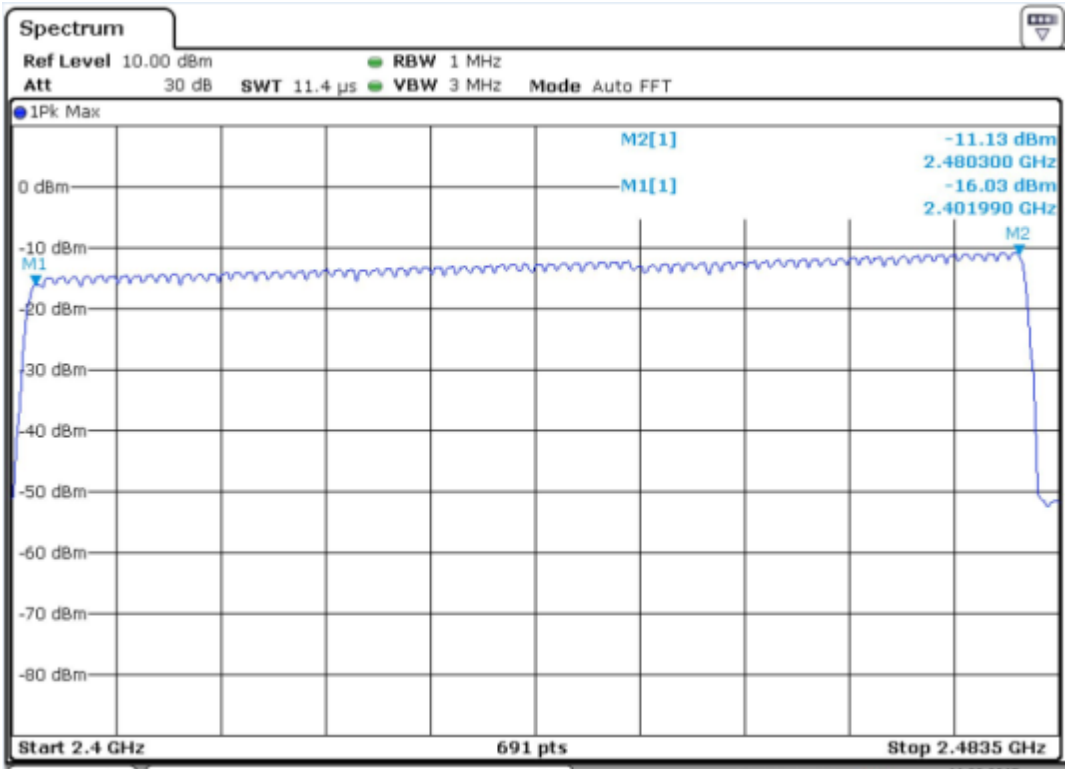
Date of testing : 15 Sep, 2015
Power supply : 120Vac, 60Hz
Operation mode : B (See 3.3)
Ambient temperature : 22-26 °C
Relative humidity : 50-65 %
Atmospheric pressure : 100-103 kPa

Table 14: Test result of Number of hopping frequency

Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
<u>2400</u> to <u>2483.5</u> MHz	79	≥ 15	Pass

For the measurement records, refer to following test plot:

Test Plot of Number of Hopping frequency



5.1.10 Time of Occupancy

RESULT:

Passed

Test Specification

Test standard : FCC part 15.247(a)(1)(iii)
Basic standard : ANSI C63.10: 2013
Limits : 0.4s
Kind of test site : Shielded Room

Test Setup

Date of testing : 15 Sep, 2015
Power supply : 120Vac, 60Hz
Operation mode : A (See 3.3)
Test channel : Low / Middle / High
Ambient temperature : 22-26 °C
Relative humidity : 50-65 %
Atmospheric pressure : 100-103 kPa

Table 15: Test result of Time of Occupancy, BDR mode

Channel	Data Mode	Pulse width (ms)	Measured Dwell time (s)	Limit (s)	Result
Low Channel	DH1	0.433	0.139	0.4	Pass
	DH3	1.700	0.272	0.4	Pass
	DH5	2.933	0.313	0.4	Pass
Mid Channel	DH1	0.464	0.148	0.4	Pass
	DH3	1.710	0.274	0.4	Pass
	DH5	2.957	0.315	0.4	Pass
High Channel	DH1	0.449	0.144	0.4	Pass
	DH3	1.725	0.276	0.4	Pass
	DH5	2.957	0.315	0.4	Pass

Table 16: Test result of Time of Occupancy, EDR mode

Channel	Data Mode	Pulse width (ms)	Measured Dwell time (s)	Limit (s)	Result
Low Channel	DH1	0.443	0.148	0.4	Pass
	DH3	1.690	0.274	0.4	Pass
	DH5	2.843	0.317	0.4	Pass
Mid Channel	DH1	0.464	0.148	0.4	Pass
	DH3	1.710	0.274	0.4	Pass
	DH5	2.971	0.317	0.4	Pass
High Channel	DH1	0.464	0.148	0.4	Pass
	DH3	1.710	0.274	0.4	Pass
	DH5	2.971	0.317	0.4	Pass

Note:

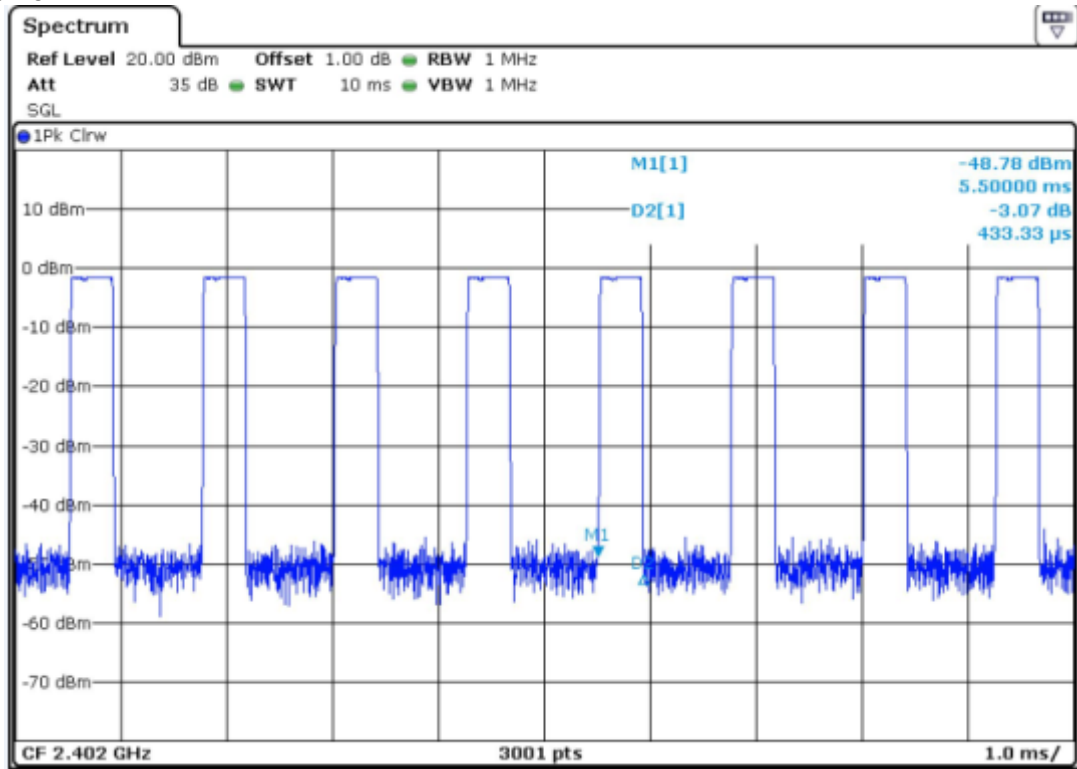
Dwell time = Pulse width x (Hopping rate / Number of channels) x Period

