

FCC Radio Test Report

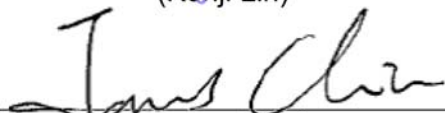
FCC ID: RYK-WPEQ160ACNBT

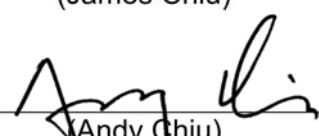
This report concerns (check one): ☒ Original Grant ☐ Class I Change ☐ Class II Change

Project No. : 1706188
Equipment : 802.11ac/a/b/g/n Wi-Fi+BT Module
Test Model : WPEQ-160ACN(BT)
Series Model : WPEQ-160ACN
Applicant : SparkLAN Communications, Inc.
Address : 8F., No.257, Sec.2, Tiding-Blvd., Neihu District, Taipei
City 11493, Taiwan (R.O.C.)

Date of Receipt : Sep. 13, 2017
Date of Test : Sep. 13, 2017 ~ Jan. 05, 2018
Issued Date : Jan. 10, 2018
Tested by : BTL Inc.

Testing Engineer : 
(Kenji Lin)

Technical Manager : 
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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-3-1706188	Original Issue.	Jan. 10, 2018

1. CERTIFICATION

Equipment : 802.11ac/a/b/g/n Wi-Fi+BT Module
Brand Name : SparkLAN
Test Model : WPEQ-160ACN(BT)
Series Model : WPEQ-160ACN
Applicant : SparkLAN Communications, Inc.
Manufacturer : SparkLAN Communications, Inc.
Address : 8F.,No.257,Sec.2,Tiding-Blvd.,Neihu District,Taipei City 11493,Taiwan (R.O.C.)
Date of Test : Sep. 13, 2017 ~ Jan. 05, 2018
Test Sample : Production Unit
Standard(s) : FCC Part15, Subpart C (15.247)/ ANSI C63.10-2013

The above equipment has been tested and found in compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-3-1706188) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test results included in this report is only for the Bluetooth EDR part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): FCC Part15, Subpart C (15.247)			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247 (a)(1)	Hopping Channel Separation	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.247 (b)(1)	Peak Output Power	PASS	
15.247(d) 15.209	Radiated Spurious Emission	PASS	
15.247 (a)(1)(iii)	Number of Hopping Frequency	PASS	
15.247 (a)(1)(iii)	Dwell Time	PASS	
15.205	Restricted Bands	PASS	
15.203	Antenna Requirement	PASS	

Note:

(1)" N/A" denotes test is not applicable in this test report

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

Conducted emission Test:

C05: (VCCI RN: C-4742; FCC RN:965108; FCC DN:TW1082)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Below 1 GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Above 1 GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{CISPR} requirement.

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

A. Conducted emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
C05	CISPR	150 kHz ~ 30MHz	2.68

B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15 (3m)	CISPR	9kHz ~ 150kHz	2.82
		150kHz ~ 30MHz	2.58

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
CB15 (3m)	CISPR	30MHz ~ 200MHz	V	4.20
		30MHz ~ 200MHz	H	3.64
		200MHz ~ 1,000MHz	V	4.56
		200MHz ~ 1,000MHz	H	3.90

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
CB15 (3m)	CISPR	1GHz ~ 6GHz	V	4.46
		1GHz ~ 6GHz	H	4.40
		6GHz ~ 18GHz	V	3.88
		6GHz ~ 18GHz	H	4.00

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15 (1m)	CISPR	18 ~ 26.5 GHz	4.62
		26.5 ~ 40 GHz	5.12

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR} , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz: 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz: 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR} .

Note: unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	802.11ac/a/b/g/n Wi-Fi+BT Module		
Brand Name	SparkLAN		
Test Model	WPEQ-160ACN(BT)		
Series Model	WPEQ-160ACN		
Model Difference	Model No.	WPEQ-160ACN(BT)	WPEQ-160ACN
	BT Function	○	×
EUT Power Rating	DC 3.3V (System supplied.)		
Output Power (Max.)	Operation Frequency	2402~2480 MHz	
	Modulation Technology	GFSK(1Mbps) π /4-DQPSK(2Mbps)	
	Bit Rate of Transmitter	8-DPSK(3Mbps)	
	Output Power Max.	0.28 dBm(1Mbps) -0.17 dBm(3Mbps)	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT doesn't support one or more than one antenna simultaneous transmitting for BT/WIFI 2.4G & 5G.

2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3. Table for Filed Antenna

Ant.	Brand	Test Model	Antenna Type	Connector	Gain (dBi)
1	Wanshin	WSS038	Dipole	RP-SMA	4.6

Note: 2 U.FL connectors (main antenna 0 on, diversity antenna 1 off) for 1T1R.

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX Mode Note (1)

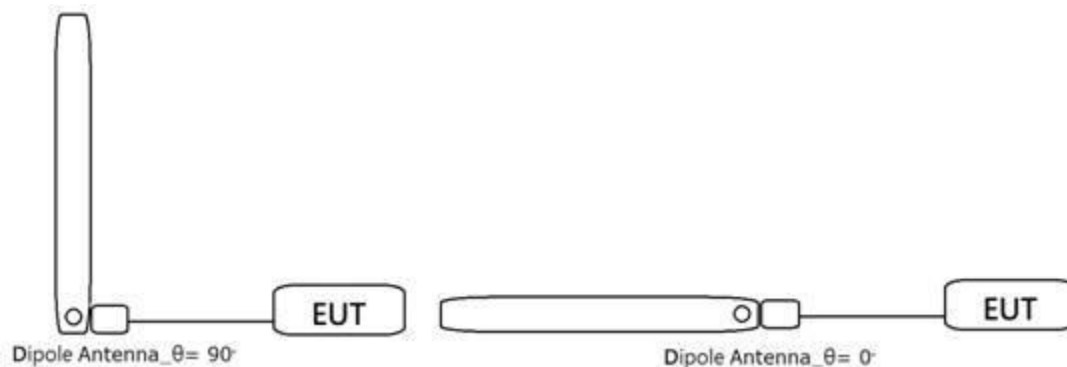
The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Emission	
Final Test Mode	Description
Mode 1	TX Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX Mode Note (1)

Note:

- (1) The measurements are performed at the high, middle, low available channels.
- (2) The measurements for Hopping Channel Separation, Bandwidth and Peak Output Power were tested during 1Mbps, 2Mbps and 3Mbps, the worst case are 1Mbps and 3Mbps, only worst case was documented.
- (3) For Dipole Antenna, the EUT has pre-tested on positioned of 0° & 90°. The worst case was found positioned on 90°. Therefore only the test data of this 90° was used for radiated emission measurement test.



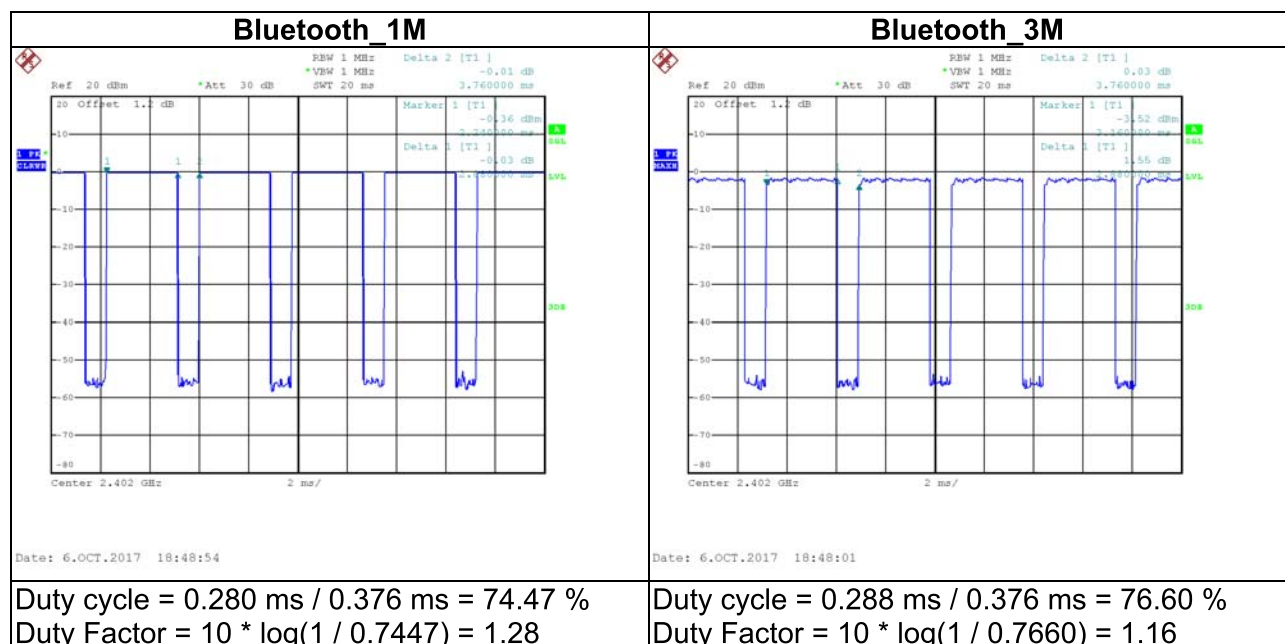
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

Test Software Version	QRCT		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1Mbps)	7	7	7
Parameters(3Mbps)	7	7	7

3.4 DUTY CYCLE

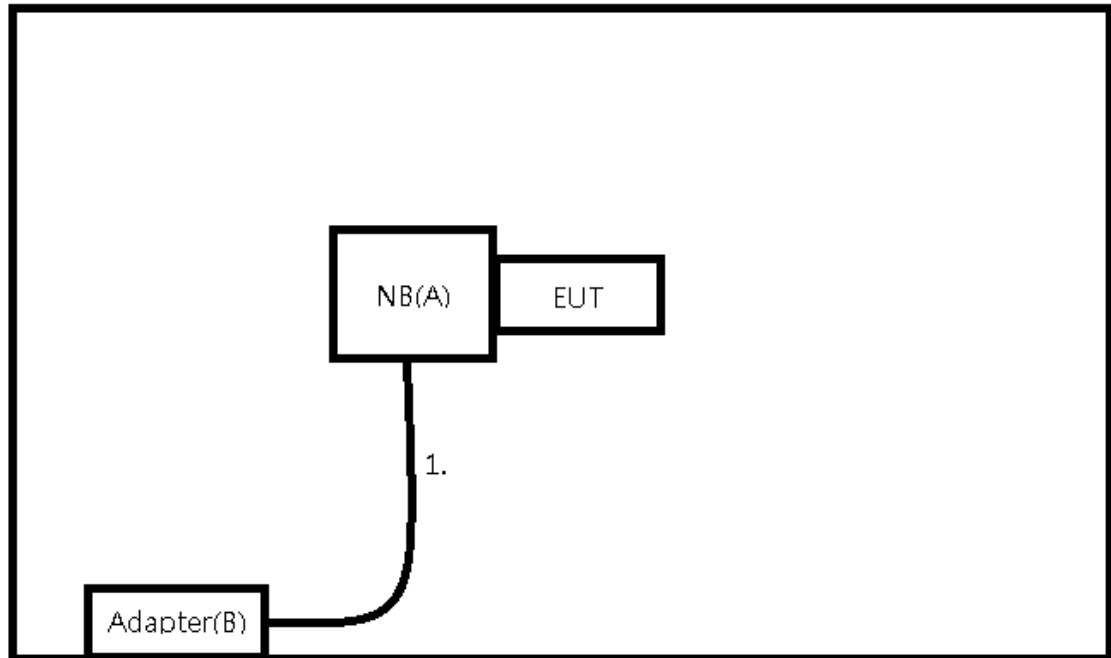
If duty cycle is $\geq 98\%$, duty factor is not required.
If duty cycle is $< 98\%$, duty factor shall be considered.



Note:

1. For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 kHz (Duty cycle $< 98\%$)
2. If the EUT duty cycle is less than 98%, set VBW larger than or equals 1/T, where T = EUT transmission On time.

3.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.6 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
A	Notebook PC	HP	TPN-I119	N/A	N/A
B	Adapter	HP	HSTNN-CA40	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	NO	1.5	Power Cable

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 -0.50	66 to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

Note:

- (1) The limit of " * " decreases with the logarithm of the frequency
- (2) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

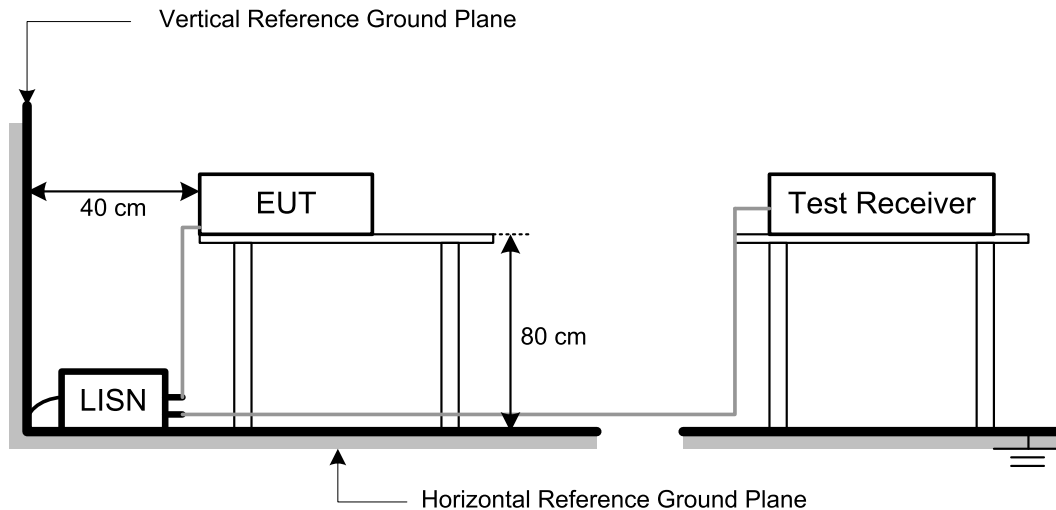
4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical function (as a customer would normally use it), EUT was programmed to be in continuously transmitting/receiving data or hopping on mode.

4.1.6 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

4.1.7 TEST RESULTS

Please refer to the Attachment A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "*" marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz -1000MHz)

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Notes:

- (1) The 9k ~ 30MHz radiated emissions have been verified between the Semi-anechoic chamber and Open site, it meets KDB414788 requirement.

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

Frequency (MHz)	(dBuV/m) (at 3 meters)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
 Margin Level = Measurement Value - Limit Value

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 1/T for Average

Spectrum Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz ~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz ~110KHz for QP detector
Start ~ Stop Frequency	110KHz ~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz ~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

4.2.2 TEST PROCEDURE

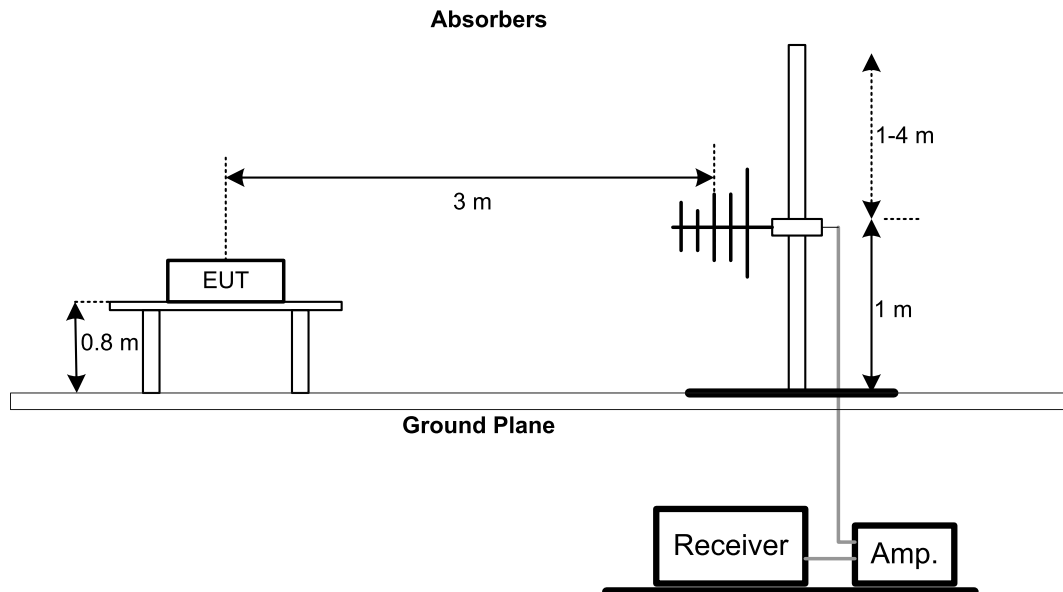
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 DEVIATION FROM TEST STANDARD

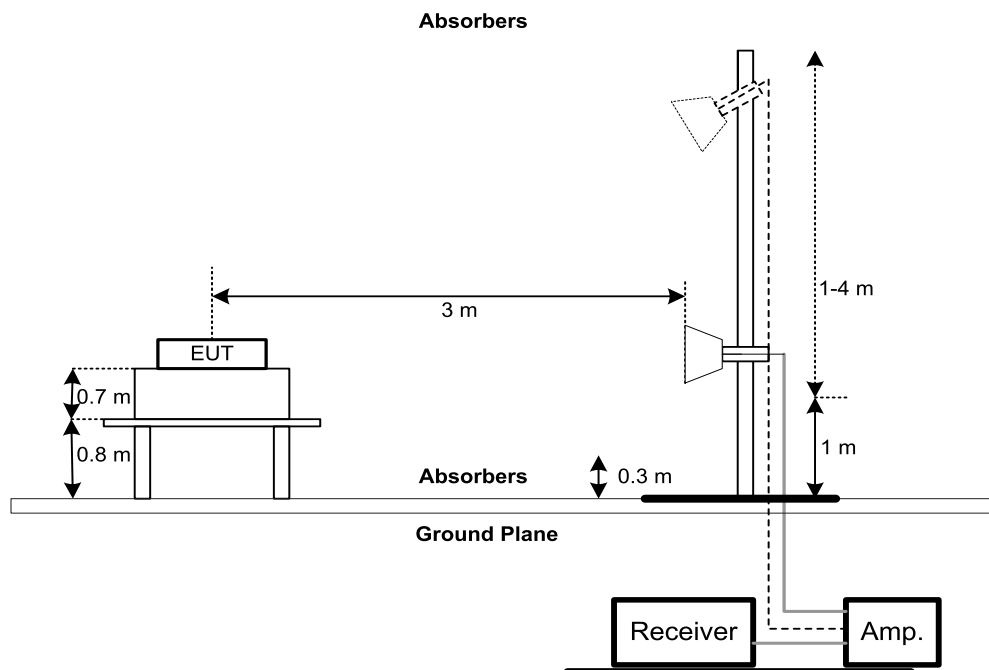
No deviation

4.2.4 TEST SETUP

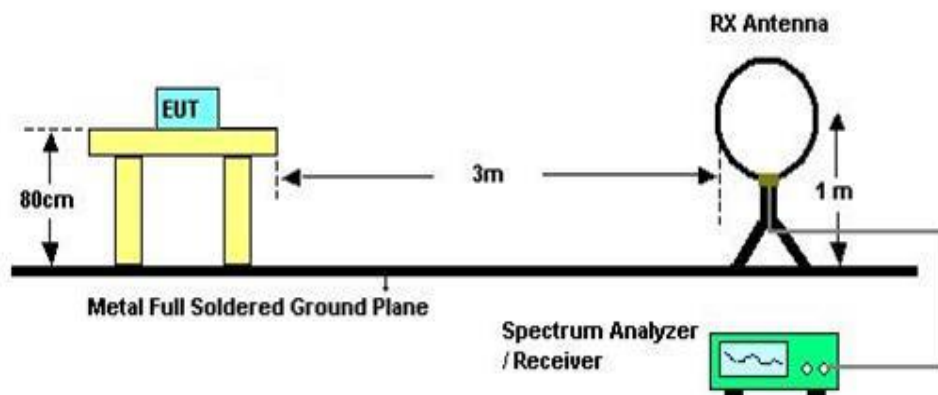
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For Radiated Emissions Below 30MHz



4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

4.2.7 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Attachment B

Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB).
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)

Please refer to the Attachment C.

