

FCC Radio Test Report
FCC ID: M82-DLV6210
This report concerns (check one): ⊠Original Grant □Class I Change □Class II Change
Project No.: 1608164Equipment: ComputerTest Model: DLT-V6210Series Model: DLTV6210XXXXXXXXXXXXXXXX (where X may be any alphanumeric character, blank or "-".)Applicant: Advantech Co., Ltd.Address: No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.
Date of Receipt       :       Oct. 07, 2016         Date of Test       :       Oct. 07, 2016 ~ Nov. 22, 2016         Issued Date       :       Nov. 24, 2016         Tested by       :       BTL Inc.
Testing Engineer : <u>Rush</u> Kao
Technical Manager :
Authorized Signatory :(Andy Chiu)
<b>BTL INC.</b> B1, No.37, Lane 365, Yang Guang St., Nei-Hu District, Taipei City 114, Taiwan. TEL:+886-2-2657-3299 FAX: +886-2-2657-3331



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## **REPORT ISSUED HISTORY**

Issued No.	Description	Issued Date
BTL-FCCP-1-1608164	Original Issue.	Nov. 24, 2016



## **1. CERTIFICATION**

Equipment : Brand Name :	
Test Model :	
	DLTV6210XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Applicant :	Advantech Co., Ltd.
Manufacturer :	Advantech Co., Ltd.
Address :	No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.
Date of Test :	Oct. 07, 2016 ~ Nov. 22, 2016
	Engineering Sample
Standard(s) :	FCC Part15, Subpart C (15.247) / ANSI C63.10-2013

The above equipment has been tested and found 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-1-1608164) 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	3.06

#### B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15	CISPR	9kHz ~ 150kHz	2.96
(3m)	CISEN	150kHz ~ 30MHz	2.74

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
CB15 (3m) CISPR		30MHz ~ 200MHz	V	4.76
	5	30MHz ~ 200MHz	Н	4.28
	200MHz ~ 1,000MHz	V	5.08	
		200MHz ~ 1,000MHz	Н	4.50

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
CB15		1GHz ~ 6GHz	V	4.48
	CISPR	1GHz ~ 6GHz	Н	4.50
(3m)	UISEN	6GHz ~ 18GHz	V	4.30
		6GHz ~ 18GHz	Н	4.14

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15	CISPR	18 ~ 26.5 GHz	4.72
(1m)	UISEN	26.5 ~ 40 GHz	5.20



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	Computer		
Brand Name	ADVANTECH		
Test Model	DLT-V6210		
Series Model	DLTV6210XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
Model Difference	Different model distribute to different area.		
	Operation Frequency	2402~2480 MHz	
	Modulation Technology	GFSK(1Mbps) $\pi$ /4-DQPSK(2Mbps)	
Output Power (Max.)	Bit Rate of Transmitter	8-DPSK(3Mbps)	
	Output Power Max. 5.65 dBm(1Mbps)		
Power Source	Supplied from DC power.		
Power Rating	EUT I/P: DC 9V-60V		

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.



## 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.	Mfr/Brand	Test Model	Antenna Type	Connector	Gain (dBi)
1	ADVANTECH	Y6AGIK79376200	PCB	IPEX	6.5

Note:

(1) Direction gain (dBi) = 6.5

The reduced conducted power limits (dBm) = 30 - (6.5-6) = 29.5



## 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible 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	1 TX Mode Note (1)	

Note:

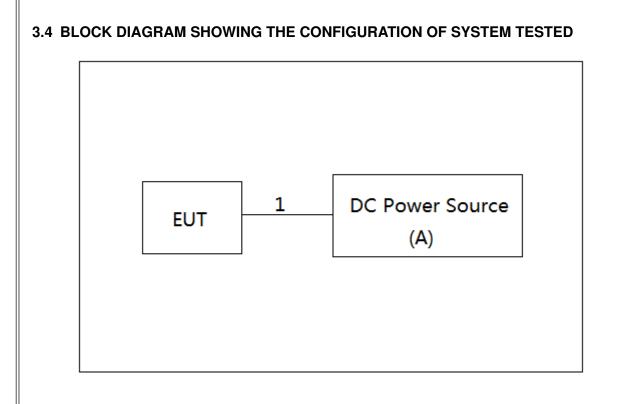
- (1) The measurements are performed at the high, middle, low available channels.
- (2) The measurements for Hopping Channel Separation, Bandwidth and Peak Output Power were tested during 1Mbps, 2Mbps and 3Mbps, the worst case are 1Mbps and 3Mbps, only worst case was documented.