Period = 0.4 (seconds/ channel) x 79 (channel) = 31.6 seconds

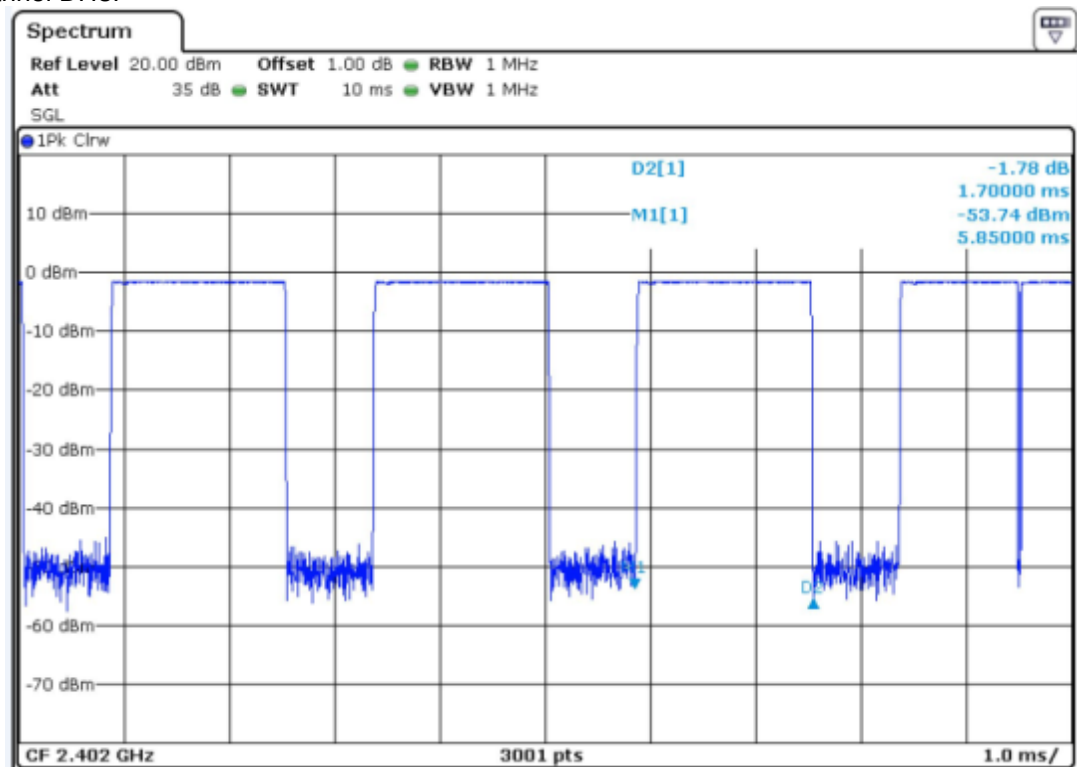
For the measurement records, refer to following test plot:

Test Plot of Time of Occupancy, BDR mode

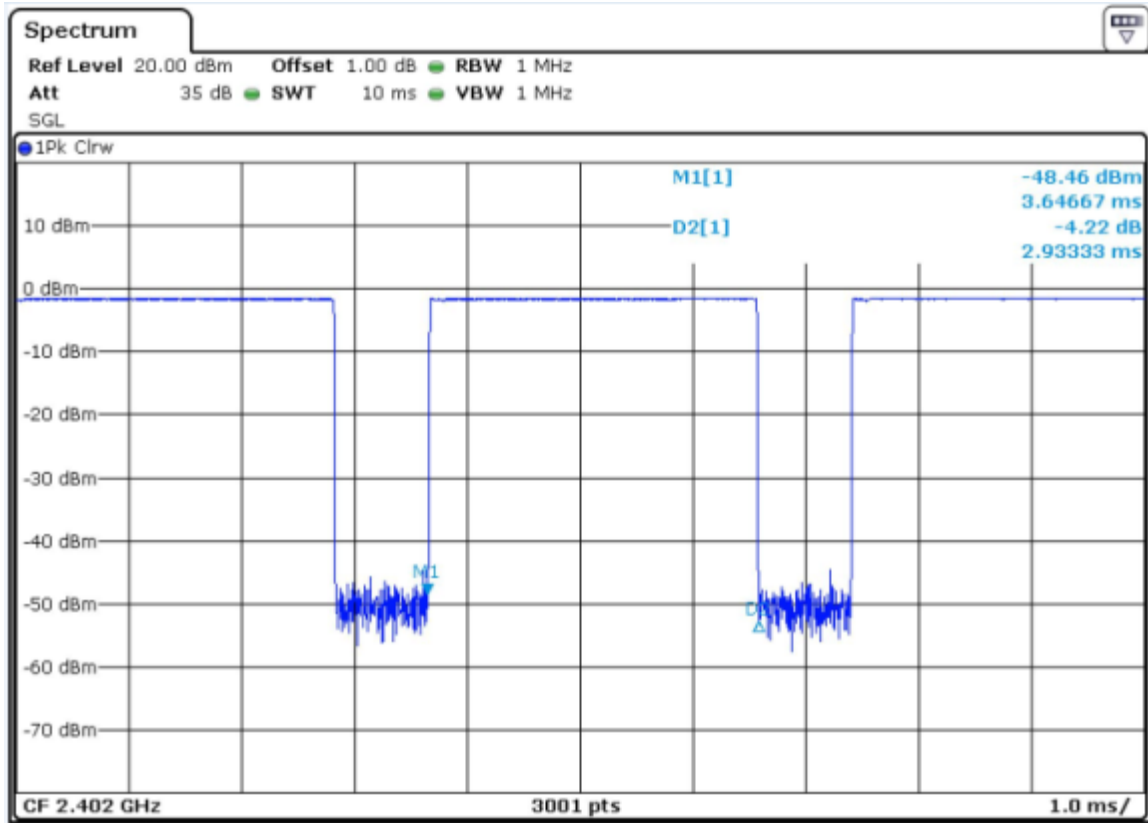
Low channel DH1:



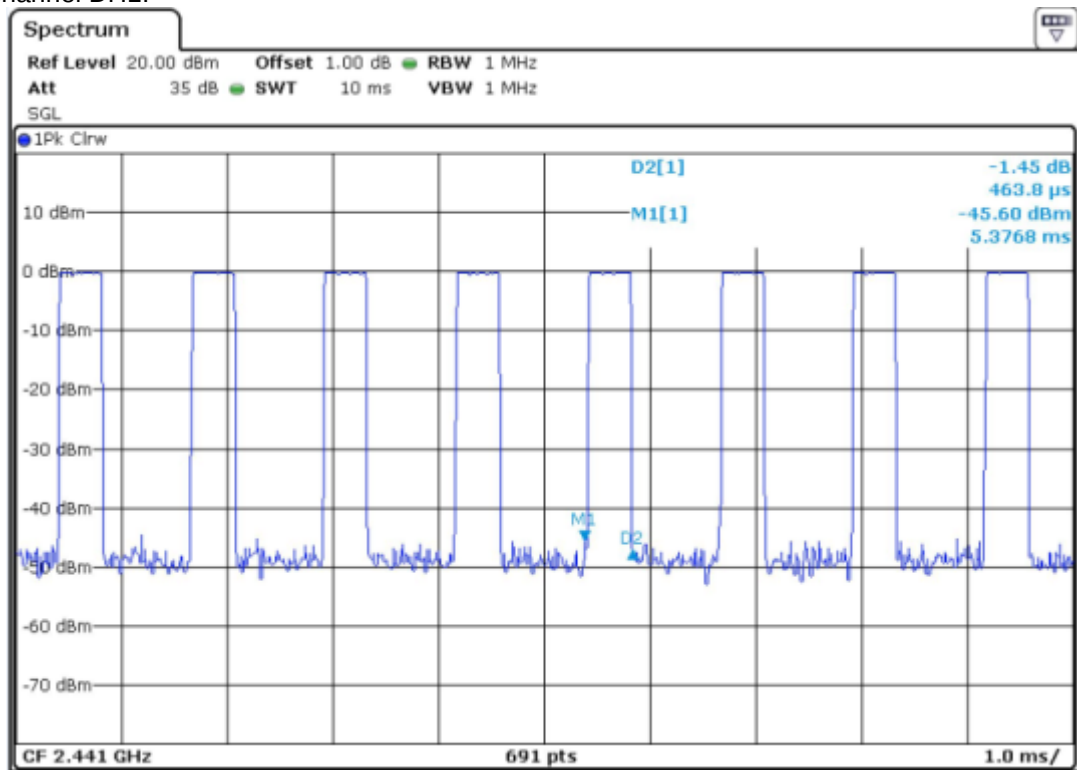
Low channel DH3:



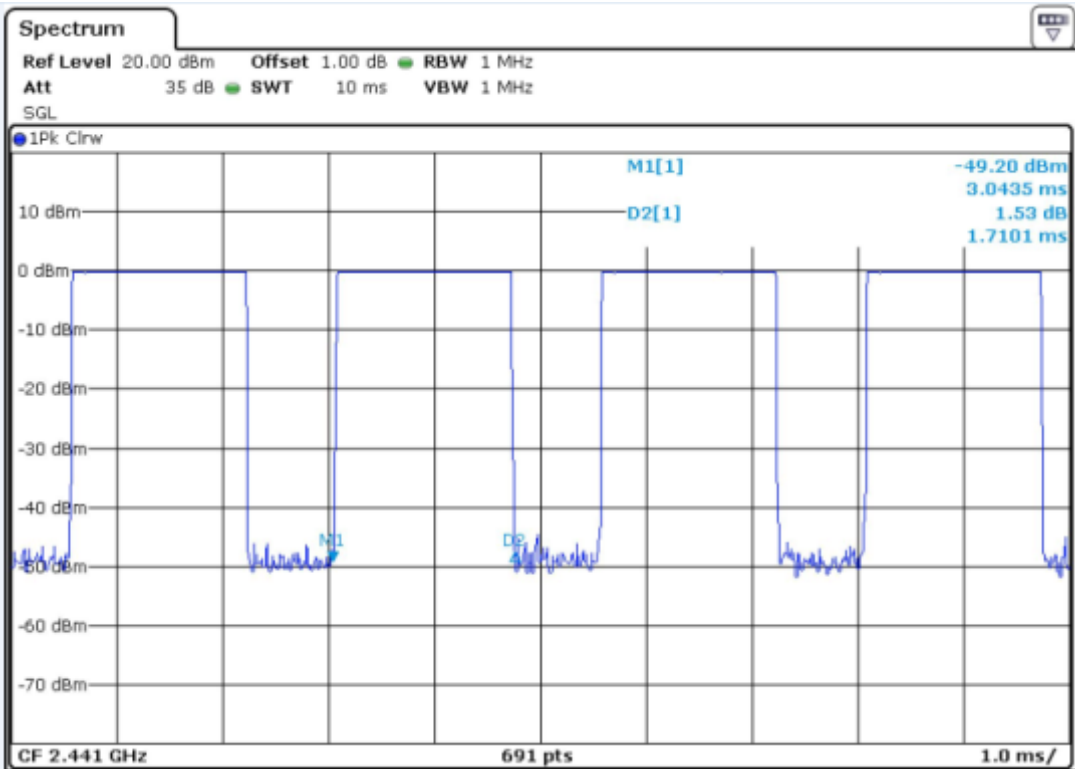
Low channel DH5:



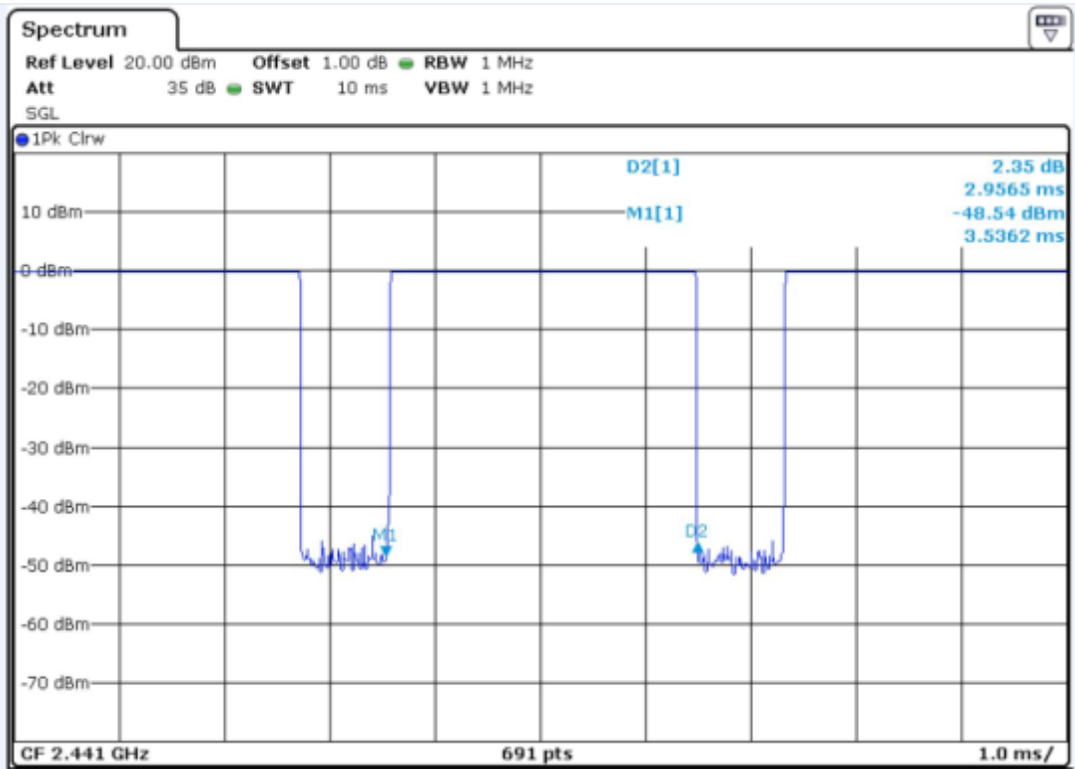
Middle channel DH1:



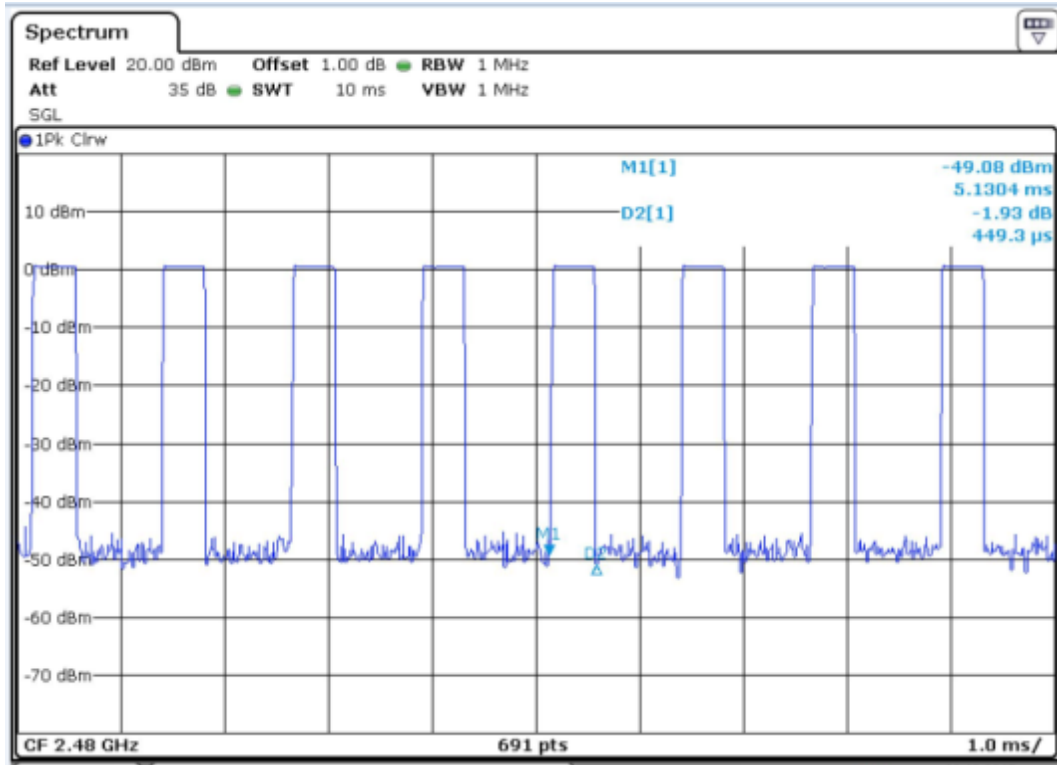
Middle channel DH3:



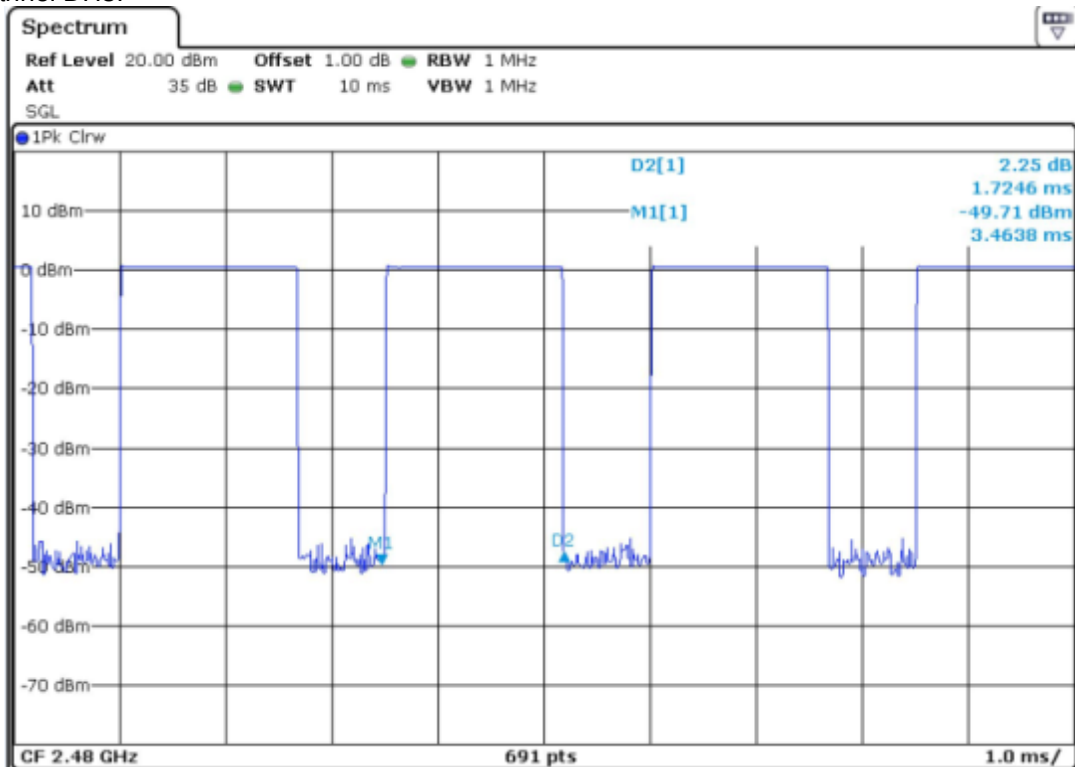
Middle channel DH5:



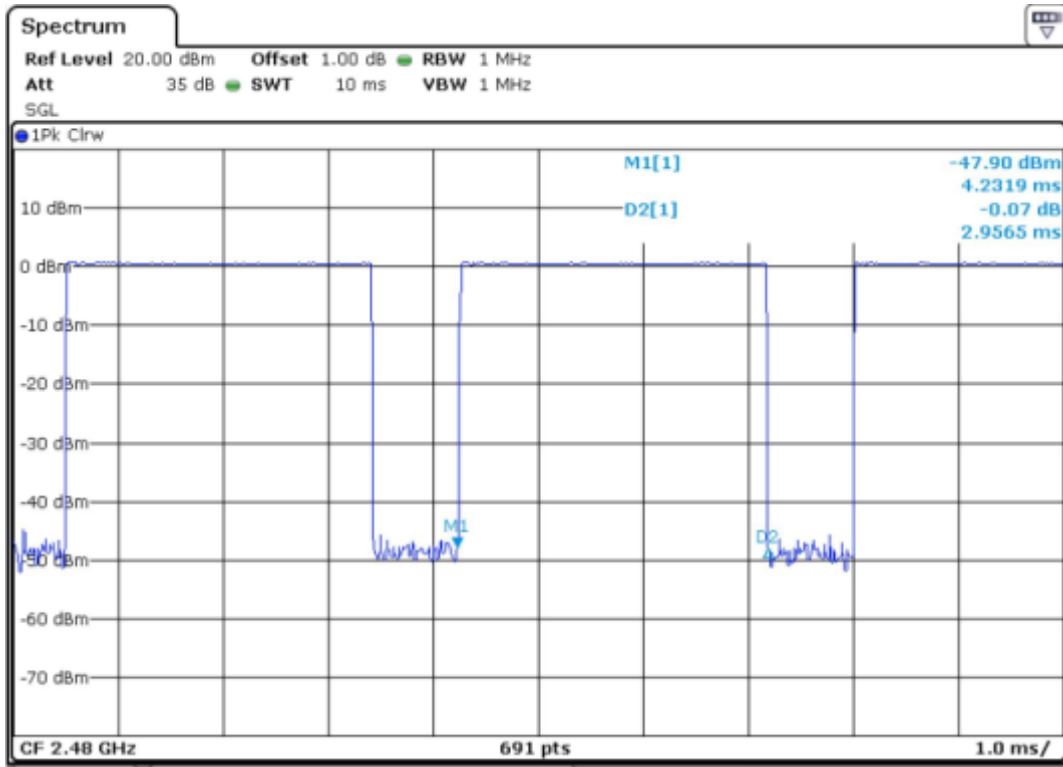
High channel DH1:



High channel DH3:

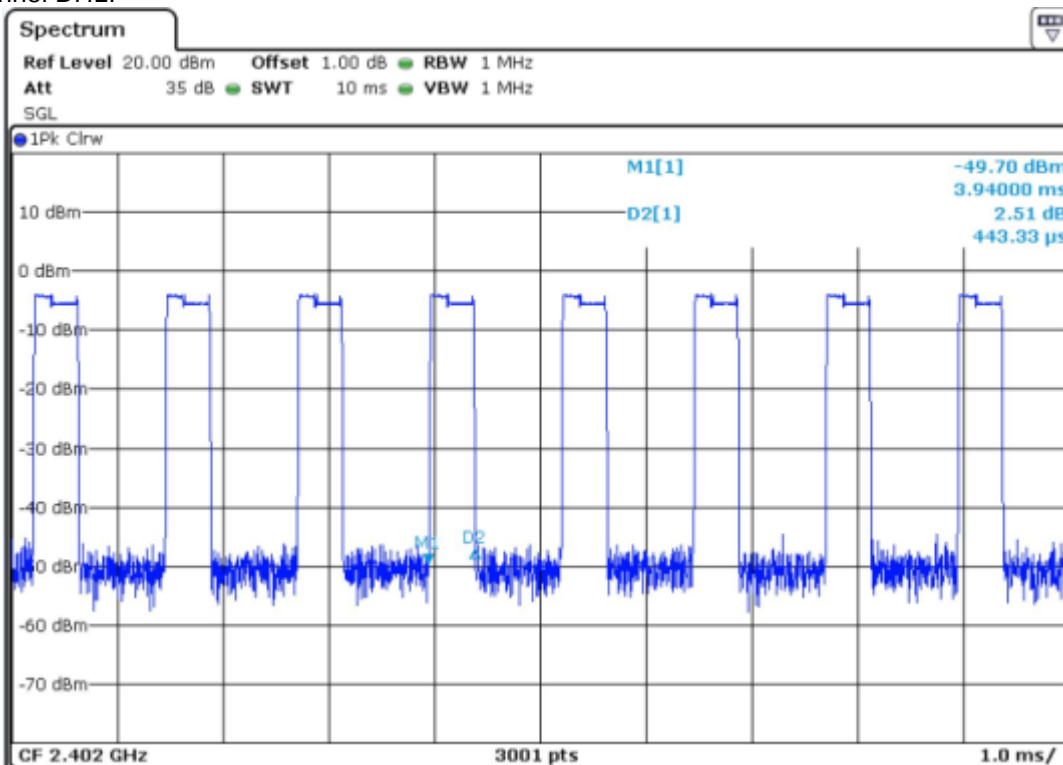


High channel DH5:

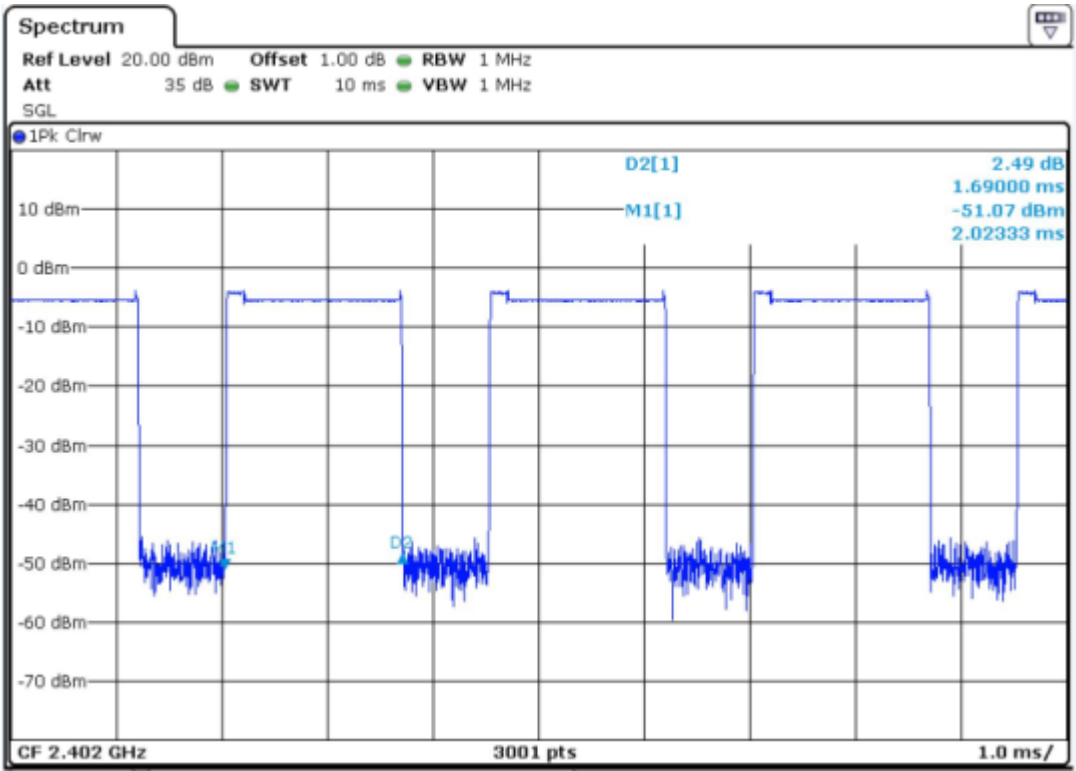


Test Plot of Time of Occupancy, EDR mode

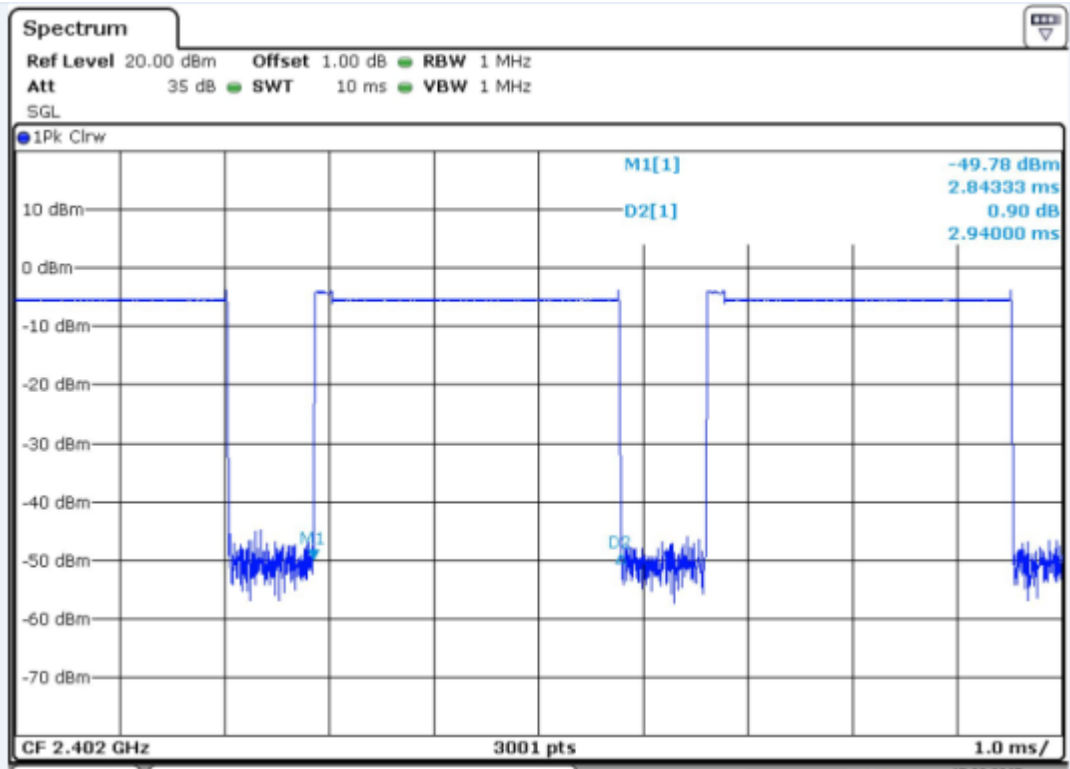
Low channel DH1:



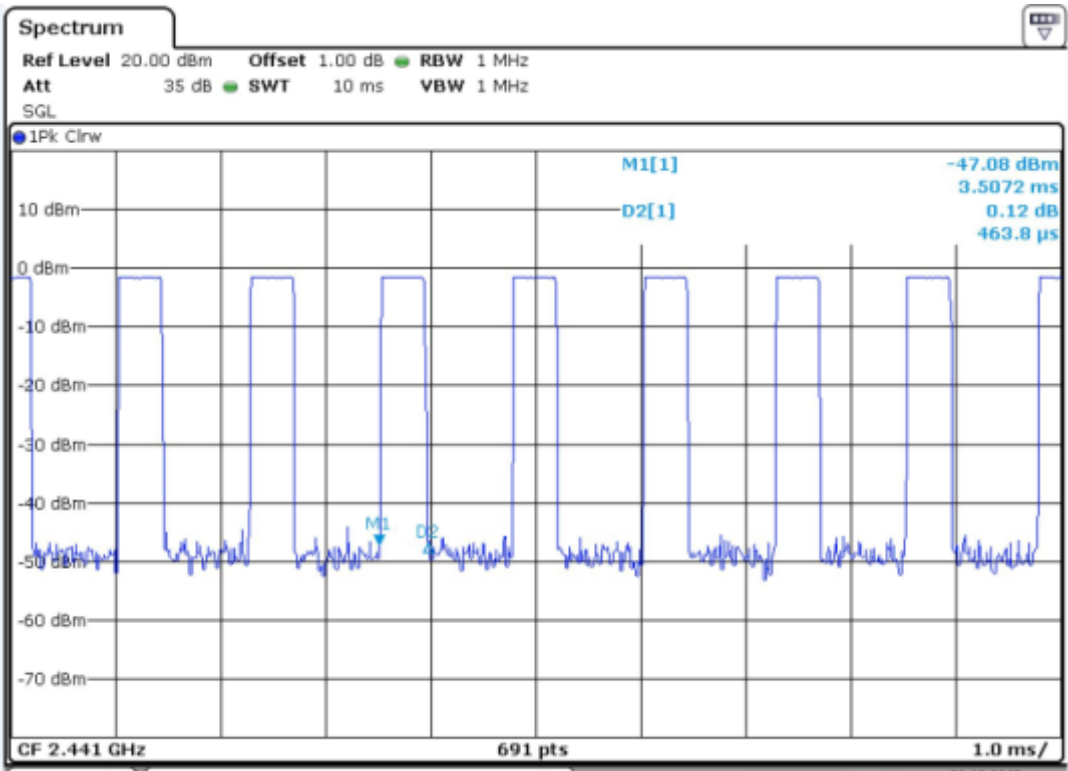
Low channel DH3:



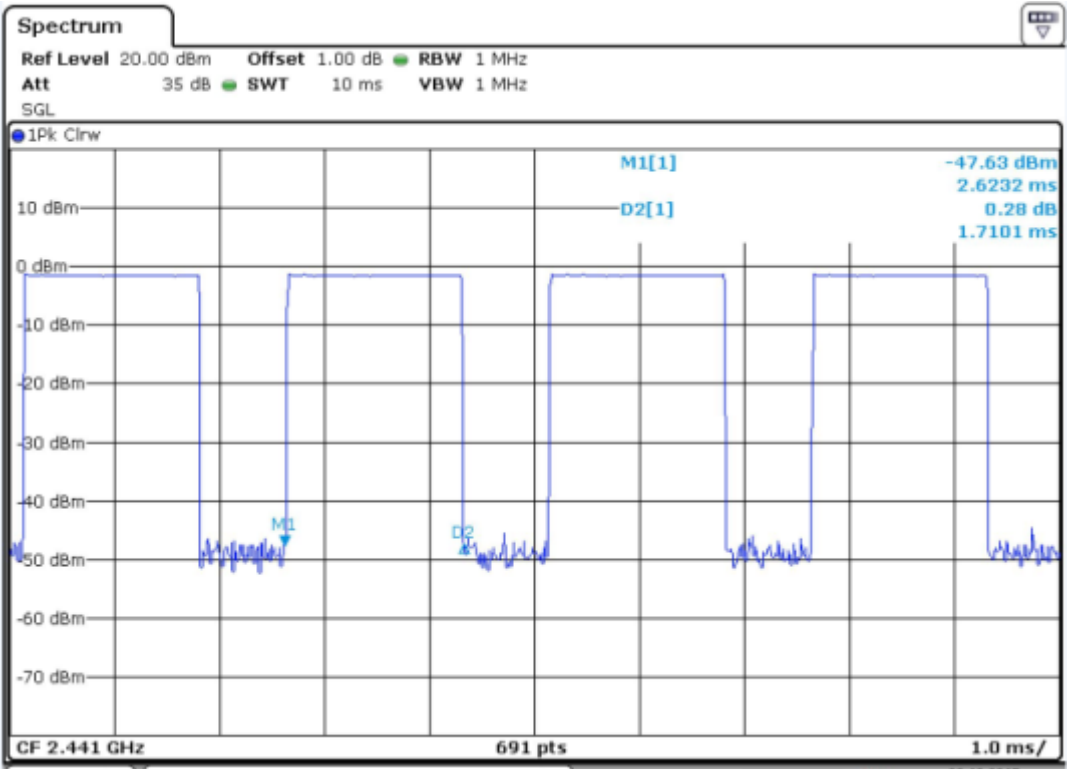
Low channel DH5:



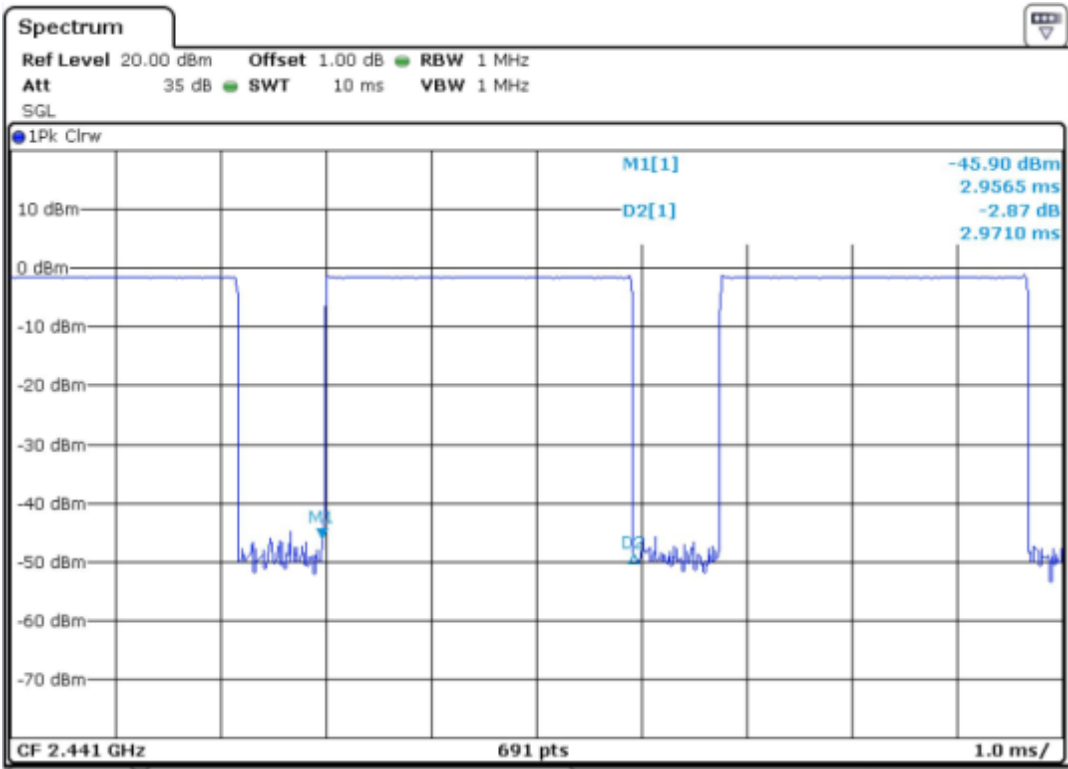
Middle channel DH1:



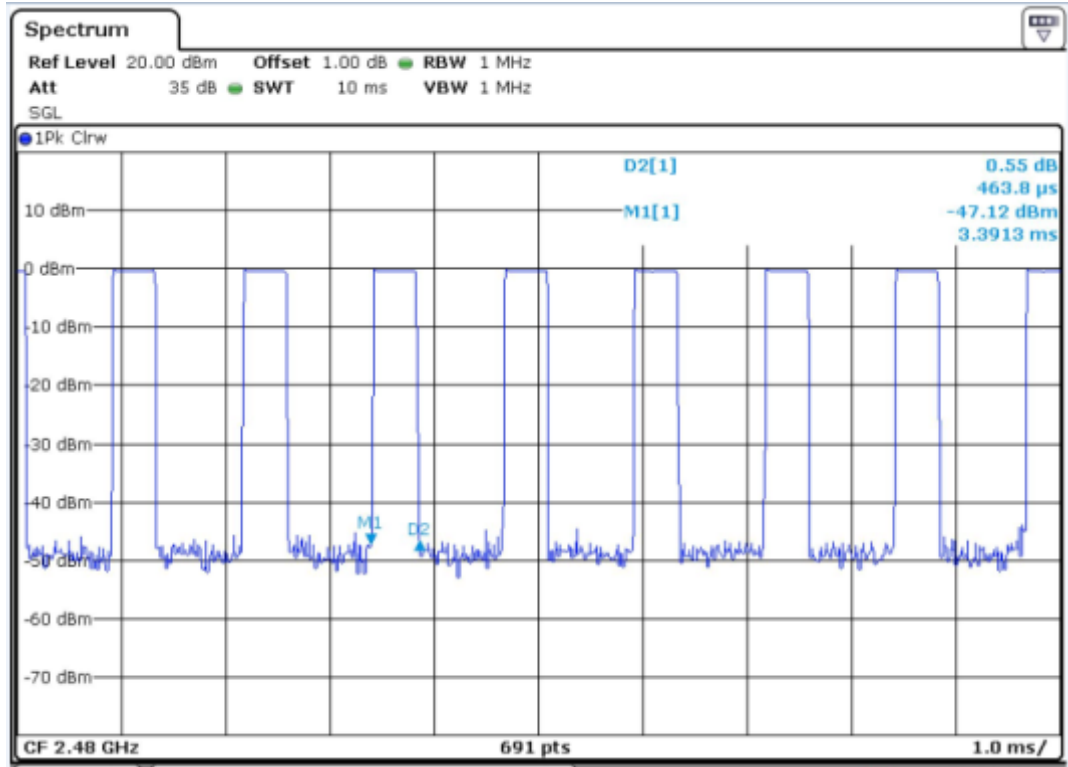
Middle channel DH3:



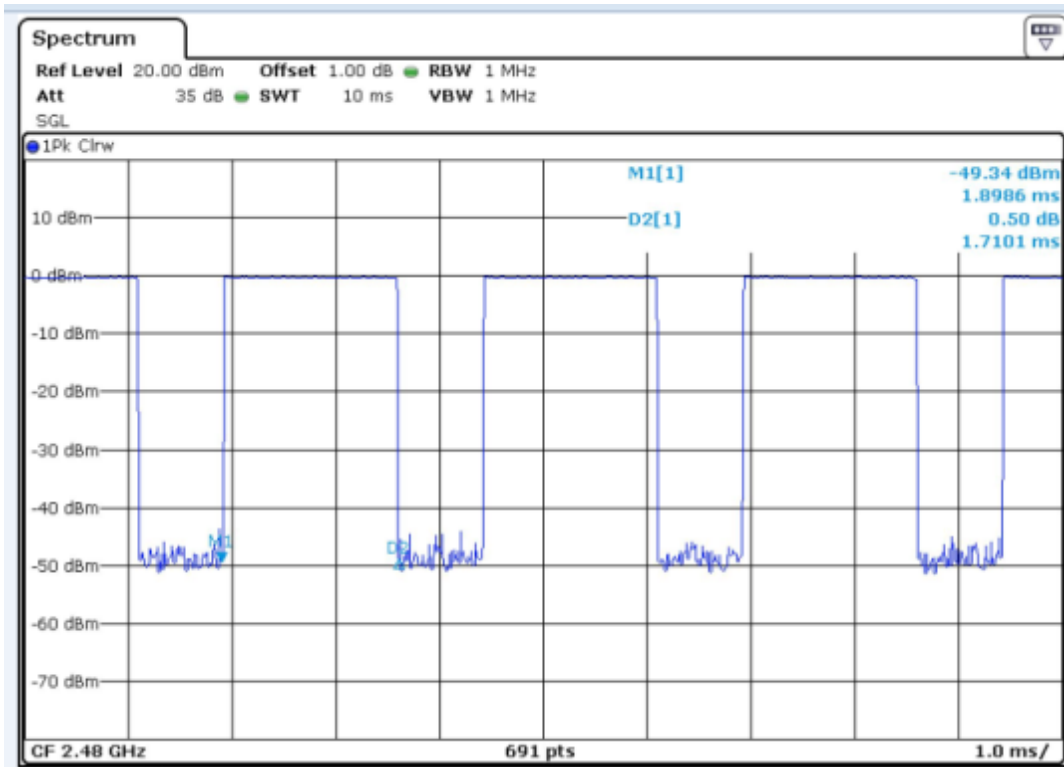
Middle channel DH5:



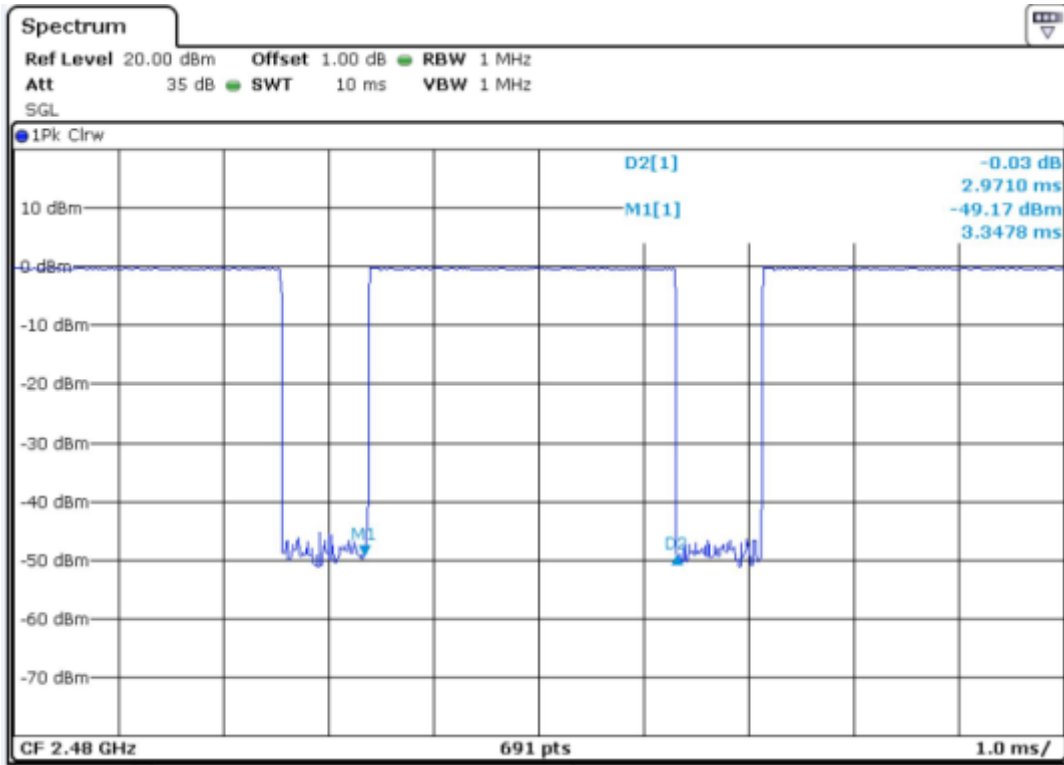
High channel DH1:



High channel DH3:



High channel DH5:



5.2 Mains Emissions

5.2.1 Mains Conducted Emissions

RESULT:

Passed

Test standard	:	FCC Part 15.207
Limits	:	Mains Conducted emissions as defined in above test standards must comply with the mains conducted emission limits specified
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	11 Sep, 2015
Power supply	:	120Vac, 60Hz
Operation mode	:	C,D,E,F,G
Earthing	:	Not connected
Ambient temperature	:	23.2 °C
Relative Humidity	:	56.0 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix 1.

6 Safety Human exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:

Passed

Test Specification

Test standard : FCC KDB Publication 447498 v05r02

The maximum peak output power of the transmitter is 1.26mW, only, which less than 20mW.

The minimum distance for the EUT is 5mm, since maximum peak output power of the transmitter is 1.26mW <10 mW, hence the EUT is excluded from SAR evaluation according to FCC KDB Publication 447498 D01 General RF Exposure Guidance v05r02.

7 Photographs of the Test Set-Up

Photograph 1: Set-up for Spurious Emissions (9kHz - 30MHz)



Photograph 2: Set-up for Spurious Emissions (30MHz-1GHz)



Photograph 3: Set-up for Spurious Emissions (above 1GHz)



Photograph 4: Set-up for Conducted Emission



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