4.2.9 TEST RESULTS (ABOVE 1000 MHZ)

Please refer to the Attachment D.

Remark:

- (1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(1)(iii)	Number of Hopping Channel	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RBW	100 KHz
VBW	100 KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW=100KHz, VBW=100KHz, Sweep time = Auto.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

5.1.6 TEST RESULTS

Please refer to the Attachment E

6. AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyzer
- Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- Measure the maximum time duration of one single pulse.
A Period Time = (channel number)*0.4

For Normal Mode (79 Channel):

DH1 Time Solt: Reading * (1600/2)*31.6/(channel number)

DH1 Time Solt: Reading * (1600/2)*31.6/(channel number)

DH1 Time Solt: Reading * (1600/2)*31.6/(channel number)

For AFH Mode (20 Channel):

DH1 Time Solt: Reading * (1600/2)*8/(channel number)

DH1 Time Solt: Reading * (1600/4)*8/(channel number)

DH1 Time Solt: Reading * (1600/6)*8/(channel number)

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

6.1.6 TEST RESULTS

Please refer to the Attachment F

7. HOPPING CHANNEL SEPARATION MEASUREMENT

7.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RBW	30 KHz
VBW	100 KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

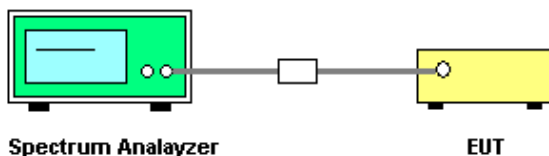
7.1.1 TEST PROCEDURE

- The EUT must have its hopping function enabled
- Span = wide enough to capture the peaks of two adjacent channels
 Resolution (or IF) Bandwidth (RBW) $\geq$ 1% of the span
 Video (or Average) Bandwidth (VBW) $\geq$ RBW
 Sweep = Auto
 Detector function = Peak
 Trace = Max Hold

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT TEST CONDITIONS

Temperature: 25°C
 Relative Humidity: 55%
 Test Voltage: AC 120V/60Hz

7.1.5 TEST RESULTS

Please refer to the Attachment G

8. BANDWIDTH TEST

8.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C		
Section	Test Item	Frequency Range (MHz)
15.247(a)(2)	Bandwidth	2400-2483.5

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RBW	30 KHz (20dB Bandwidth) / 30 KHz (Channel Separation)
VBW	100 KHz (20dB Bandwidth) / 100 KHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep Time = Auto.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

8.1.5 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

8.1.6 TEST RESULTS

Please refer to the Attachment H

9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	1 Watt or 30dBm (hopping channel >75) 0.125Watt or 21dBm (hopping channel <75)	2400-2483.5	PASS

9.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 1MHz/3MHz, VBW= 1MHz/3MHz, Sweep time = Auto.

9.1.2 DEVIATION FROM STANDARD

No deviation.

9.1.3 TEST SETUP



9.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

9.1.5 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

9.1.6 TEST RESULTS

Please refer to the Attachment I

10. ANTENNA CONDUCTED SPURIOUS EMISSION

10.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

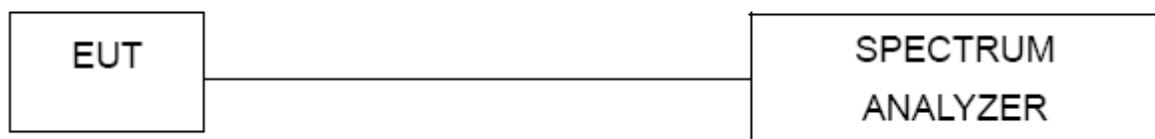
10.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.
- Offset=antenna gain+cable loss

10.1.2 DEVIATION FROM STANDARD

No deviation.

10.1.3 TEST SETUP



10.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

10.1.5 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz

10.1.6 TEST RESULTS

Please refer to the Attachment J

11. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 25, 2018
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 13, 2018
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 08, 2018
4	Measurement Software	EZ	EZ EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMCI	012645B	980267	Feb. 28, 2018
2	Preamplifier	EMCI	EMC02325	980217	Dec. 28, 2018
3	Preamplifier	EMCI	EMC2654045	980030	Feb. 14, 2018
4	Test Cable	EMCI	EMC104-SM-S M-8000	8m	Jan. 04, 2018
5	Test Cable	EMCI	EMC104-SM-S M-800	150207	Jan. 04, 2018
6	Test Cable	EMCI	EEMC104-SM-S M-3000	151205	Jan. 04, 2018
7	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 09, 2018
8	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 22, 2018
9	Loop Ant	EMCO	6502	42960	Nov. 23, 2018
10	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 28, 2018
11	Horn Ant	Schwarzbeck	BBHA 9170	187	May 11, 2018
12	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 16, 2018
13	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 16, 2018

Number of Hopping Channel					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

Average Time of Occupancy					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

Hopping Channel Separation Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

Peak Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

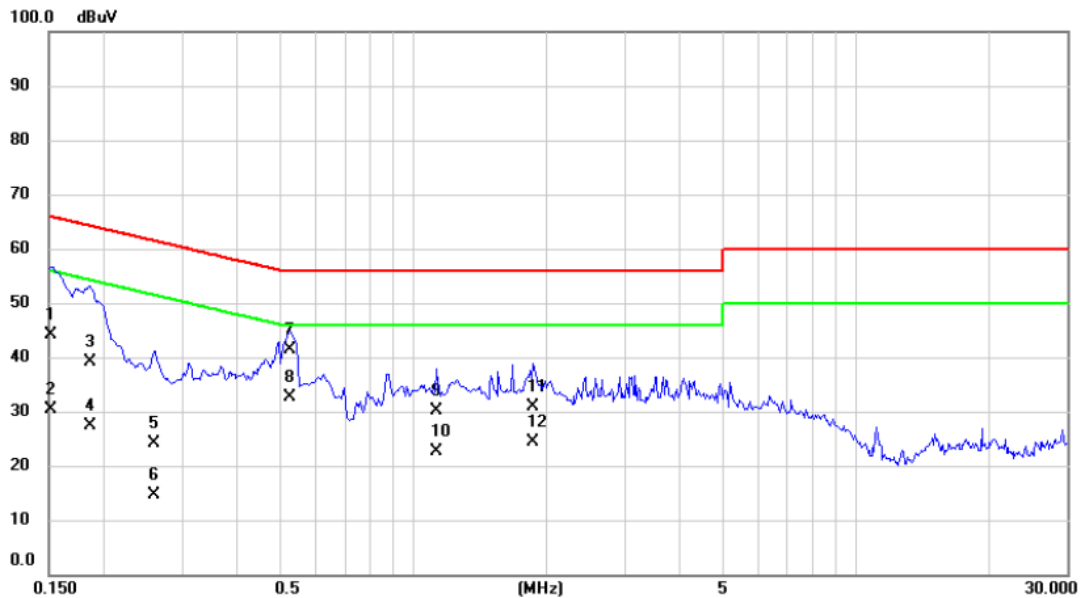
Antenna Conducted Spurious Emission					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	R&S/FSP30	100854	May 25, 2018

Remark: "N/A" denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

ATTACHMENT A - CONDUCTED EMISSION

Test Mode: TX Mode

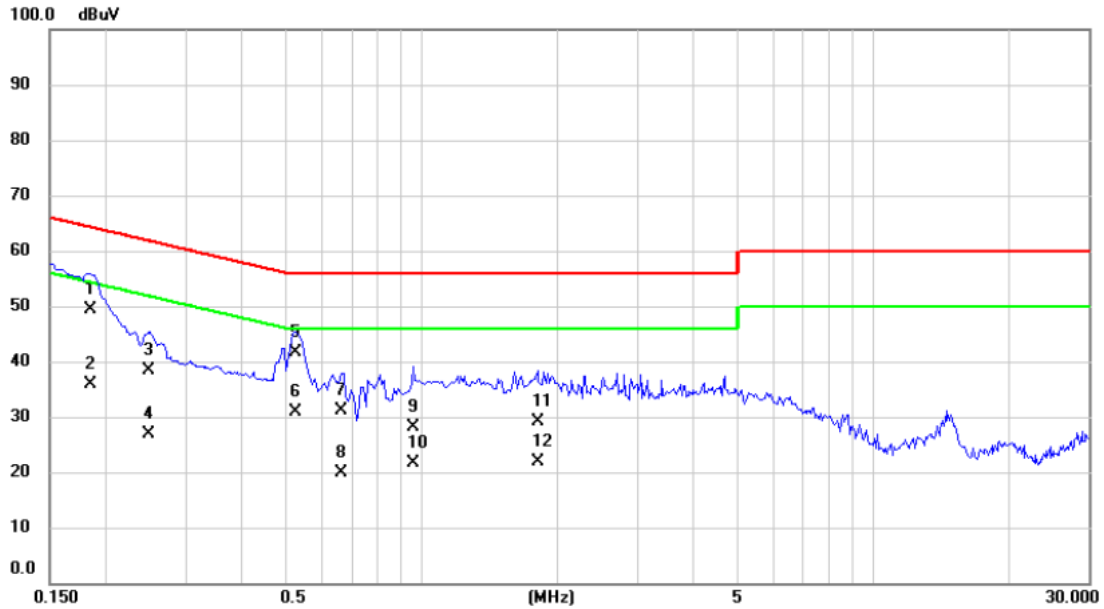
Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1514	34.40	9.73	44.13	65.92	-21.79	QP	
2		0.1514	20.60	9.73	30.33	55.92	-25.59	AVG	
3		0.1857	29.30	9.72	39.02	64.23	-25.21	QP	
4		0.1857	17.60	9.72	27.32	54.23	-26.91	AVG	
5		0.2600	14.50	9.73	24.23	61.43	-37.20	QP	
6		0.2600	4.90	9.73	14.63	51.43	-36.80	AVG	
7		0.5270	31.60	9.74	41.34	56.00	-14.66	QP	
8	*	0.5270	23.00	9.74	32.74	46.00	-13.26	AVG	
9		1.1300	20.30	9.74	30.04	56.00	-25.96	QP	
10		1.1300	12.90	9.74	22.64	46.00	-23.36	AVG	
11		1.8680	21.20	9.77	30.97	56.00	-25.03	QP	
12		1.8680	14.50	9.77	24.27	46.00	-21.73	AVG	

Test Mode: TX Mode

Neutral

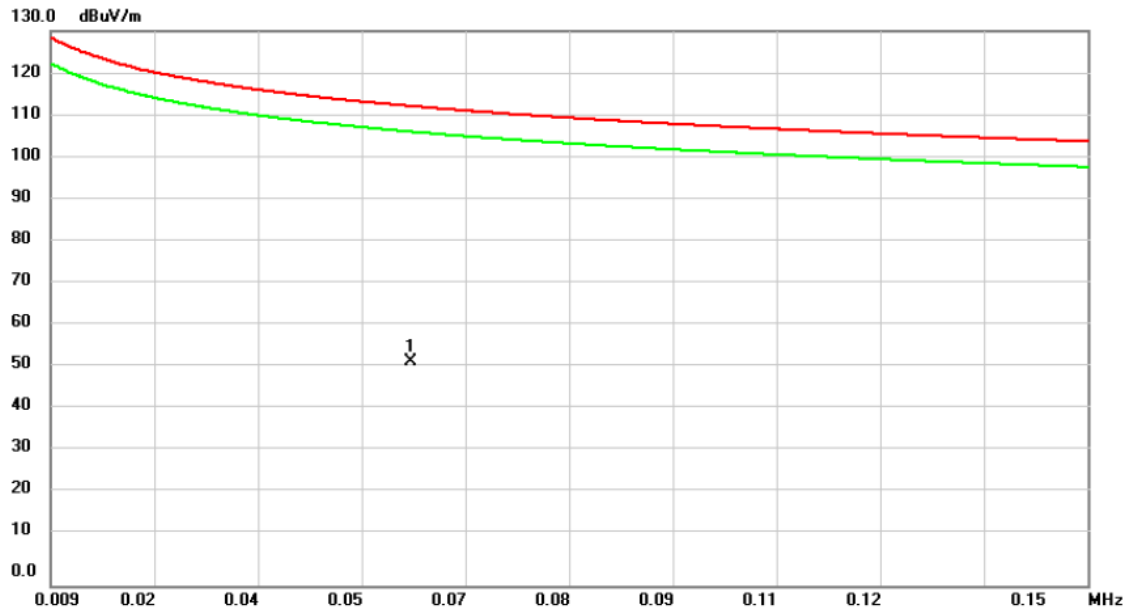


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1843	39.80	9.65	49.45	64.29	-14.84	QP	
2		0.1843	26.30	9.65	35.95	54.29	-18.34	AVG	
3		0.2494	28.80	9.66	38.46	61.78	-23.32	QP	
4		0.2494	17.10	9.66	26.76	51.78	-25.02	AVG	
5	*	0.5270	32.00	9.68	41.68	56.00	-14.32	QP	
6		0.5270	21.30	9.68	30.98	46.00	-15.02	AVG	
7		0.6620	21.40	9.68	31.08	56.00	-24.92	QP	
8		0.6620	10.20	9.68	19.88	46.00	-26.12	AVG	
9		0.9590	18.40	9.69	28.09	56.00	-27.91	QP	
10		0.9590	12.00	9.69	21.69	46.00	-24.31	AVG	
11		1.8050	19.30	9.71	29.01	56.00	-26.99	QP	
12		1.8050	12.10	9.71	21.81	46.00	-24.19	AVG	

ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)

Test Mode: TX 2480MHz_CH78_1Mbps_θ=90°

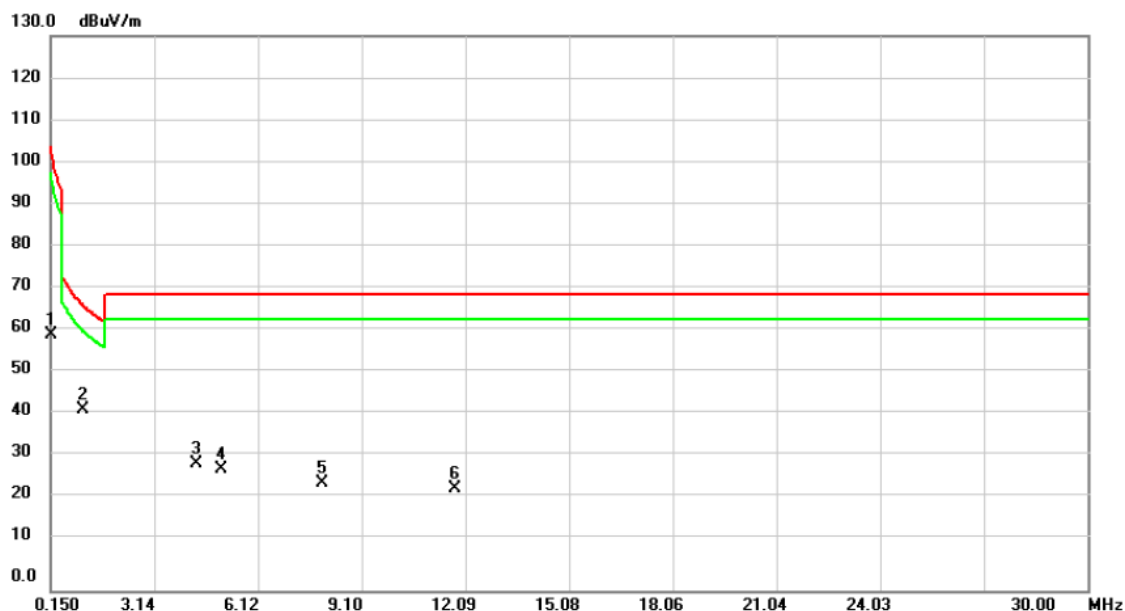
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0580	39.60	12.86	52.46	112.34	-59.88	peak	