#### 3.3 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	BtUSB_V18.12		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1Mbps)	7	7	7
Parameters(3Mbps)	7	7	7





## 3.5 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	Switch Mode Power Supply	Twintex	TDS-60-15	N/A	G27120155

Item	Shielded Type	Ferrite Core	Length	Note
1	NA	NA	1.5m	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 Li	mit (dBµV)
	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

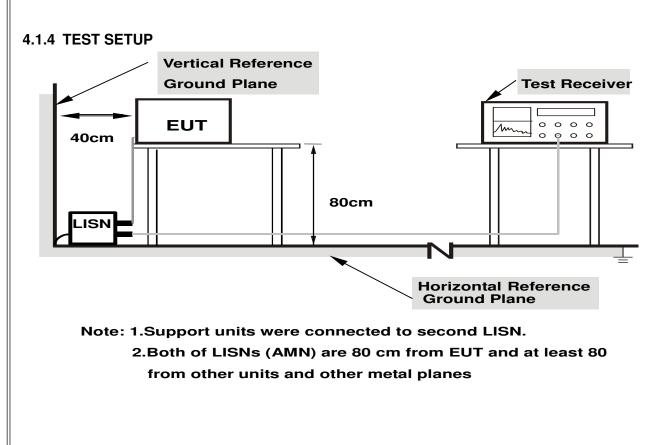
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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







## 4.1.5 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.



## 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	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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

#### 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



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

- a. 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)
- b. 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)
- c. 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.
- d. 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).
- e. 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.
- f. 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.
- g. 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)
- h. 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)
- i. For the actual test configuration, please refer to the related Item -EUT Test Photos.

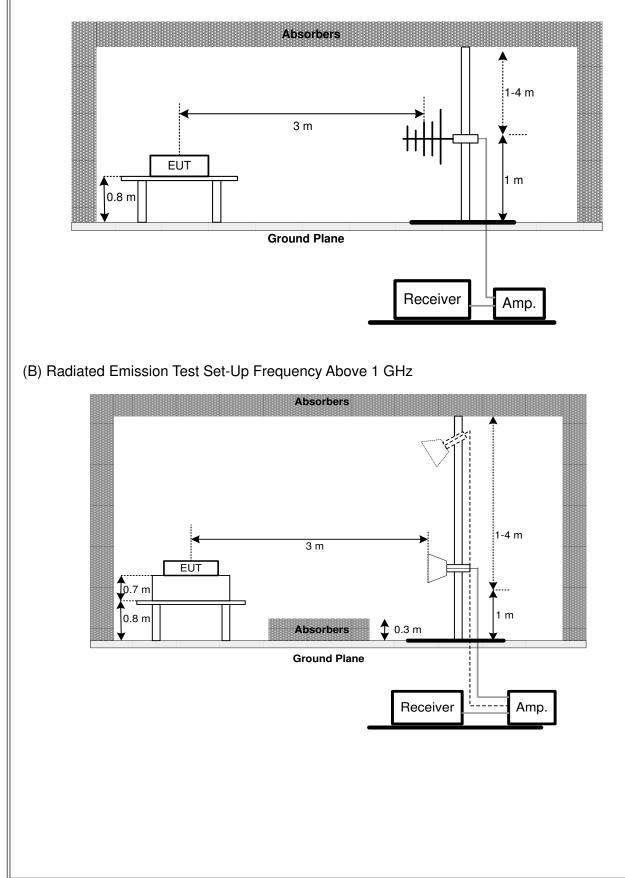
## 4.2.3 DEVIATION FROM TEST STANDARD

No deviation



## 4.2.4 TEST SETUP

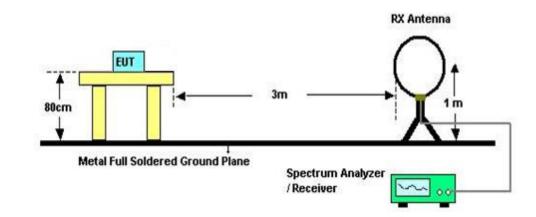
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz







## (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 (specific distance / 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

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

## 5.1.2 DEVIATION FROM STANDARD

No deviation.