Test Mode: TX 2480MHz_CH78_1Mbps_θ=90°

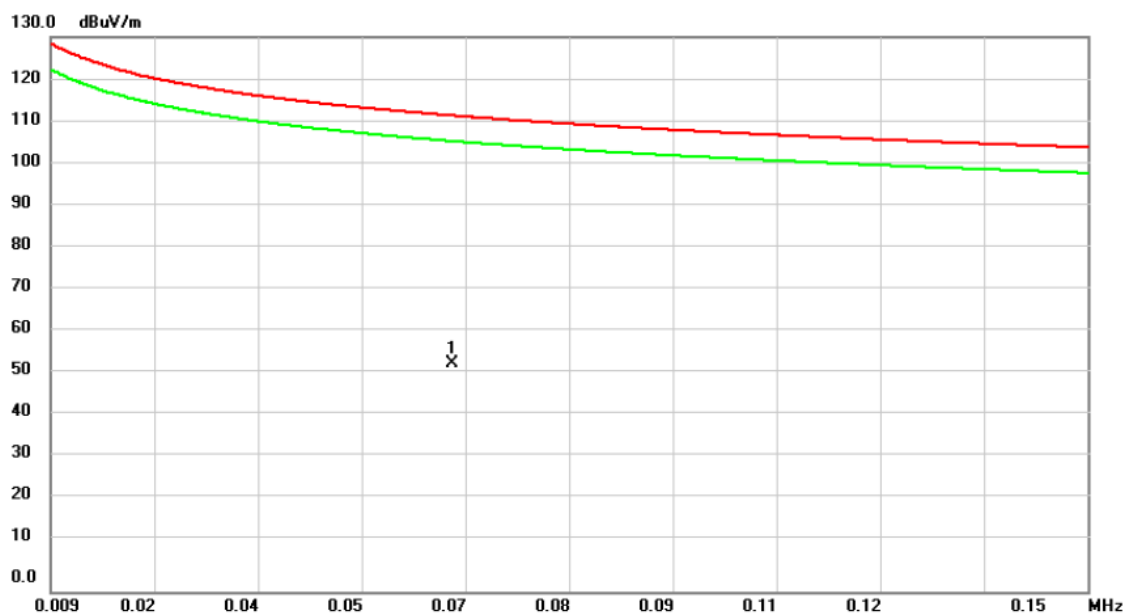
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.93	12.03	59.96	104.08	-44.12	peak	
2	*	1.0750	30.36	11.97	42.33	66.98	-24.65	peak	
3		4.3290	18.38	11.30	29.68	69.54	-39.86	peak	
4		5.0750	16.98	11.40	28.38	69.54	-41.16	peak	
5		7.9706	13.82	11.34	25.16	69.54	-44.38	peak	
6		11.7911	12.65	11.25	23.90	69.54	-45.64	peak	

Test Mode:	TX 2480MHz_CH78_1Mbps_θ=90°
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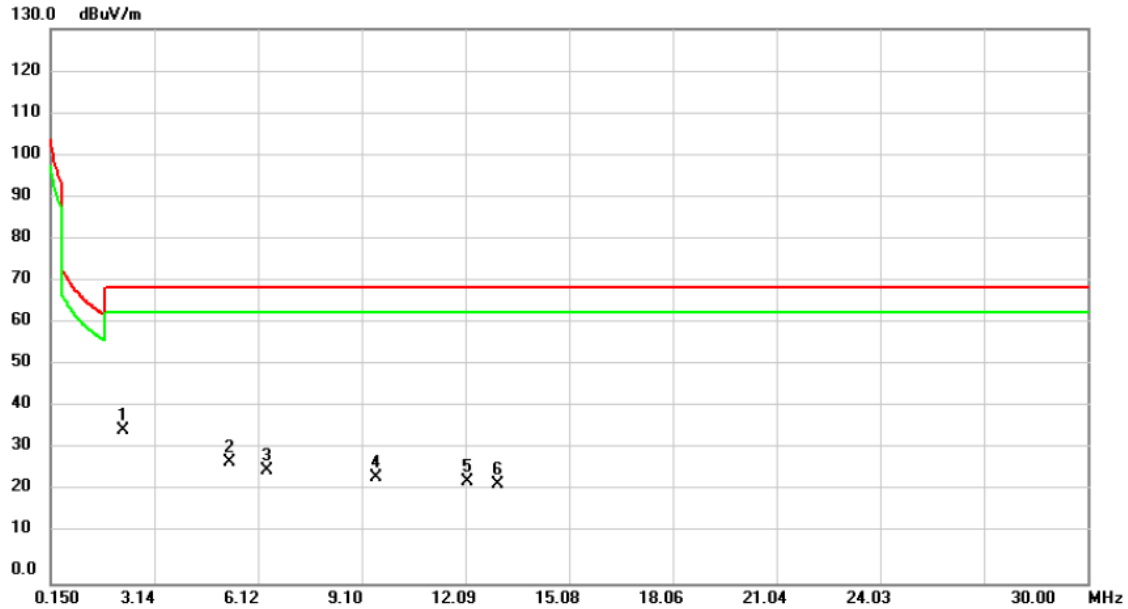
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0637	40.61	12.75	53.36	111.52	-58.16	peak	

Test Mode: TX 2480MHz_CH78_1Mbps_θ=90°

Ant 90°

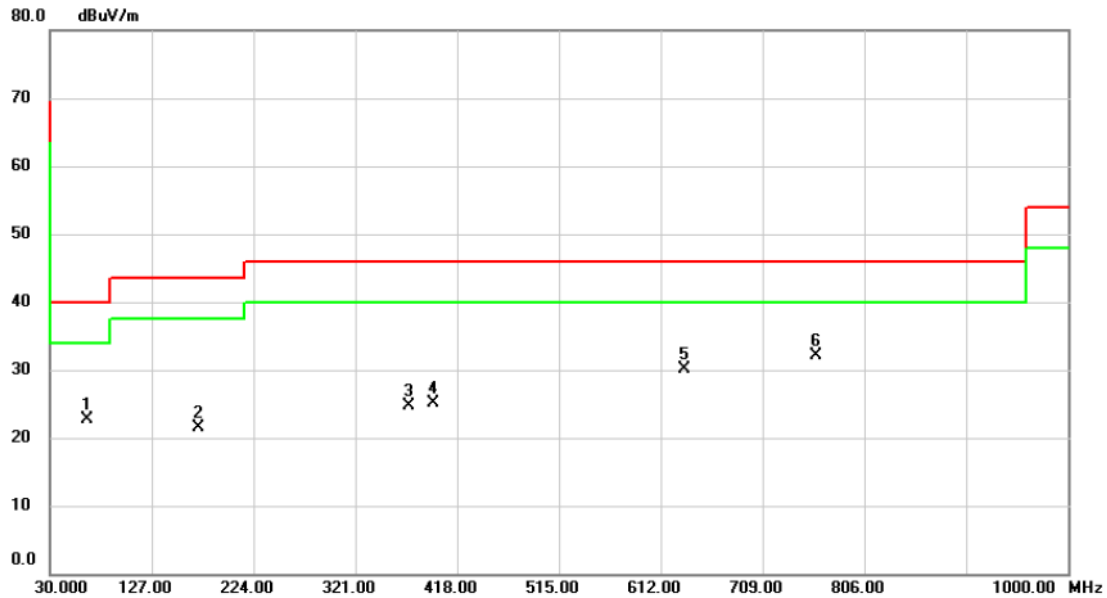


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2.2395	24.62	11.44	36.06	69.54	-33.48	peak	
2		5.2842	16.97	11.39	28.36	69.54	-41.18	peak	
3		6.3887	15.28	11.37	26.65	69.54	-42.89	peak	
4		9.5228	13.44	11.31	24.75	69.54	-44.79	peak	
5		12.1493	12.61	11.24	23.85	69.54	-45.69	peak	
6		13.0152	12.08	11.21	23.29	69.54	-46.25	peak	

ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)

Test Mode: TX 2480MHz_CH78_1Mbps_θ=90°

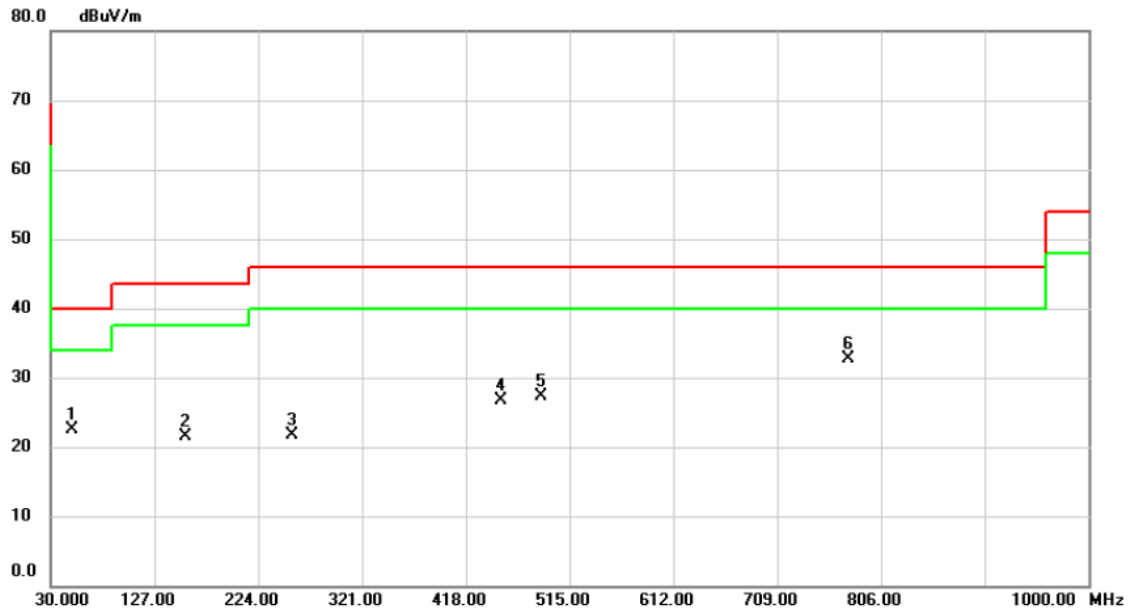
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		65.8900	32.28	-9.52	22.76	40.00	-17.24	peak	
2		171.6200	30.34	-8.77	21.57	43.50	-21.93	peak	
3		372.4100	30.35	-5.65	24.70	46.00	-21.30	peak	
4		394.7200	30.13	-5.08	25.05	46.00	-20.95	peak	
5		634.3100	30.19	-0.15	30.04	46.00	-15.96	peak	
6	*	760.4100	29.98	2.04	32.02	46.00	-13.98	peak	

Test Mode: TX 2480MHz_CH78_1Mbps_θ=90°

Horizontal

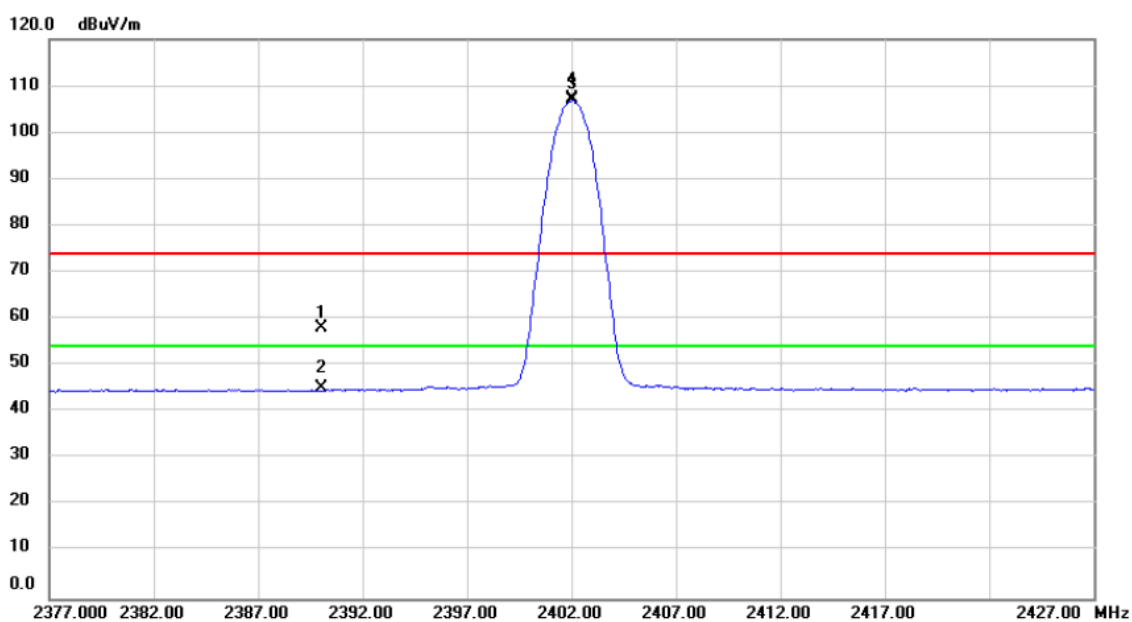


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		49.4000	30.81	-8.33	22.48	40.00	-17.52	peak	
2		156.1000	30.16	-8.73	21.43	43.50	-22.07	peak	
3		256.0100	30.60	-8.89	21.71	46.00	-24.29	peak	
4		450.9800	30.33	-3.55	26.78	46.00	-19.22	peak	
5		488.8100	30.14	-2.91	27.23	46.00	-18.77	peak	
6	*	774.9600	30.47	2.26	32.73	46.00	-13.27	peak	

ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

Test Mode : TX 2402MHz _CH00_1Mbps_θ=90°

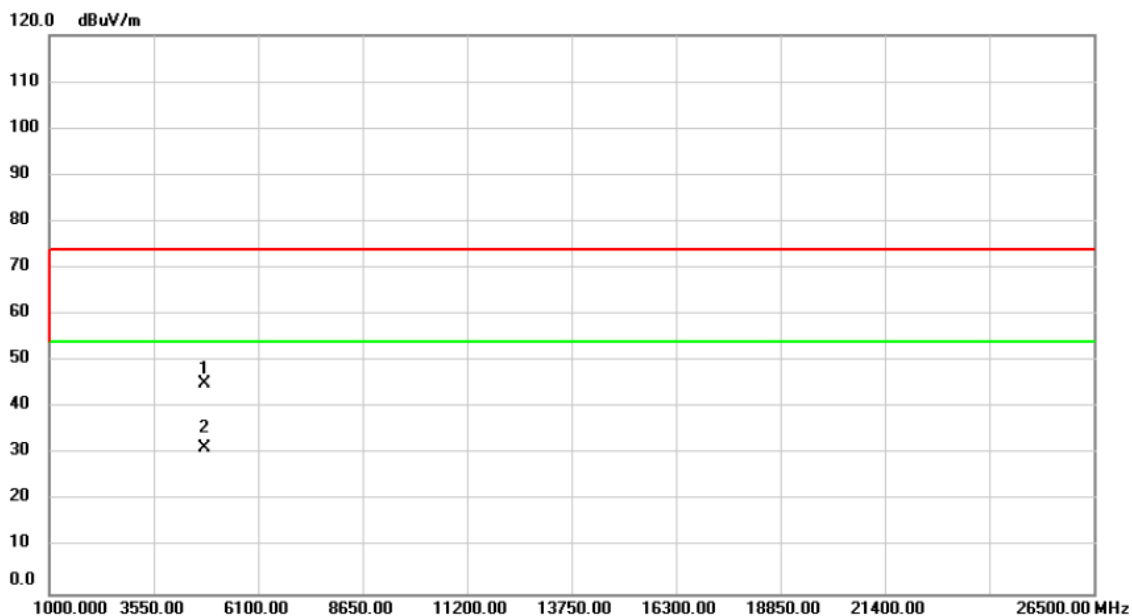
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	26.94	31.06	58.00	74.00	-16.00	peak	
2		2390.000	13.97	31.06	45.03	54.00	-8.97	AVG	
3	X	2402.000	76.03	31.11	107.14	74.00	33.14	peak	No Limit
4	*	2402.000	75.74	31.11	106.85	54.00	52.85	AVG	No Limit

Test Mode :	TX 2402MHz _CH00_1Mbps_θ=90°
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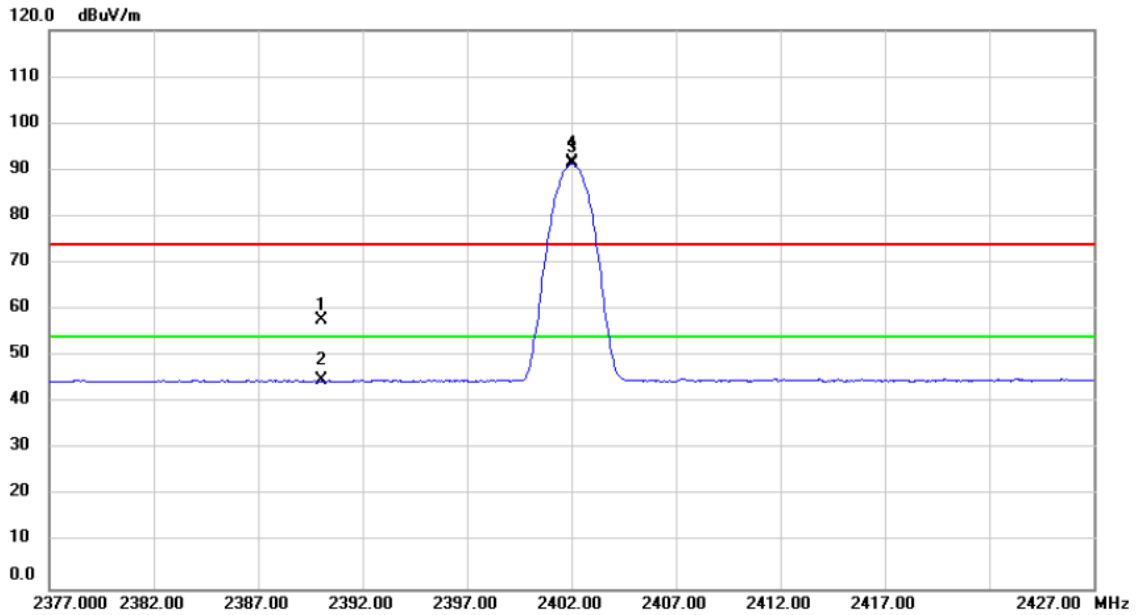
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4804.000	56.41	-11.40	45.01	74.00	-28.99	peak	
2	*	4804.000	42.84	-11.40	31.44	54.00	-22.56	AVG	

Test Mode : TX 2402MHz _CH00_1Mbps_θ=90°

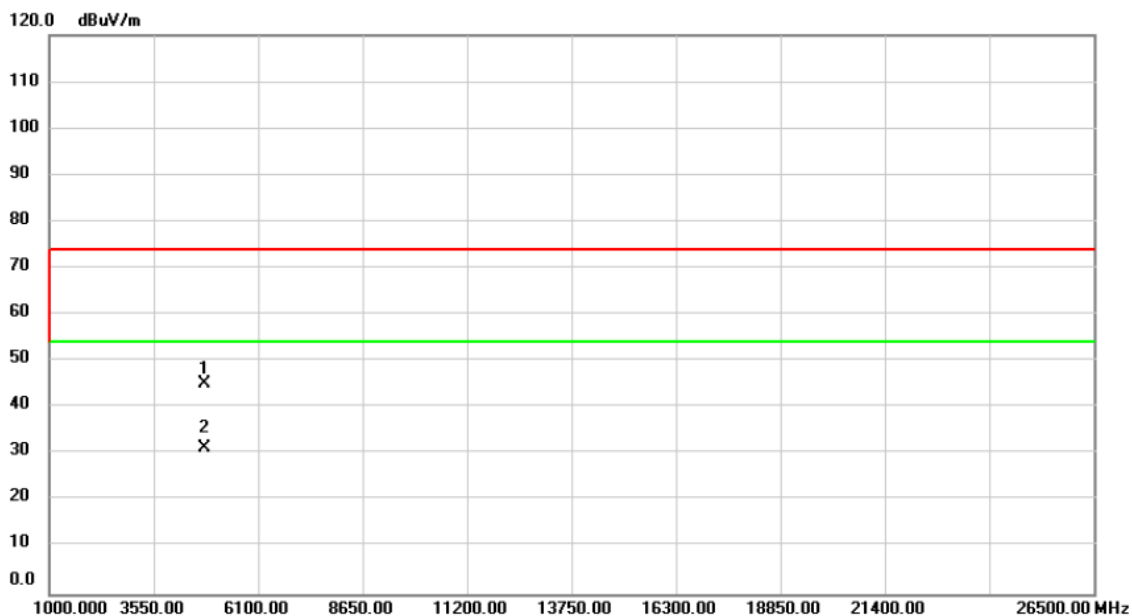
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	26.83	31.06	57.89	74.00	-16.11	peak	
2		2390.000	13.87	31.06	44.93	54.00	-9.07	AVG	
3	X	2402.000	60.47	31.11	91.58	74.00	17.58	peak	No Limit
4	*	2402.000	60.13	31.11	91.24	54.00	37.24	AVG	No Limit

Test Mode :	TX 2402MHz _CH00_1Mbps_θ=90°
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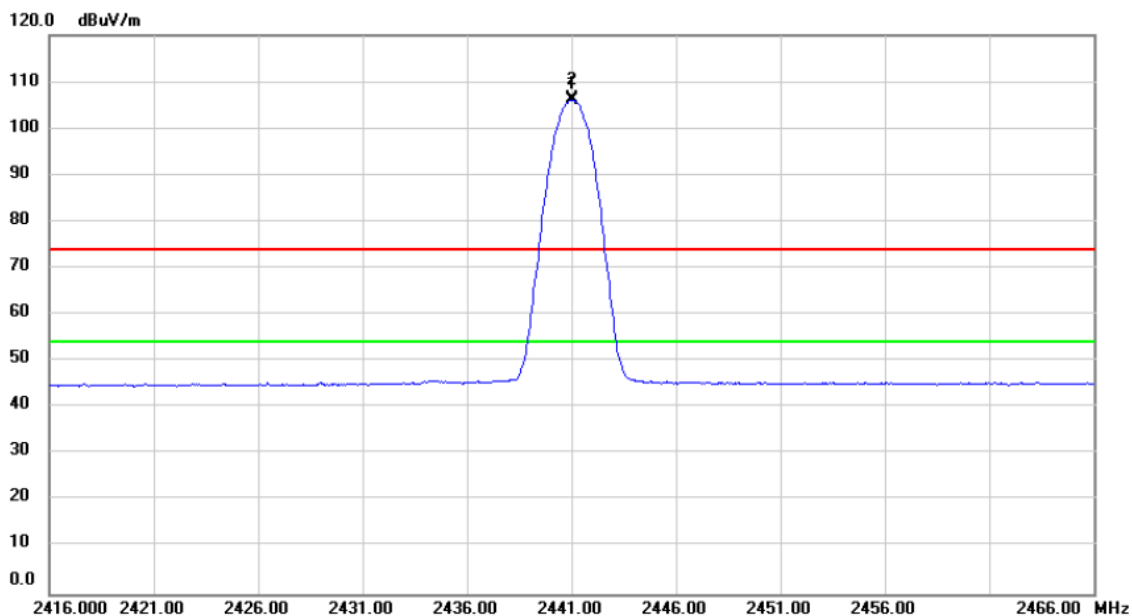
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4804.000	56.64	-11.40	45.24	74.00	-28.76	peak	
2	*	4804.000	42.81	-11.40	31.41	54.00	-22.59	AVG	

Test Mode : TX 2441MHz _CH39_ 1Mbps_ $\theta=90^\circ$

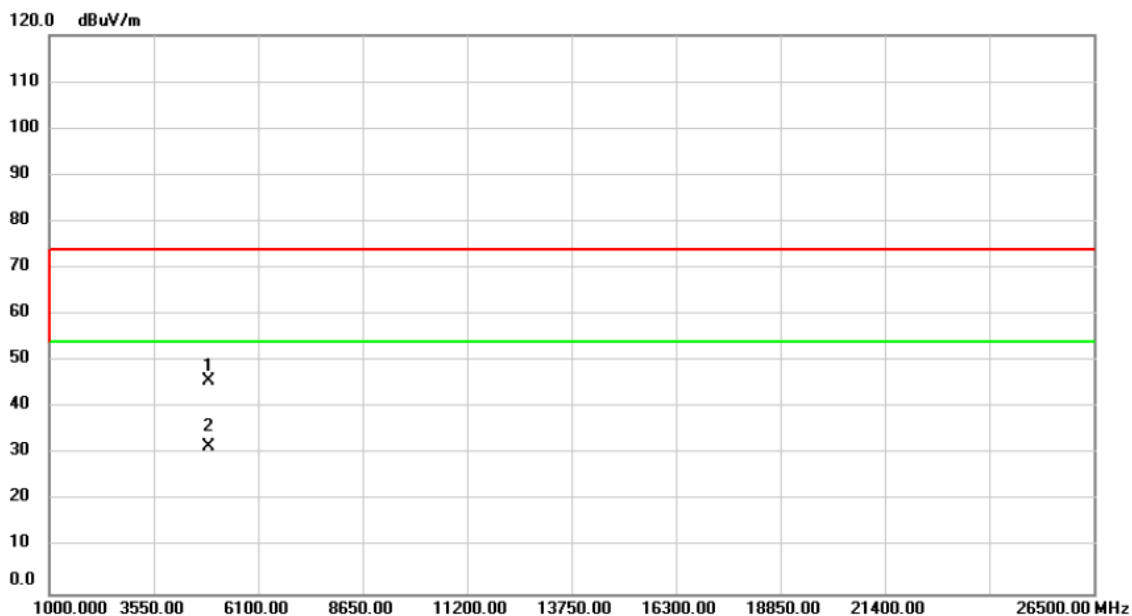
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2441.000	75.12	31.25	106.37	74.00	32.37	peak	No Limit
2	*	2441.000	74.87	31.25	106.12	54.00	52.12	AVG	No Limit

Test Mode : TX 2441MHz _CH39_ 1Mbps_θ=90°

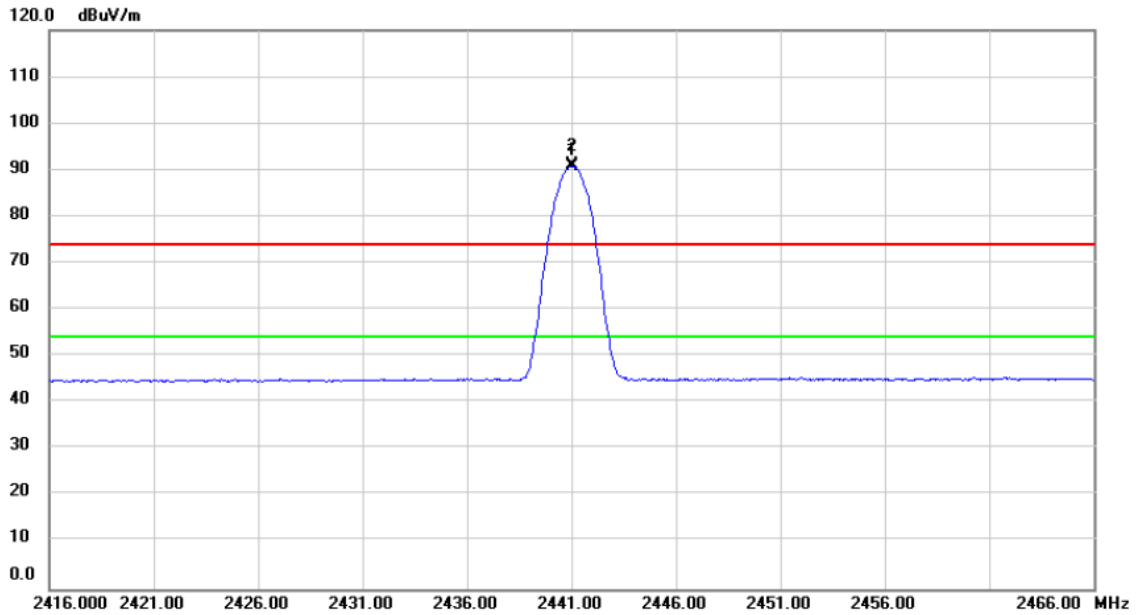
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4882.000	56.97	-11.28	45.69	74.00	-28.31	peak	
2	*	4882.000	42.88	-11.28	31.60	54.00	-22.40	AVG	

Test Mode : TX 2441MHz _CH39_1Mbps_θ=90°

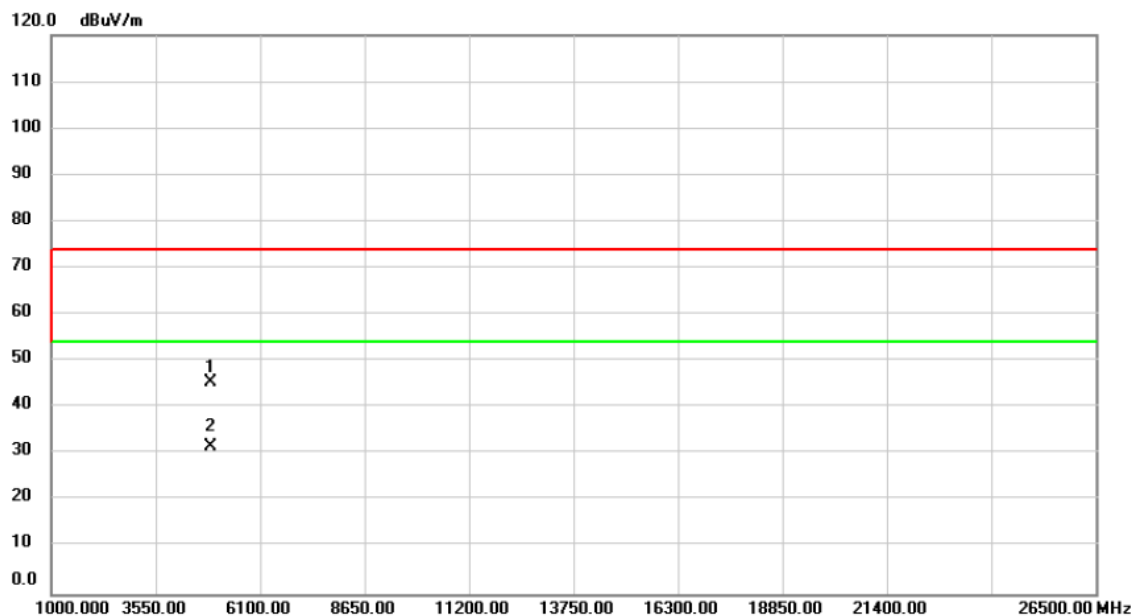
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2441.000	59.88	31.25	91.13	74.00	17.13	peak	No Limit
2	*	2441.000	59.59	31.25	90.84	54.00	36.84	AVG	No Limit

Test Mode :	TX 2441MHz _CH39_1Mbps_θ=90°
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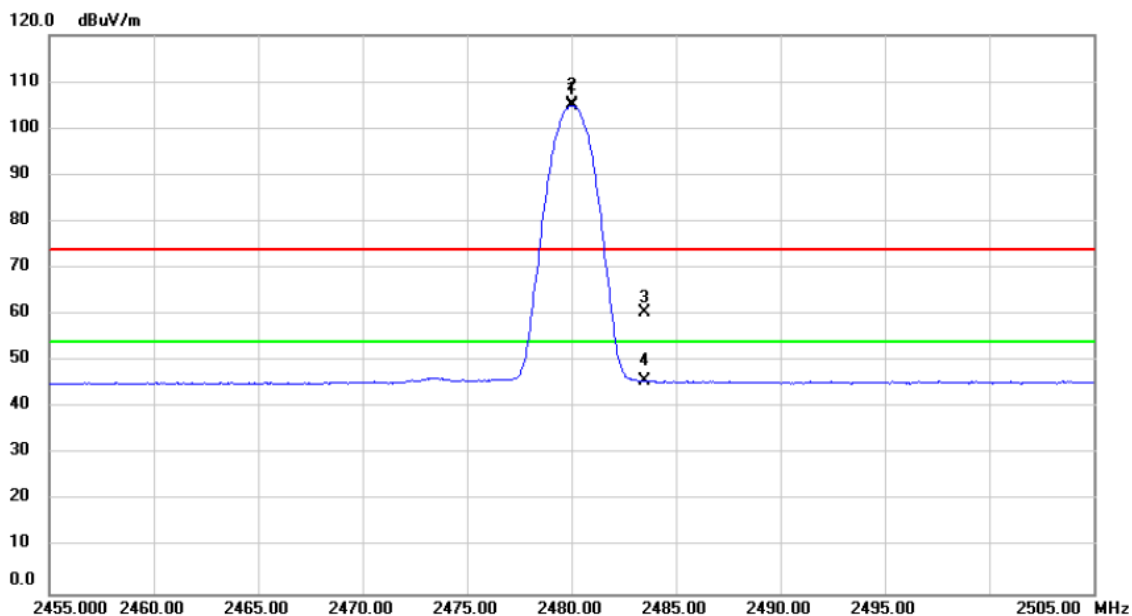
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4882.000	56.59	-11.28	45.31	74.00	-28.69	peak	
2	*	4882.000	42.81	-11.28	31.53	54.00	-22.47	AVG	

Test Mode : TX 2480MHz _CH78_ 1Mbps_ $\theta=90^\circ$

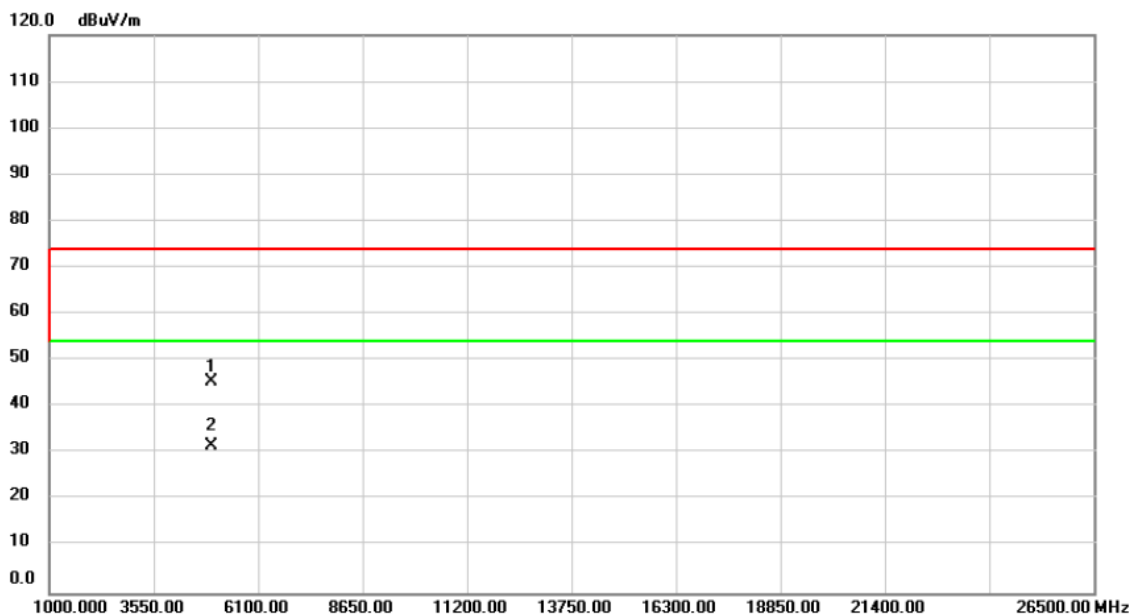
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2480.000	73.84	31.39	105.23	74.00	31.23	peak	No Limit
2	*	2480.000	73.53	31.39	104.92	54.00	50.92	AVG	No Limit
3		2483.500	29.02	31.41	60.43	74.00	-13.57	peak	
4		2483.500	14.40	31.41	45.81	54.00	-8.19	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps_θ=90°
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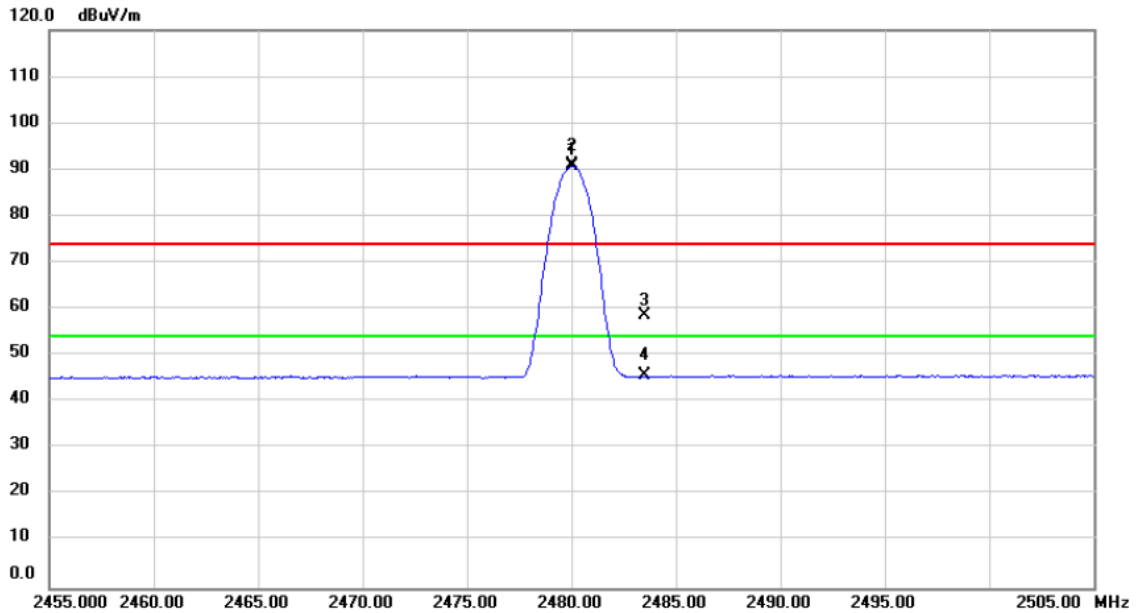
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4960.000	56.56	-11.15	45.41	74.00	-28.59	peak	
2	*	4960.000	42.80	-11.15	31.65	54.00	-22.35	AVG	