## 5.1.3 TEST SETUP

EUT	SPECTRUM
	ANALYZER

## 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

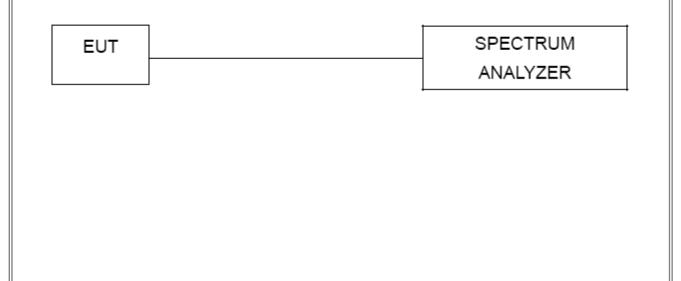
## 6.1.1 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- $\tilde{h}$ . Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times  $3.37 \times 31.6 = 106.6$  within 31.6 seconds.
- j. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 5.06 x 31.6 = 160 within 31.6 seconds.
- k. DH1 Packet permit maximum 1600 / 79 /2 = 10.12 hops per second in each channel (1 time slot TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 10.12 x 31.6 = 320 within 31.6 seconds.

## 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

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

## 7.1.2 DEVIATION FROM STANDARD

No deviation.

## 7.1.3 TEST SETUP



Spectrum Analayzer

EUT

#### 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	
Occuon		(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

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

#### 8.1.2 DEVIATION FROM STANDARD

No deviation.

## 8.1.3 TEST SETUP

EUT	SPECTRUM	Ì
	ANALYZER	

## 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	2400-2483.5	PASS
		(hopping channel <75		

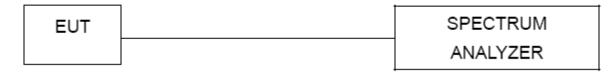
#### 9.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. 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

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.
- c. 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. 26, 2017		
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 15, 2017		
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 10, 2016		
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	Mar. 01, 2017		
2	Preamplifier	EMCI	EMC02325	980217	Dec. 30, 2016		
3	Test Cable	EMCI	EMC104-SM-S M-8000	8m	Jan. 05, 2017		
4	Test Cable	EMCI	EMC104-SM-S M-800	150207	Jan. 05, 2017		
5	Test Cable	EMCI	EEMC104-SM-S M-3000	151205	Jan. 05, 2017		
6	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 08, 2017		
7	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 23, 2017		
8	Loop Ant	EMCO	6502	42960	Nov. 24, 2017		
9	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Mar. 01, 2017		
10	Horm Ant	Schwarzbeck	BBHA 9170	187	May 12, 2017		
11	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 17, 2017		
12	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 17, 2017		



Number of Hopping Channel						
	Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
	1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

Average Time of Occupancy						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017	

Hopping Channel Separation Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017	

Bandwidth						
	Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
	1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

	Peak Output Power						
Iter	n Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017		

Antenna Conducted Spurious Emission						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017	