Test Mode : TX 2480MHz _CH78_1Mbps_θ=90°

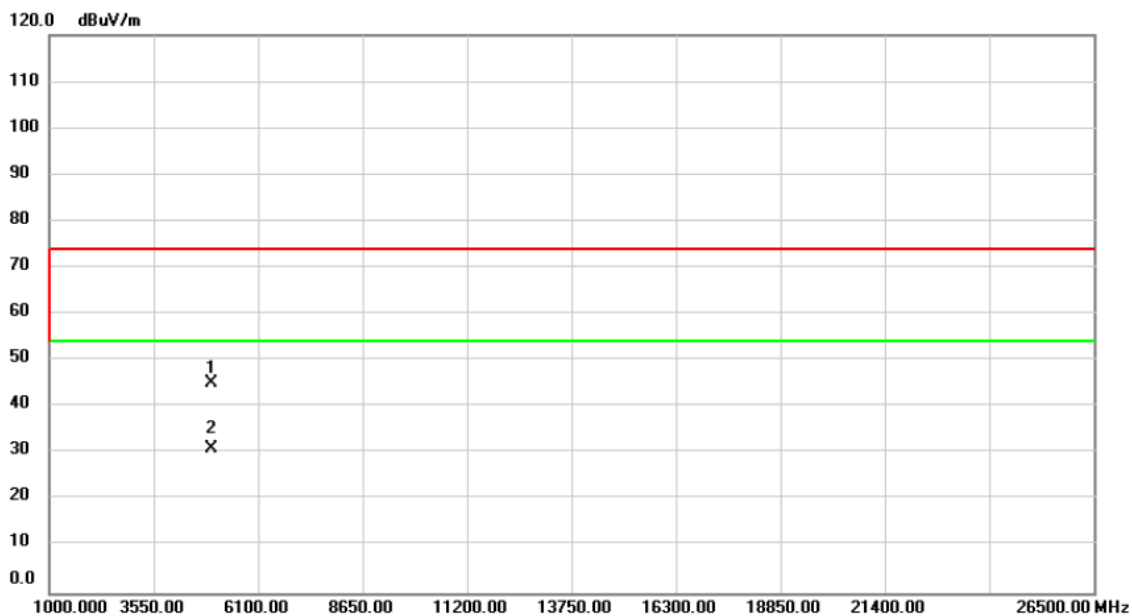
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2480.000	59.74	31.39	91.13	74.00	17.13	peak	No Limit
2	*	2480.000	59.34	31.39	90.73	54.00	36.73	AVG	No Limit
3		2483.500	27.13	31.41	58.54	74.00	-15.46	peak	
4		2483.500	14.45	31.41	45.86	54.00	-8.14	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps_θ=90°
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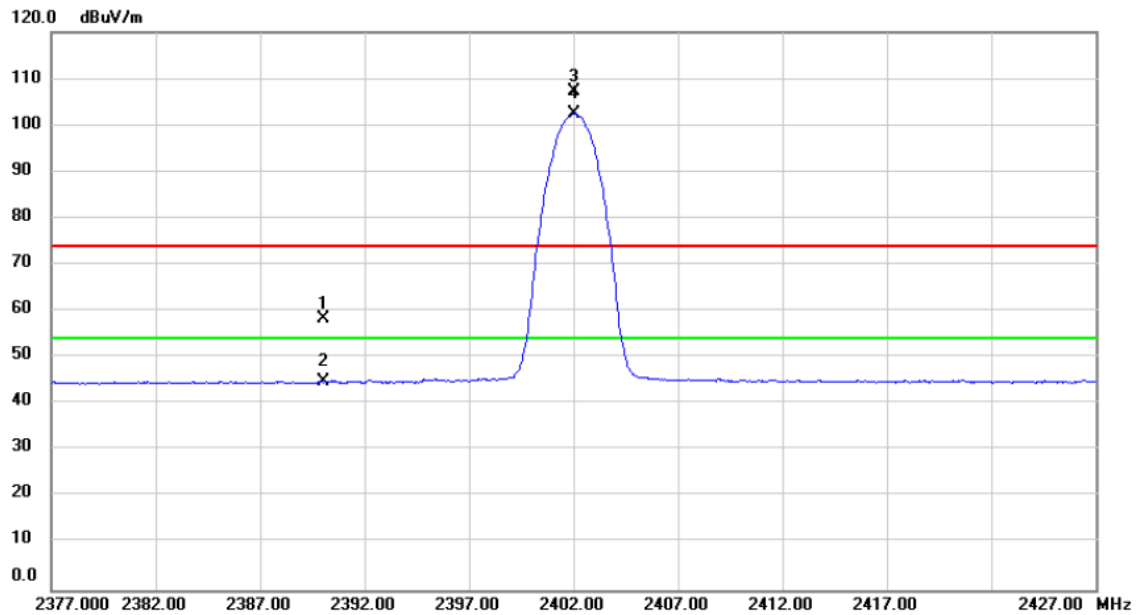
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	56.18	-11.15	45.03	74.00	-28.97	peak	
2	*	4960.000	42.15	-11.15	31.00	54.00	-23.00	AVG	

Test Mode : TX 2402MHz _CH00_ 3Mbps_ $\theta=90^\circ$

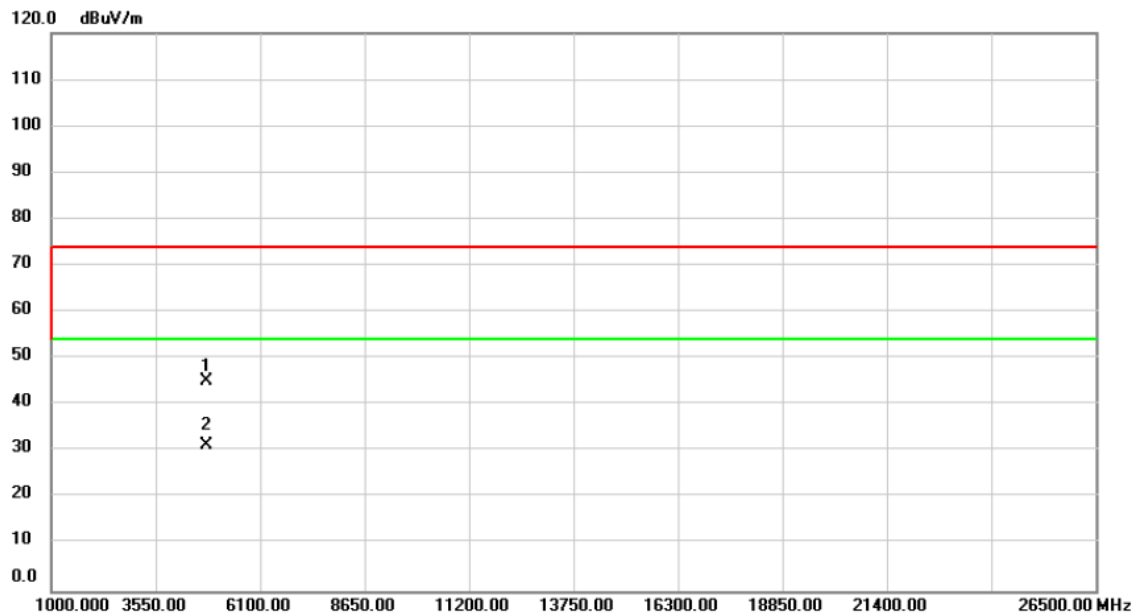
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	27.44	31.06	58.50	74.00	-15.50	peak	
2		2390.000	13.88	31.06	44.94	54.00	-9.06	AVG	
3	X	2402.000	76.04	31.11	107.15	74.00	33.15	peak	No Limit
4	*	2402.000	71.31	31.11	102.42	54.00	48.42	AVG	No Limit

Test Mode : TX 2402MHz _CH00_3Mbps_θ=90°

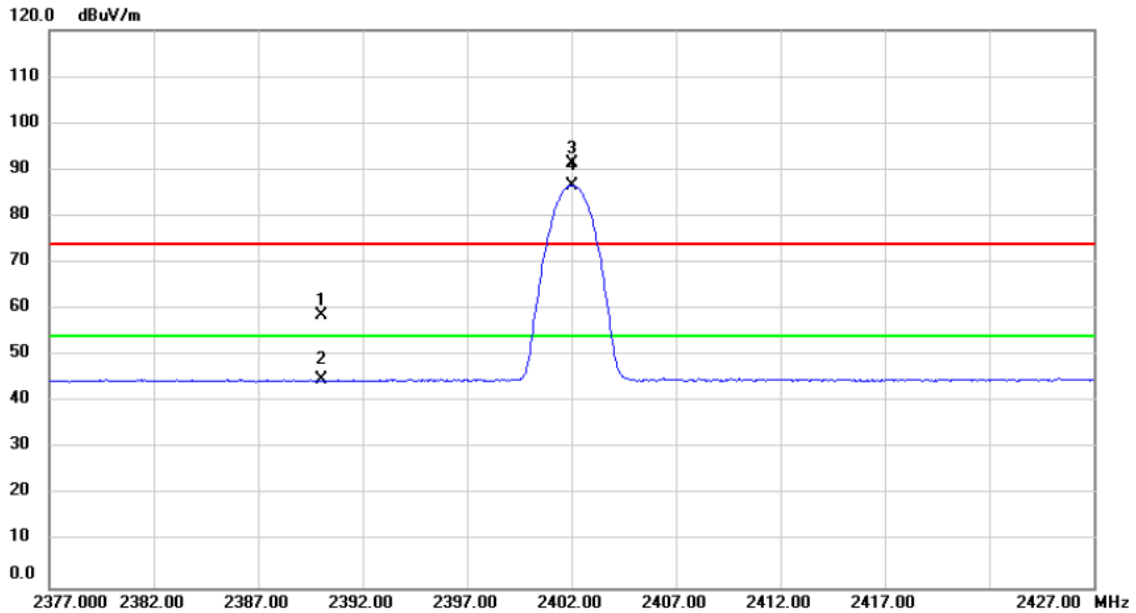
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4804.000	56.42	-11.40	45.02	74.00	-28.98	peak	
2	*	4804.000	42.88	-11.40	31.48	54.00	-22.52	AVG	

Test Mode : TX 2402MHz _CH00_3Mbps_θ=90°

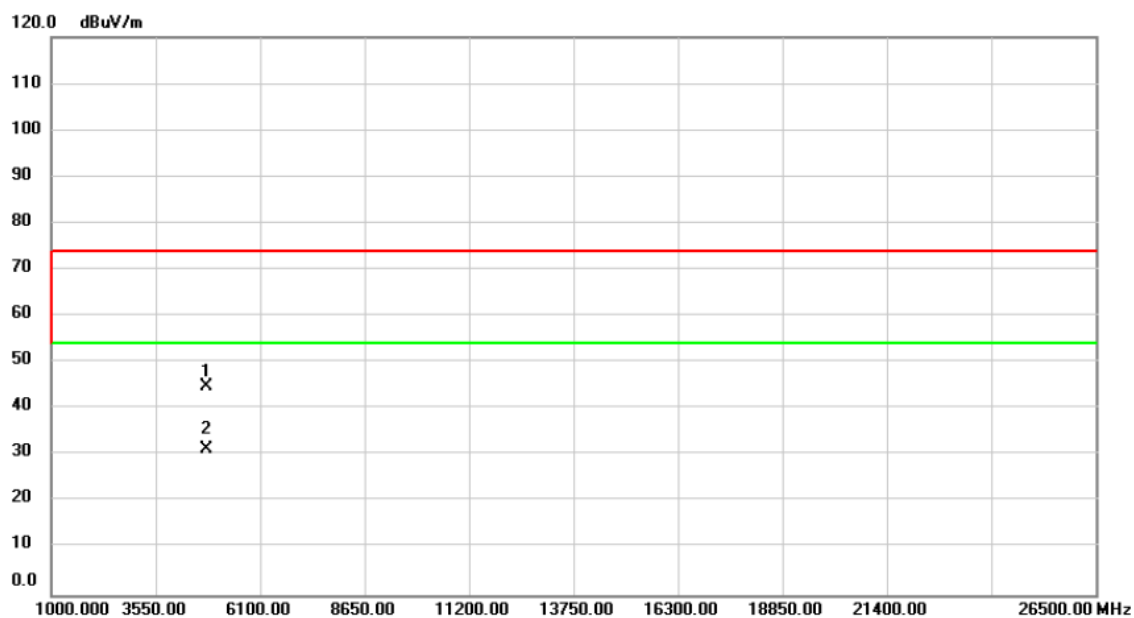
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	27.61	31.06	58.67	74.00	-15.33	peak	
2		2390.000	13.72	31.06	44.78	54.00	-9.22	AVG	
3	X	2402.000	60.26	31.11	91.37	74.00	17.37	peak	No Limit
4	*	2402.000	55.59	31.11	86.70	54.00	32.70	AVG	No Limit

Test Mode :	TX 2402MHz _CH00_3Mbps_θ=90°
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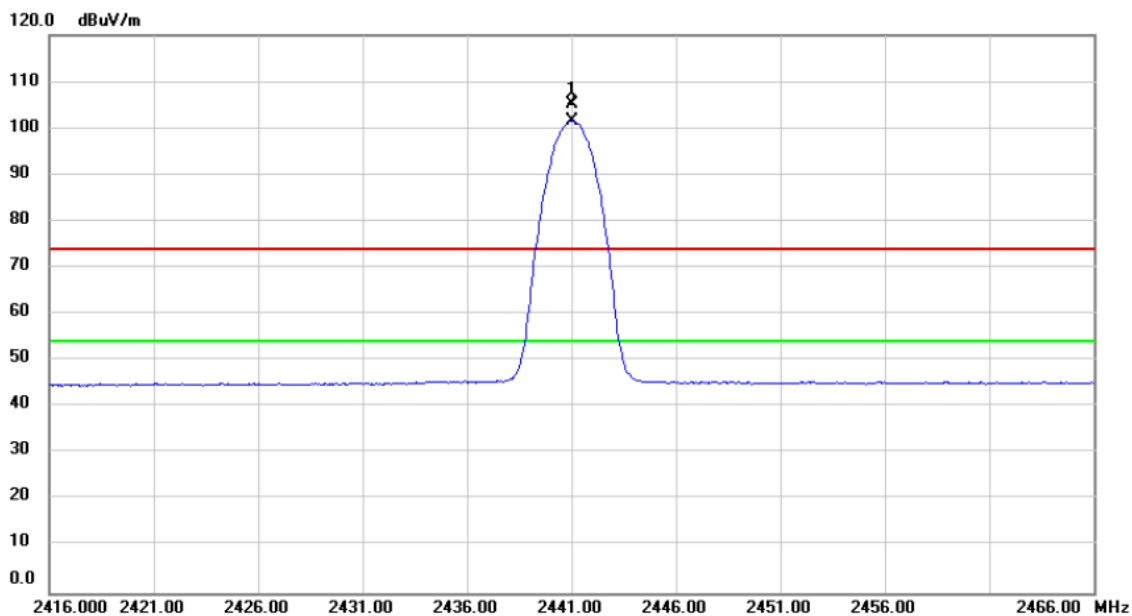
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4804.000	56.19	-11.40	44.79	74.00	-29.21	peak	
2	*	4804.000	42.89	-11.40	31.49	54.00	-22.51	AVG	

Test Mode : TX 2441MHz _CH39_3Mbps_θ=90°

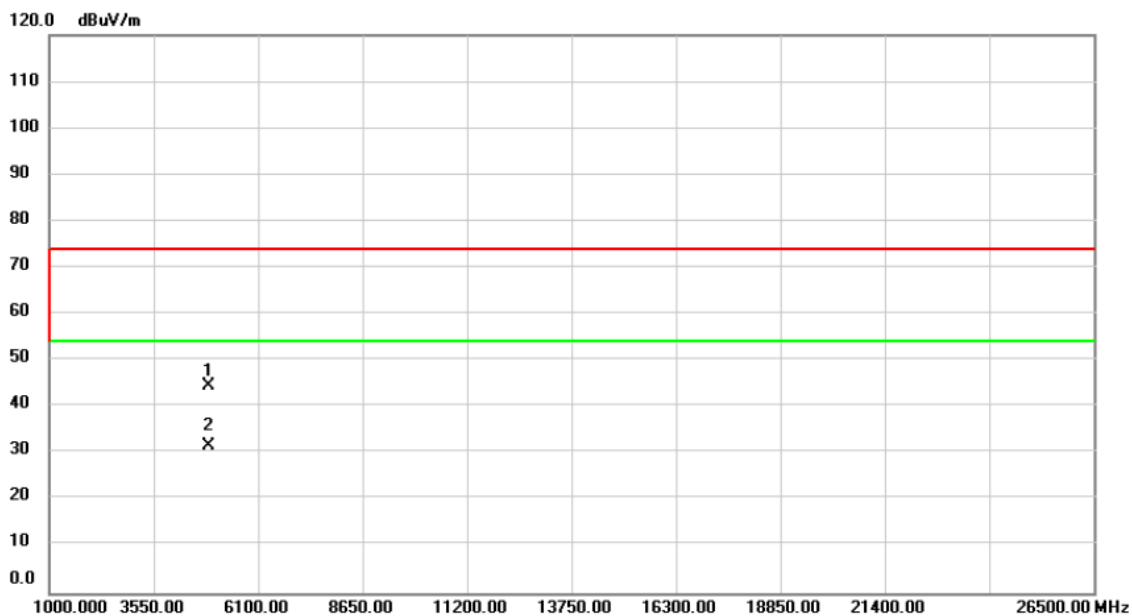
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2441.000	73.92	31.25	105.17	74.00	31.17	peak	No Limit
2	*	2441.000	70.35	31.25	101.60	54.00	47.60	AVG	No Limit

Test Mode :	TX 2441MHz _CH39_3Mbps_θ=90°
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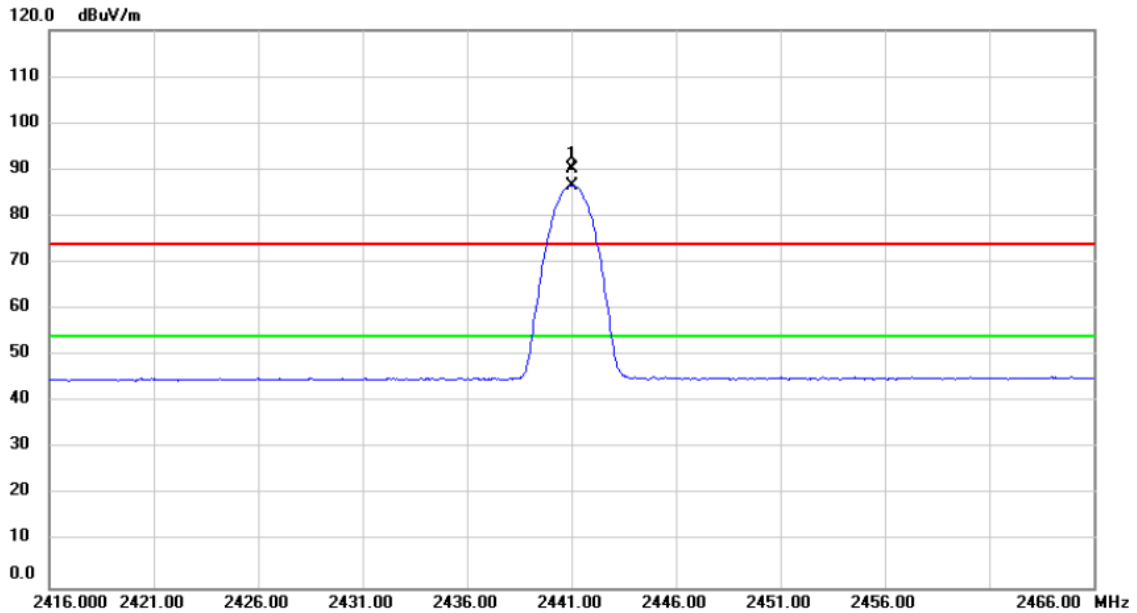
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4882.000	55.73	-11.28	44.45	74.00	-29.55	peak	
2	*	4882.000	42.95	-11.28	31.67	54.00	-22.33	AVG	

Test Mode : TX 2441MHz _CH39_3Mbps_θ=90°

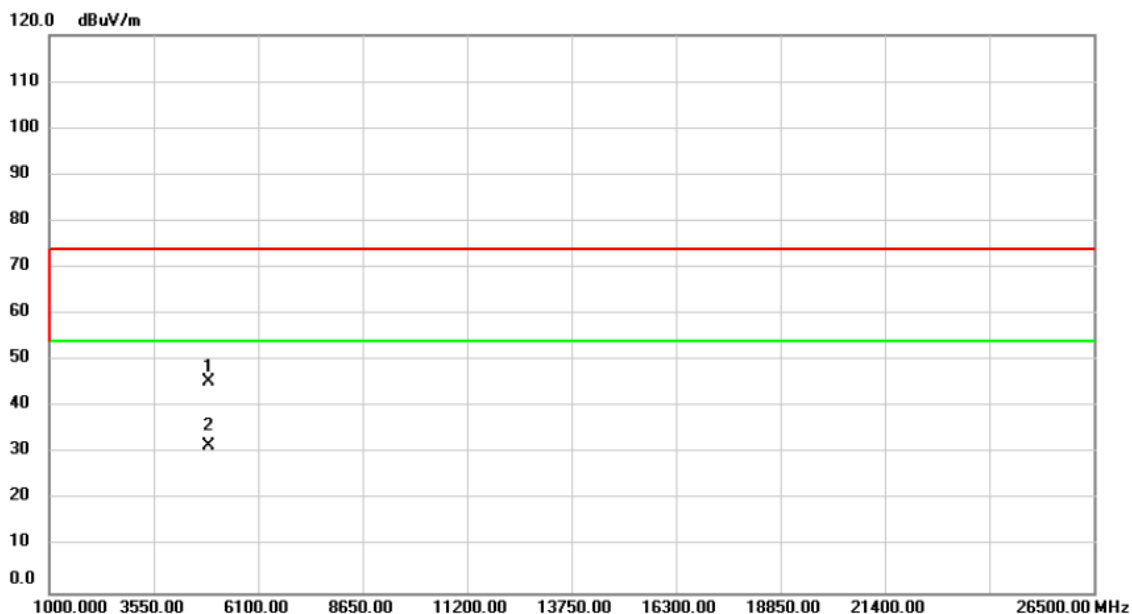
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2441.000	59.03	31.25	90.28	74.00	16.28	peak	No Limit
2	*	2441.000	55.34	31.25	86.59	54.00	32.59	AVG	No Limit

Test Mode :	TX 2441MHz _CH39_3Mbps_θ=90°
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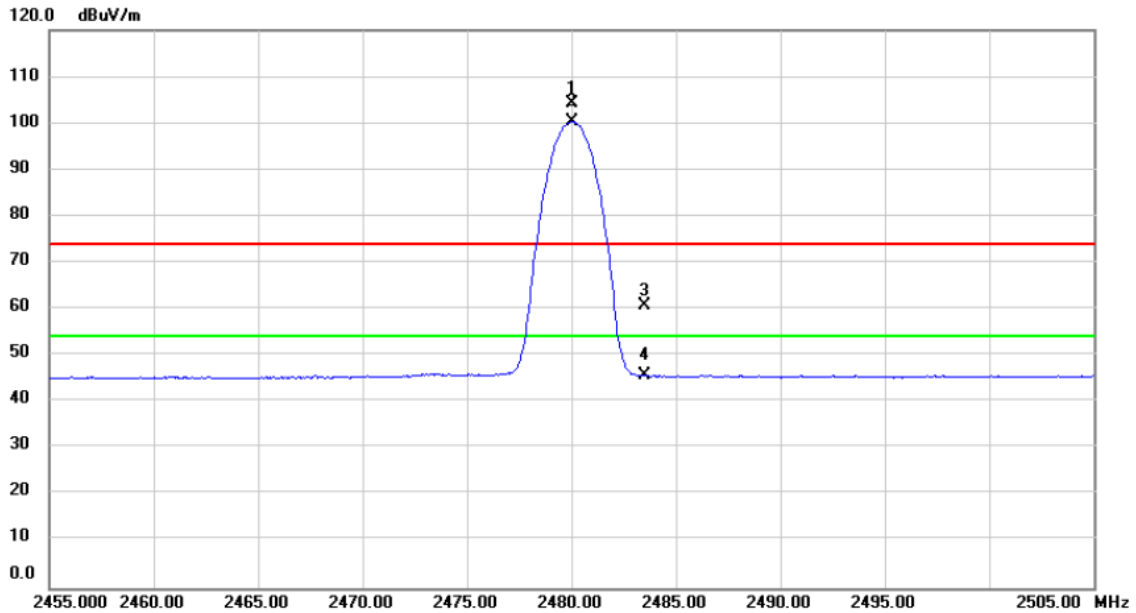
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4882.000	56.64	-11.28	45.36	74.00	-28.64	peak	
2	*	4882.000	42.81	-11.28	31.53	54.00	-22.47	AVG	

Test Mode : TX 2480MHz _CH78_ 3Mbps_ $\theta=90^\circ$

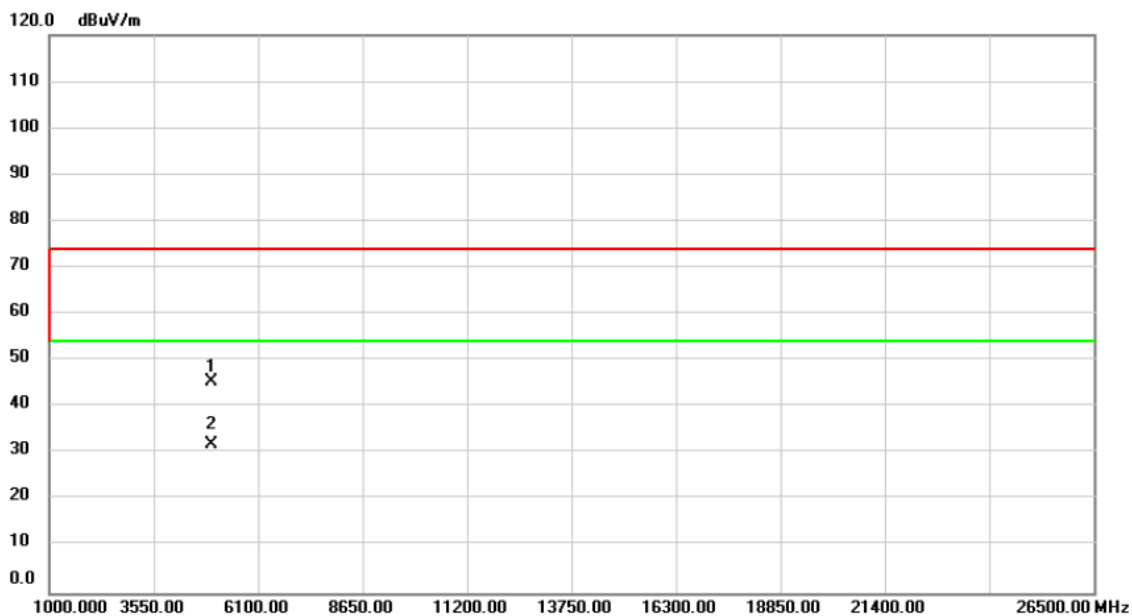
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2480.000	72.74	31.39	104.13	74.00	30.13	peak	No Limit
2	*	2480.000	68.94	31.39	100.33	54.00	46.33	AVG	No Limit
3		2483.500	29.34	31.41	60.75	74.00	-13.25	peak	
4		2483.500	14.38	31.41	45.79	54.00	-8.21	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps_θ=90°
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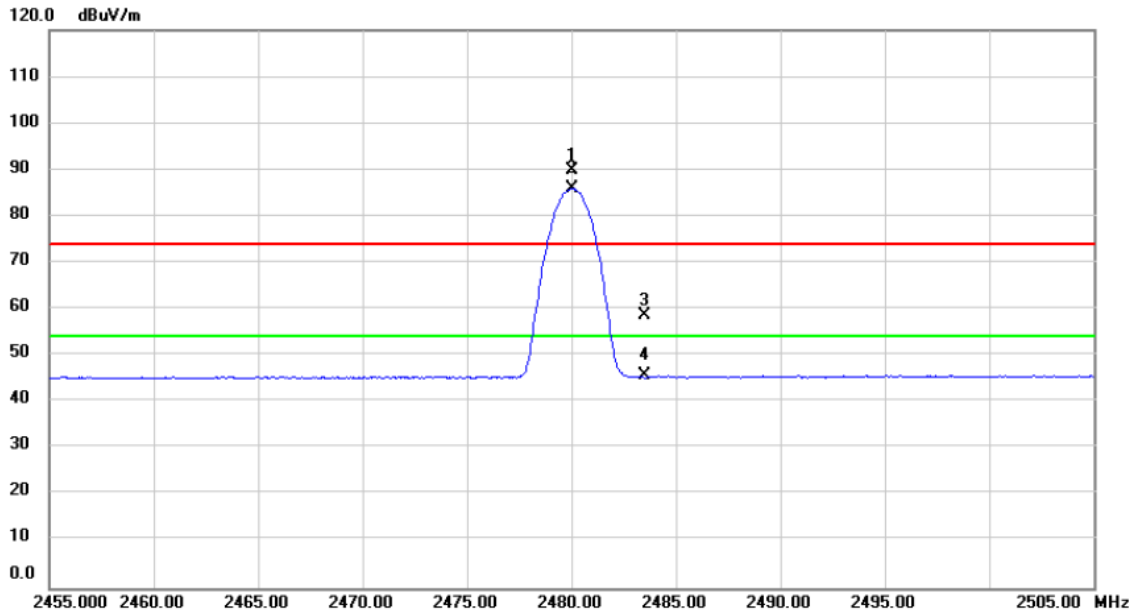
Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4960.000	56.74	-11.15	45.59	74.00	-28.41	peak	
2	*	4960.000	42.99	-11.15	31.84	54.00	-22.16	AVG	

Test Mode : TX 2480MHz _CH78_3Mbps_θ=90°

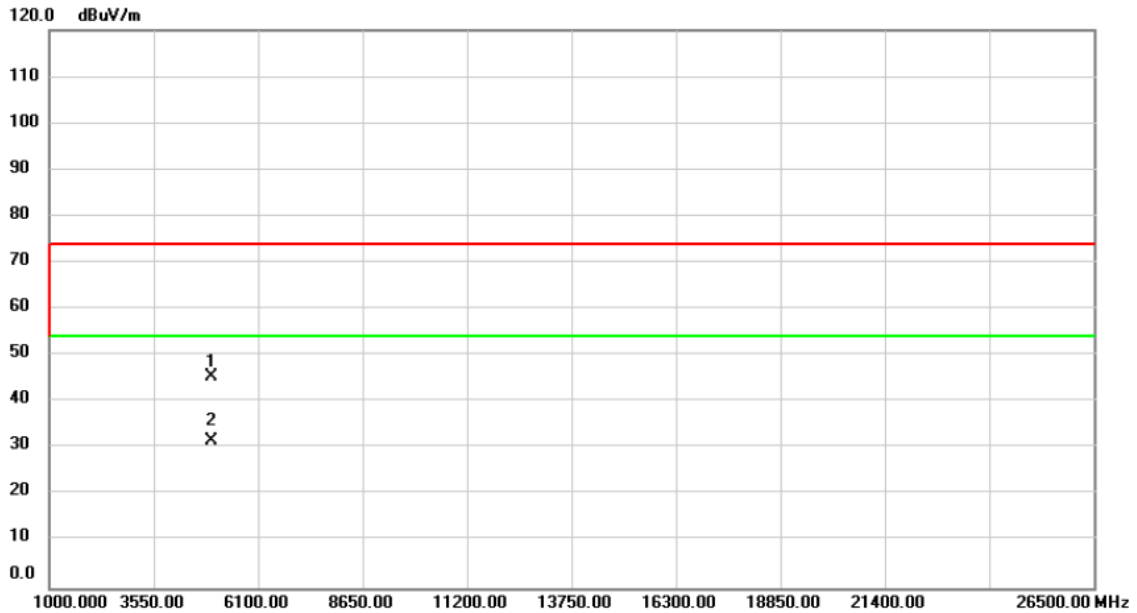
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2480.000	58.41	31.39	89.80	74.00	15.80	peak	No Limit
2	*	2480.000	54.57	31.39	85.96	54.00	31.96	AVG	No Limit
3		2483.500	27.28	31.41	58.69	74.00	-15.31	peak	
4		2483.500	14.41	31.41	45.82	54.00	-8.18	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps_θ=90°
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Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4960.000	56.56	-11.15	45.41	74.00	-28.59	peak	
2	*	4960.000	42.89	-11.15	31.74	54.00	-22.26	AVG	

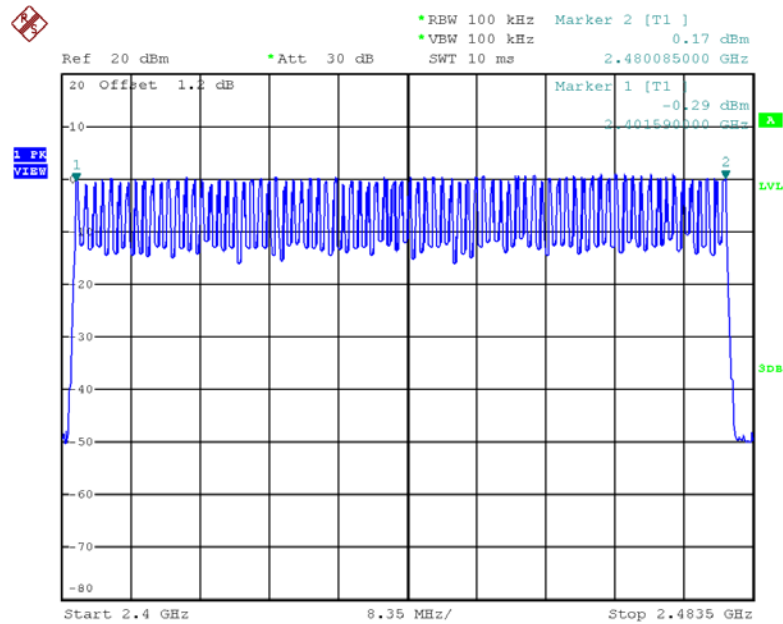
ATTACHMENT E - NUMBER OF HOPPING CHANNEL