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





## **12. EUT TEST PHOTO**

## **Conducted Measurement Photos**



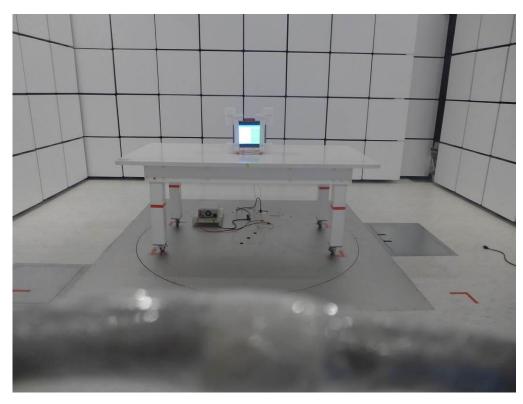


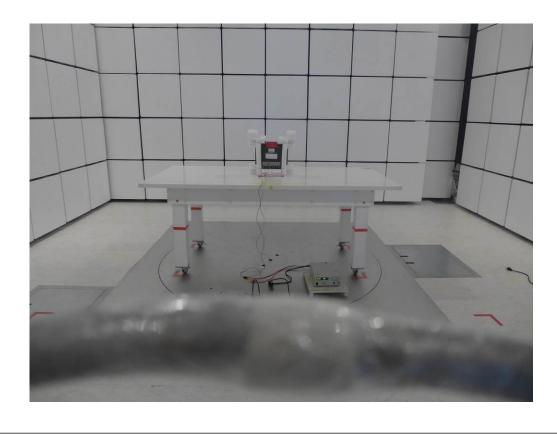
Report No.: BTL-FCCP-1-1608164



## **Radiated Measurement Photos**

9KHz to 30MHz