Test Mode

Hopping Mode_1Mbps

Number of Hopping Channel

79



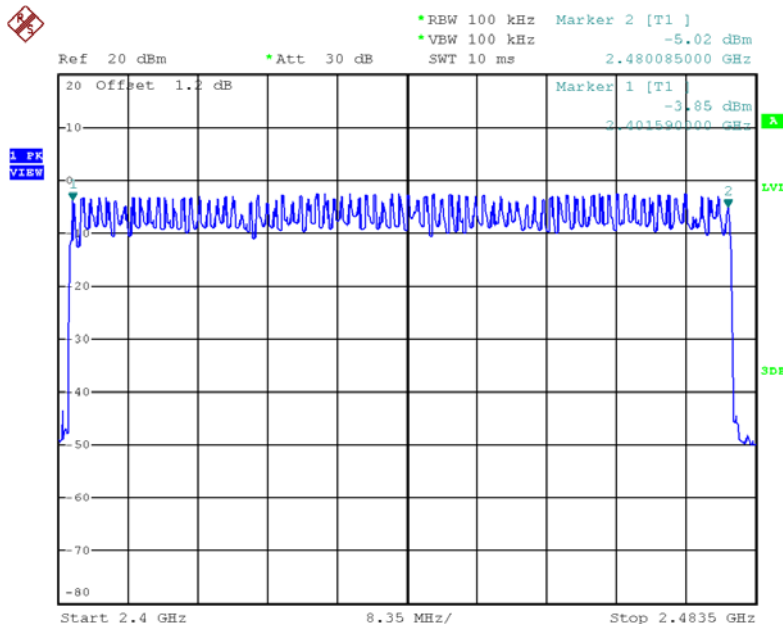
Date: 6.OCT.2017 18:13:59

Test Mode

Hopping Mode_3Mbps

Number of Hopping Channel

79



Date: 6.OCT.2017 18:35:00

ATTACHMENT F - AVERAGE TIME OF OCCUPANCY

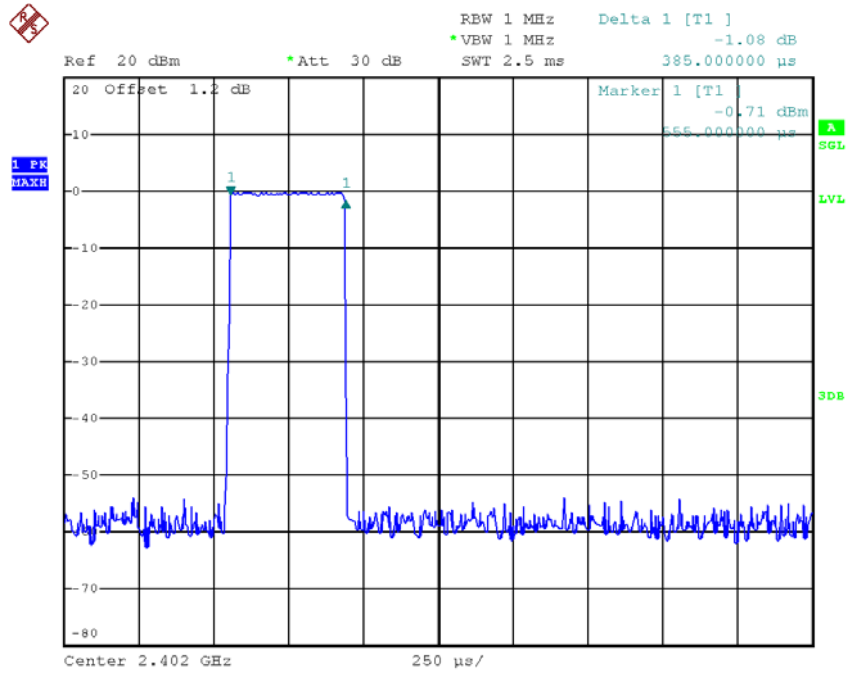
Test Mode :	TX Mode_1Mbps_ Normal Mode
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Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.8800	0.3072	0.4000	Pass
DH3	2402	1.6400	0.2624	0.4000	Pass
DH1	2402	0.3850	0.1232	0.4000	Pass
DH5	2441	2.8800	0.3072	0.4000	Pass
DH3	2441	1.6400	0.2624	0.4000	Pass
DH1	2441	0.3800	0.1216	0.4000	Pass
DH5	2480	2.8800	0.3072	0.4000	Pass
DH3	2480	1.6400	0.2624	0.4000	Pass
DH1	2480	0.3850	0.1232	0.4000	Pass

Test Mode :	TX Mode_1Mbps_ AFH Mode
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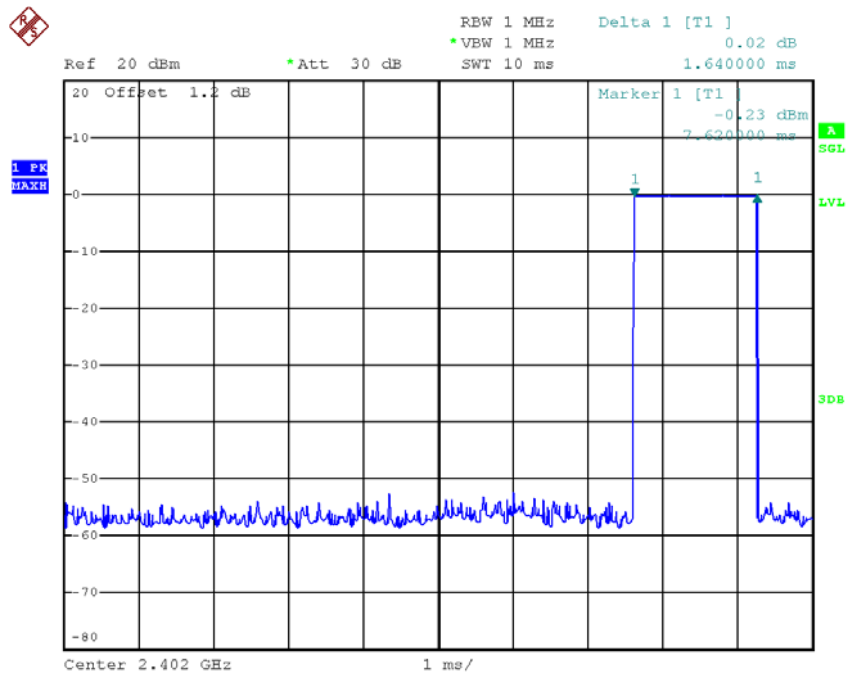
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.8800	0.3072	0.4000	Pass
DH3	2402	1.6400	0.2624	0.4000	Pass
DH1	2402	0.3850	0.1232	0.4000	Pass
DH5	2441	2.8800	0.3072	0.4000	Pass
DH3	2441	1.6400	0.2624	0.4000	Pass
DH1	2441	0.3800	0.1216	0.4000	Pass
DH5	2480	2.8800	0.3072	0.4000	Pass
DH3	2480	1.6400	0.2624	0.4000	Pass
DH1	2480	0.3850	0.1232	0.4000	Pass