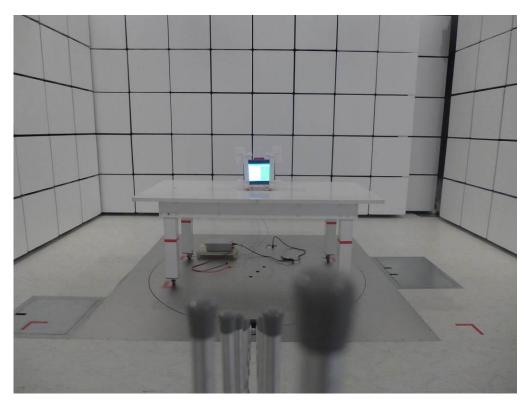


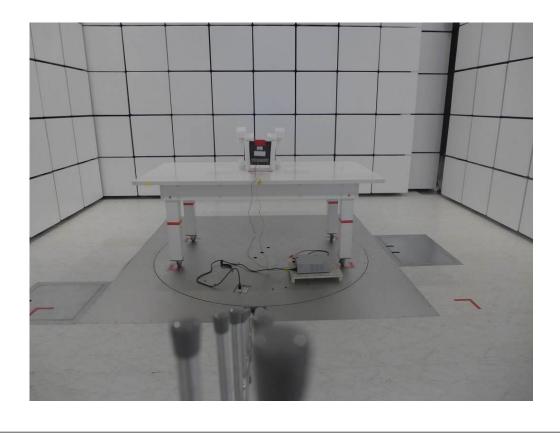
Report No.: BTL-FCCP-1-1608164



## **Radiated Measurement Photos**

30MHz to 1000MHz



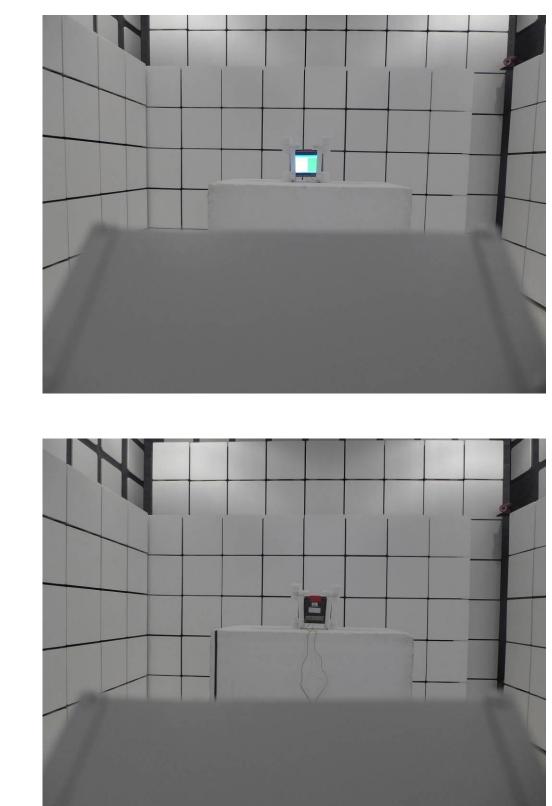


Report No.: BTL-FCCP-1-1608164



## **Radiated Measurement Photos**

Above 1000MHz

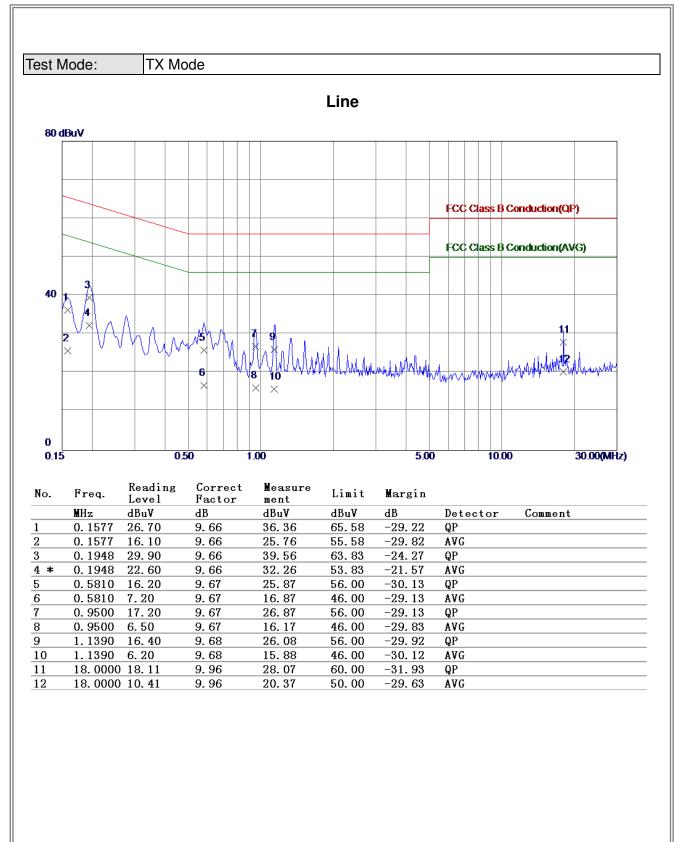