CH00-DH1



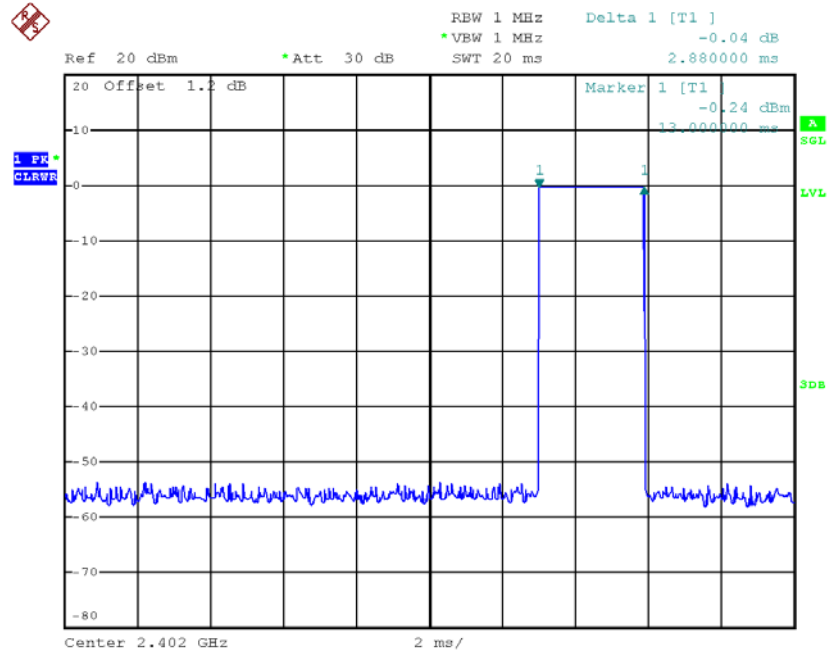
Date: 6.OCT.2017 18:05:41

CH00-DH3



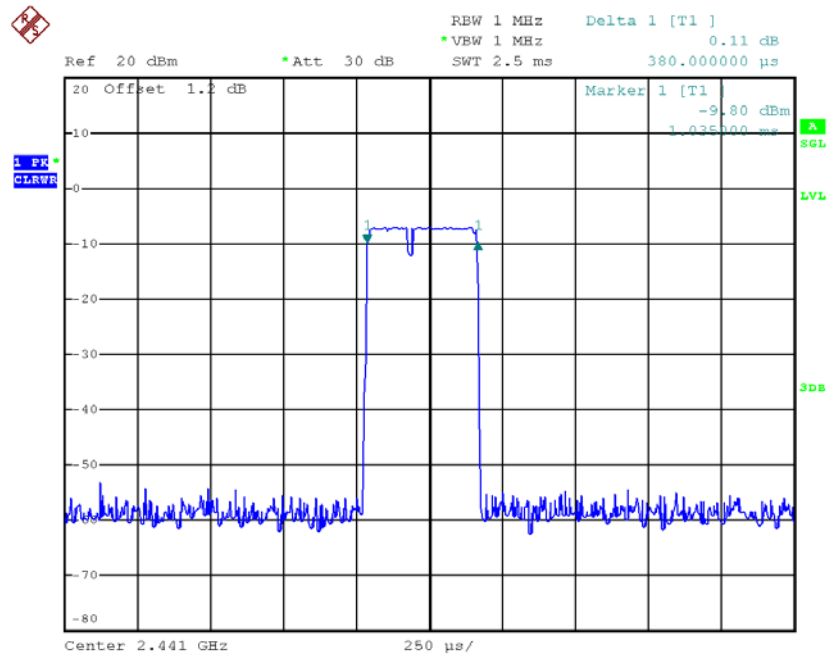
Date: 6.OCT.2017 18:15:54

CH00-DH5



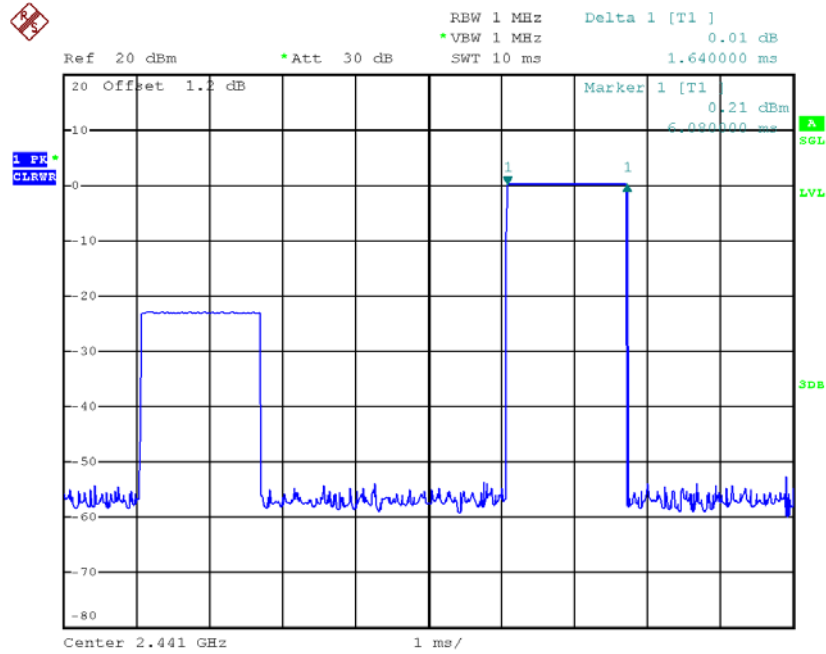
Date: 6.OCT.2017 18:16:45

CH39-DH1



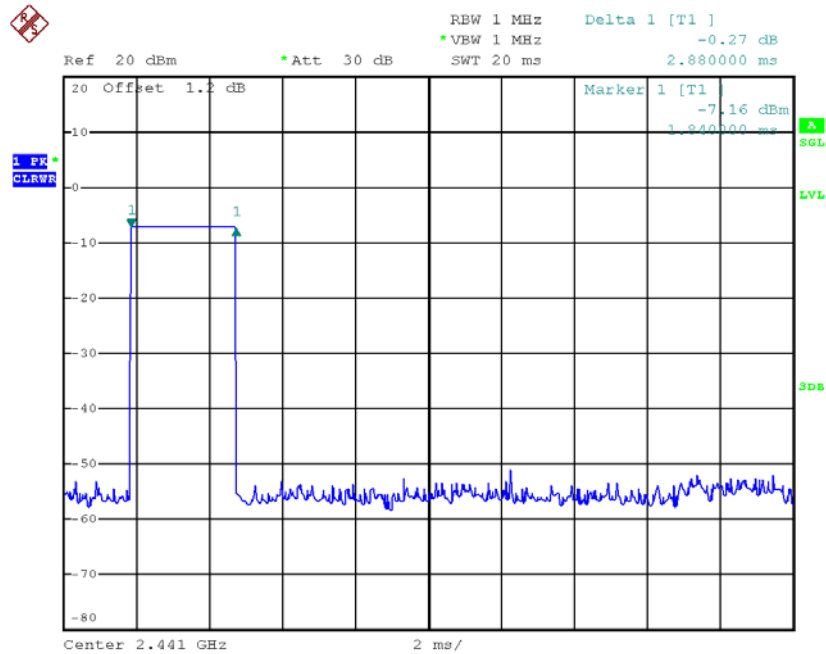
Date: 6.OCT.2017 18:05:47

CH39-DH3



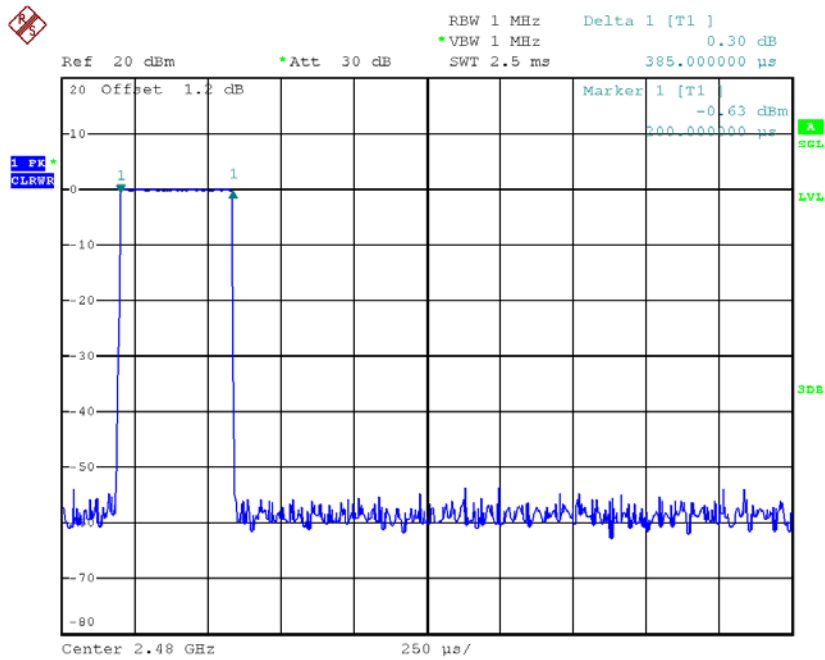
Date: 6.OCT.2017 18:16:15

CH39-DH5



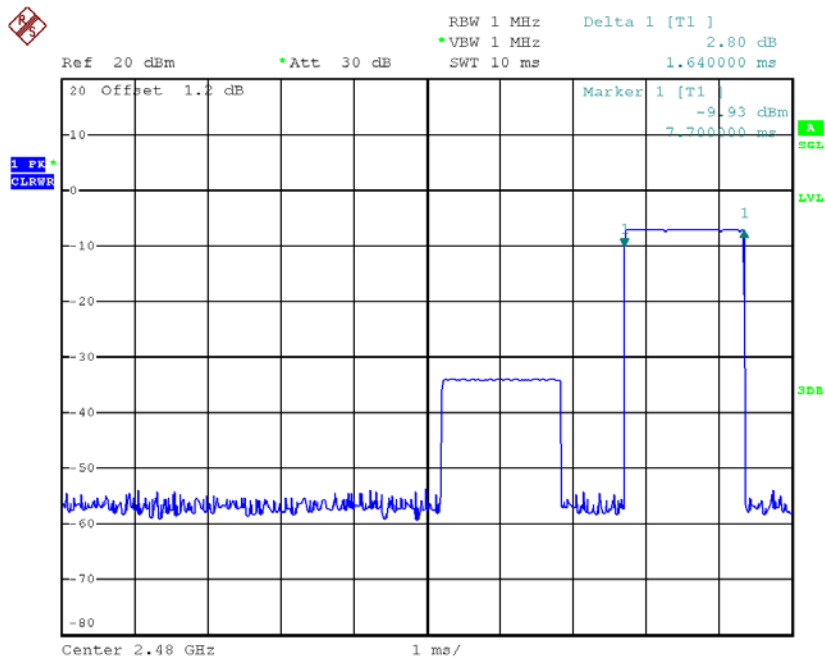
Date: 6.OCT.2017 18:16:50

CH78-DH1



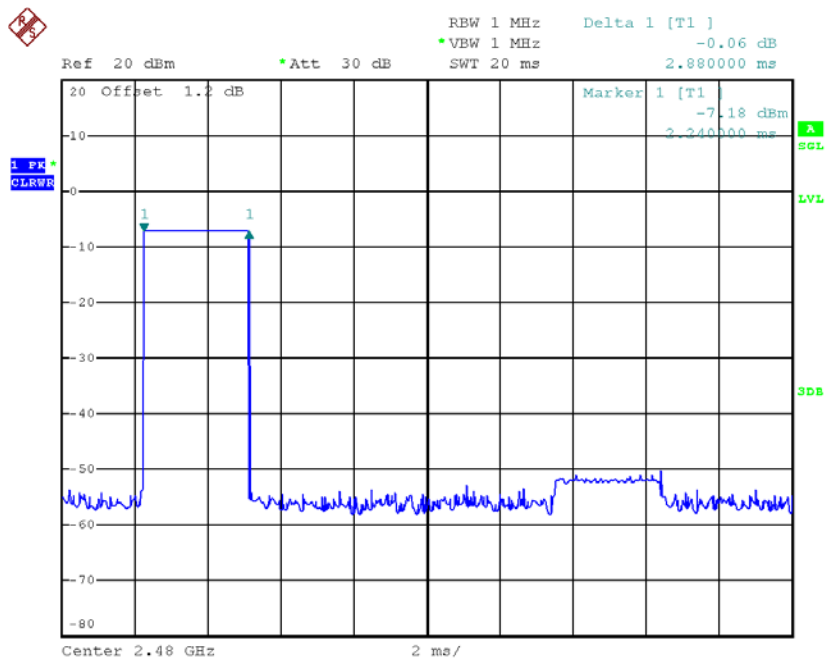
Date: 6.OCT.2017 18:05:51

CH78-DH3



Date: 6.OCT.2017 18:16:19

CH78-DH5



Date: 6.OCT.2017 18:16:53

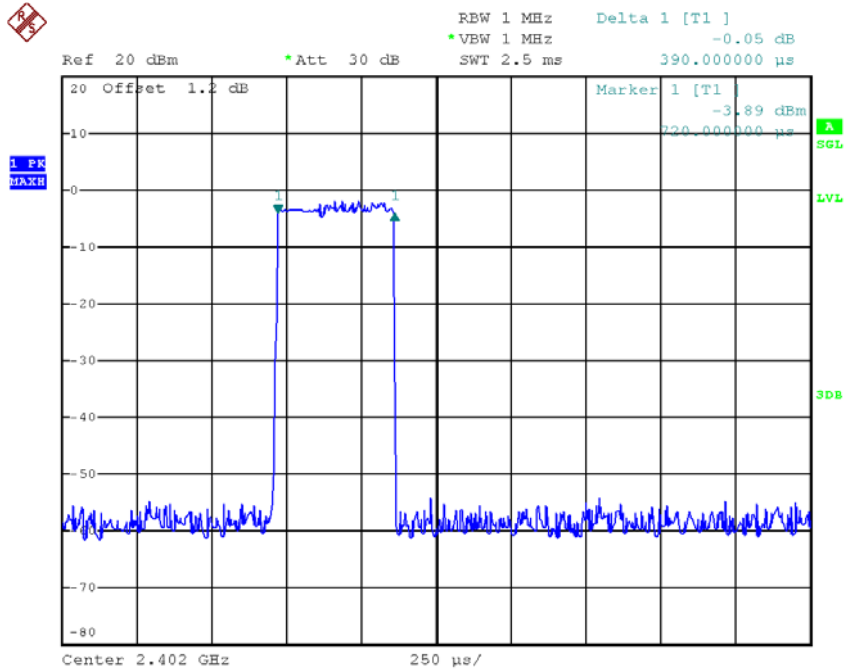
Test Mode :	TX Mode_3Mbps_ Normal Mode
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Data Packet	Frequency	Pulse Duration(ms)	Dwell Time(s)	Limits(s)	Test Result
DH5	2402	2.8800	0.3072	0.4000	Pass
DH3	2402	1.6400	0.2624	0.4000	Pass
DH1	2402	0.3900	0.1248	0.4000	Pass
DH5	2441	2.8800	0.3072	0.4000	Pass
DH3	2441	1.6400	0.2624	0.4000	Pass
DH1	2441	0.3900	0.1248	0.4000	Pass
DH5	2480	2.8800	0.3072	0.4000	Pass
DH3	2480	1.6400	0.2624	0.4000	Pass
DH1	2480	0.3900	0.1248	0.4000	Pass

Test Mode :	TX Mode_3Mbps_ AFH Mode
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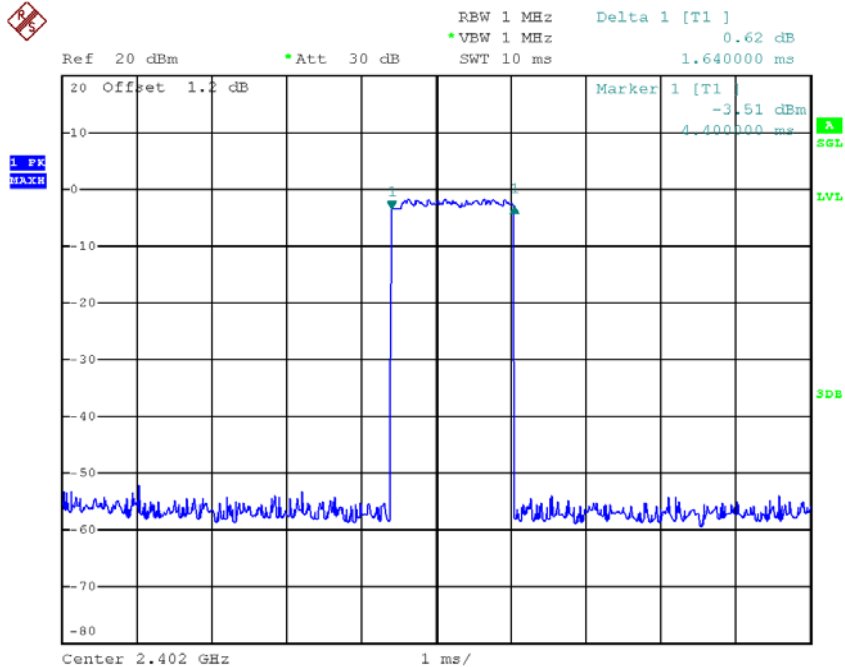
Data Packet	Frequency	Pulse Duration(ms)	Dwell Time(s)	Limits(s)	Test Result
DH5	2402	2.8800	0.3072	0.4000	Pass
DH3	2402	1.6400	0.2624	0.4000	Pass
DH1	2402	0.3900	0.1248	0.4000	Pass
DH5	2441	2.8800	0.3072	0.4000	Pass
DH3	2441	1.6400	0.2624	0.4000	Pass
DH1	2441	0.3900	0.1248	0.4000	Pass
DH5	2480	2.8800	0.3072	0.4000	Pass
DH3	2480	1.6400	0.2624	0.4000	Pass
DH1	2480	0.3900	0.1248	0.4000	Pass

CH00-DH1



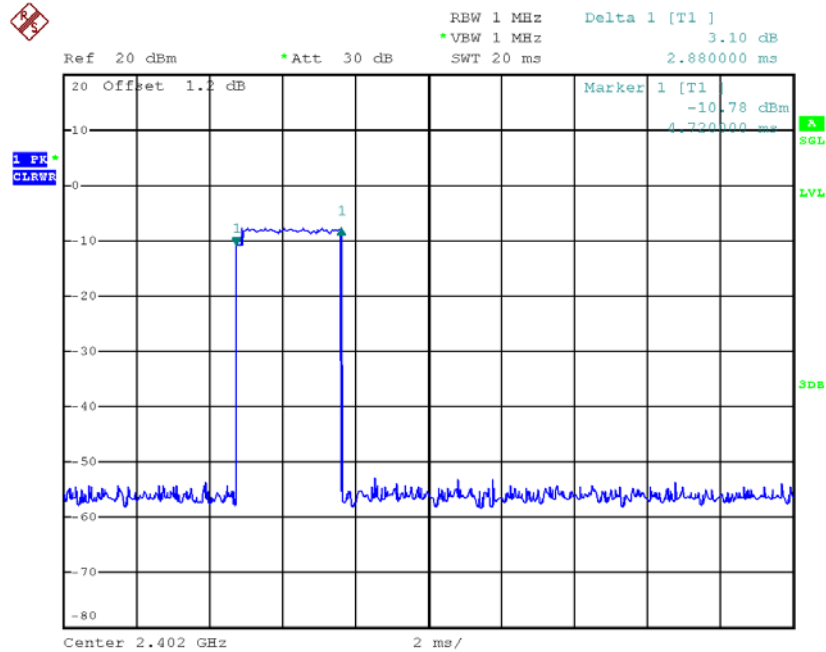
Date: 6.OCT.2017 18:26:35

CH00-DH3



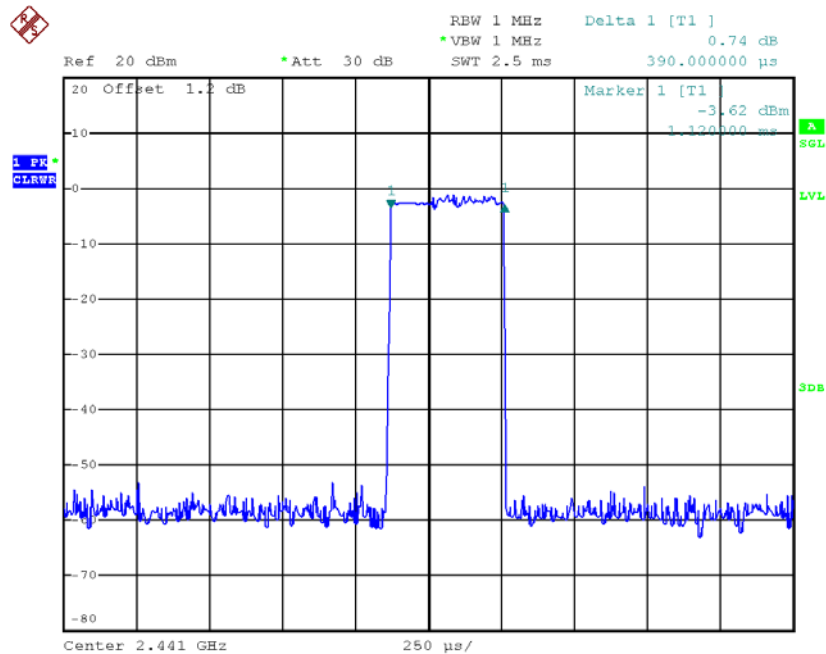
Date: 6.OCT.2017 18:37:18

CH00-DH5



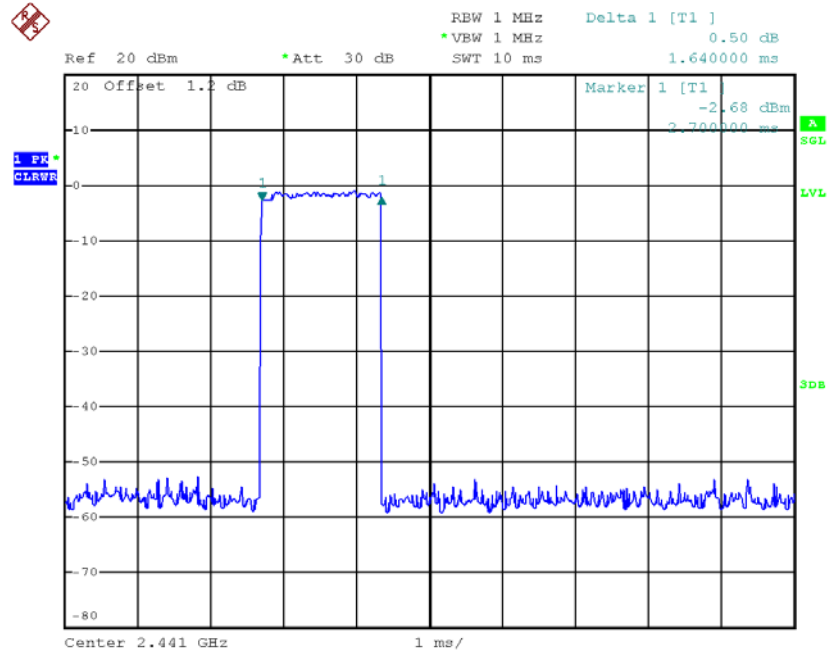
Date: 6.OCT.2017 18:38:21

CH39-DH1



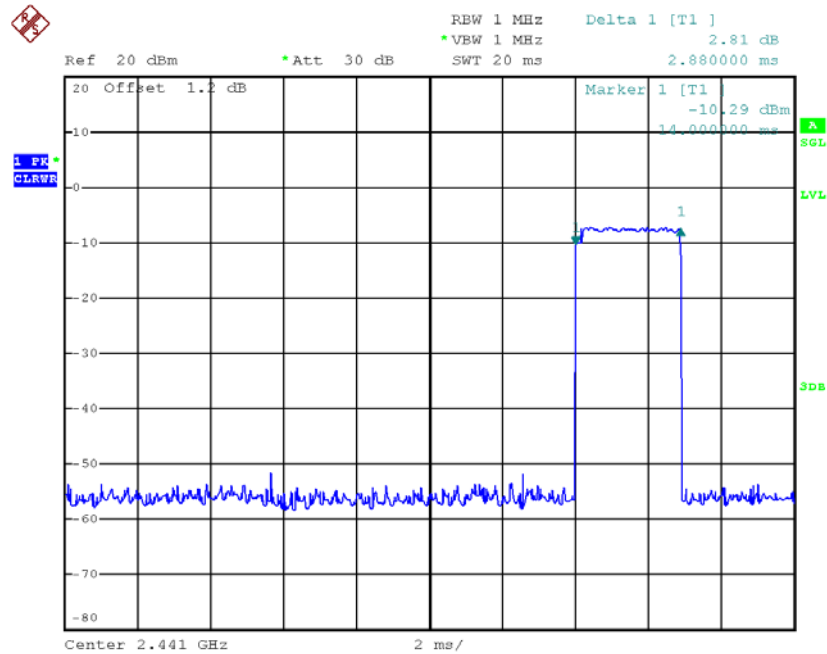
Date: 6.OCT.2017 18:26:56

CH39-DH3



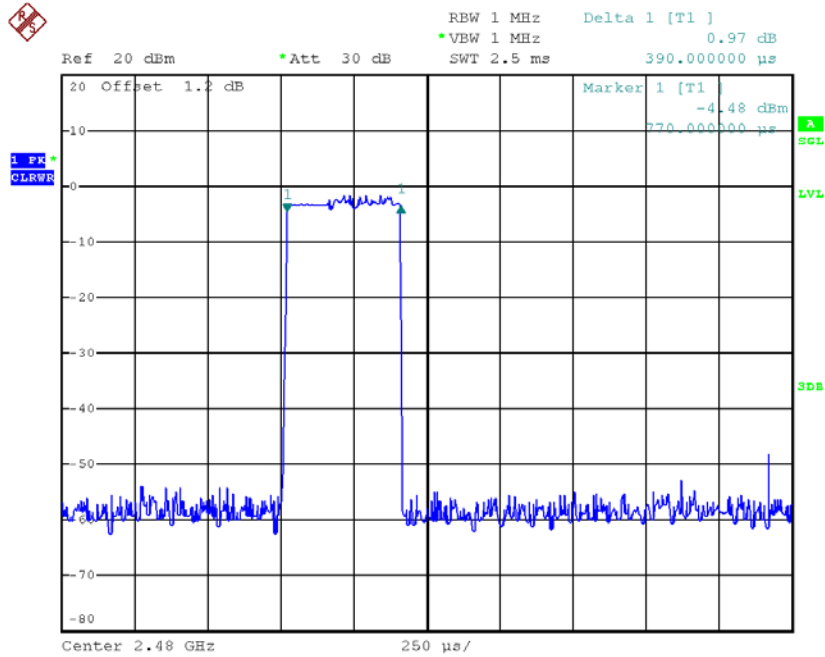
Date: 6.OCT.2017 18:37:39

CH39-DH5



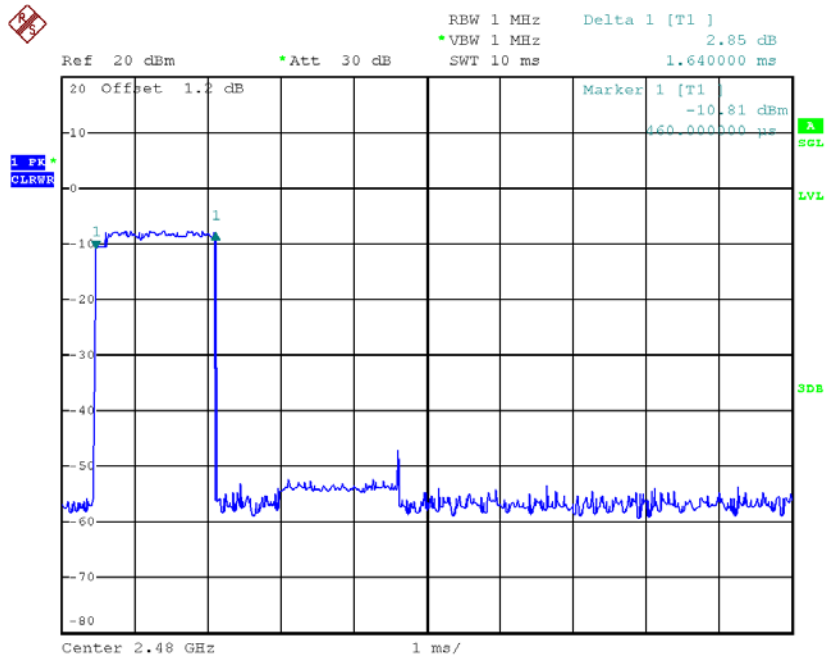
Date: 6.OCT.2017 18:38:24

CH78-DH1



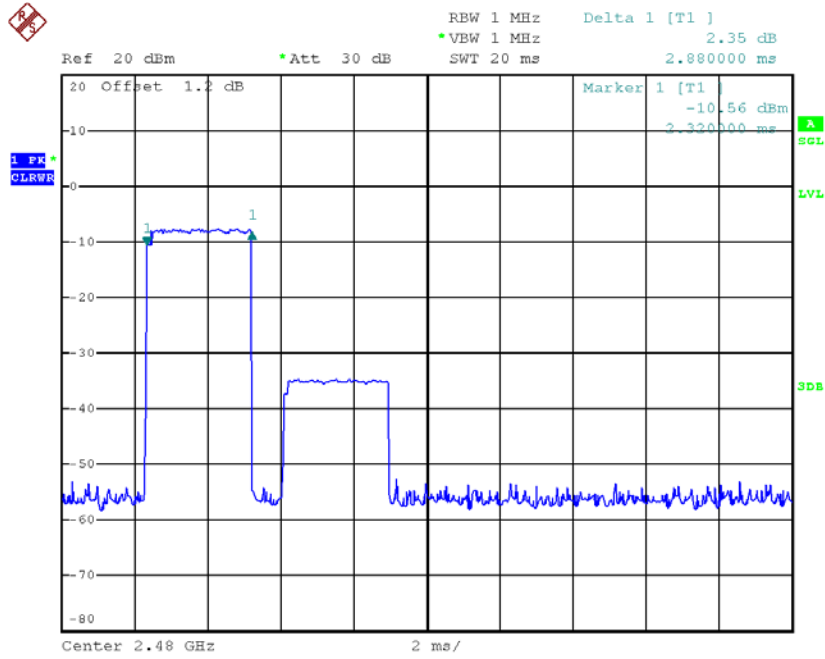
Date: 6.OCT.2017 18:27:00

CH78-DH3



Date: 6.OCT.2017 18:37:44

CH78-DH5



Date: 6.OCT.2017 18:38:29