## **ATTACHMENT A - CONDUCTED EMISSION**

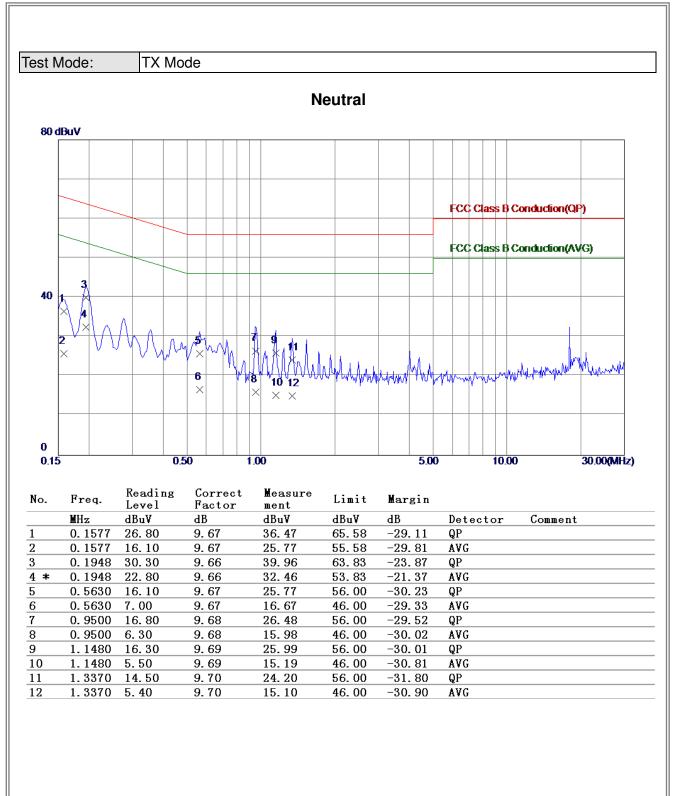
## **3**TL







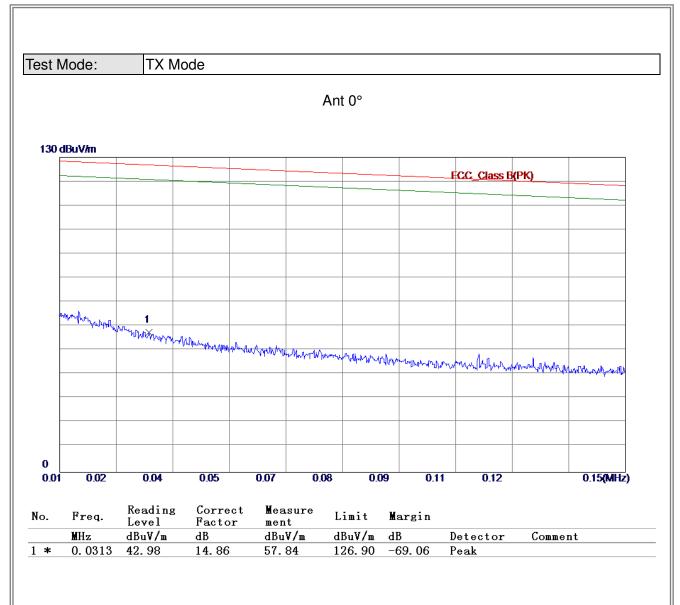




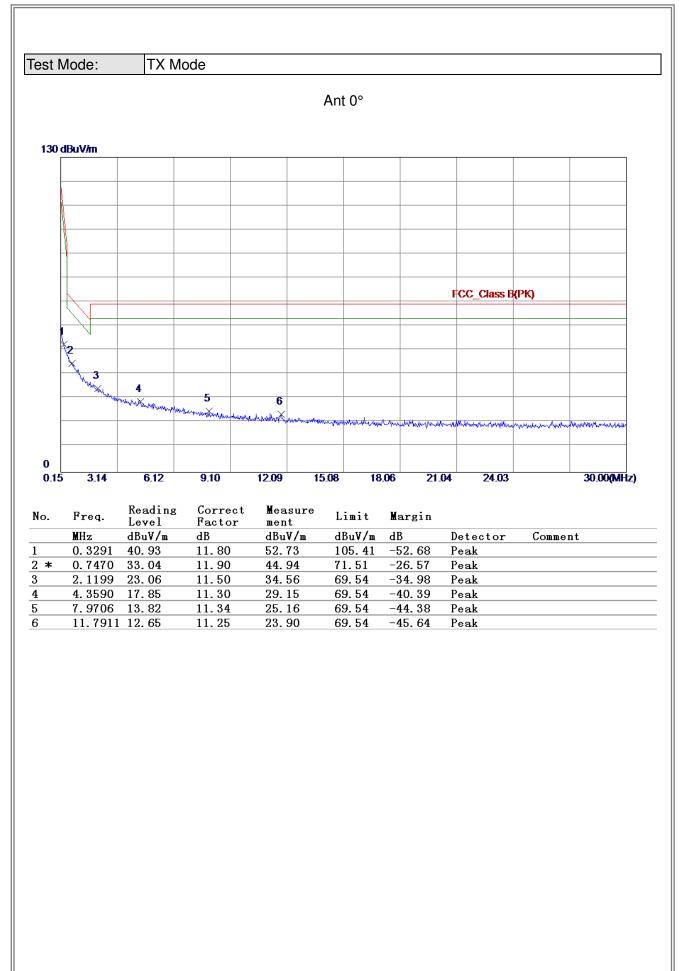


#### ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)

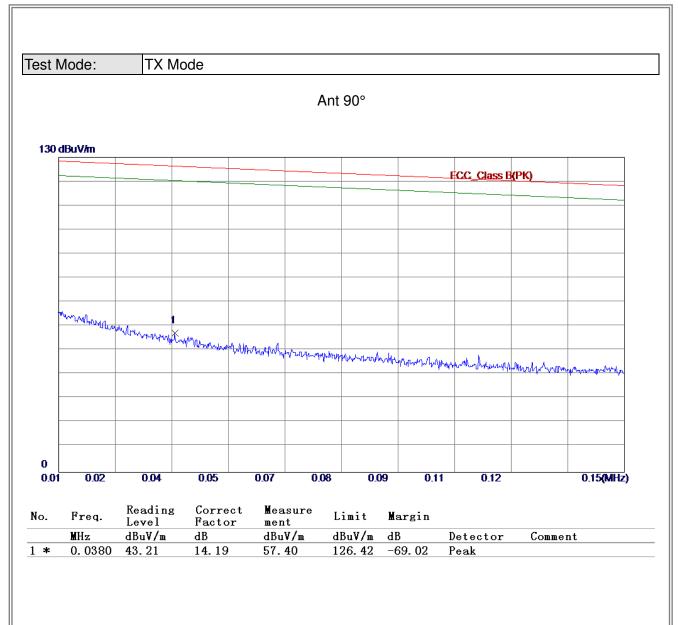






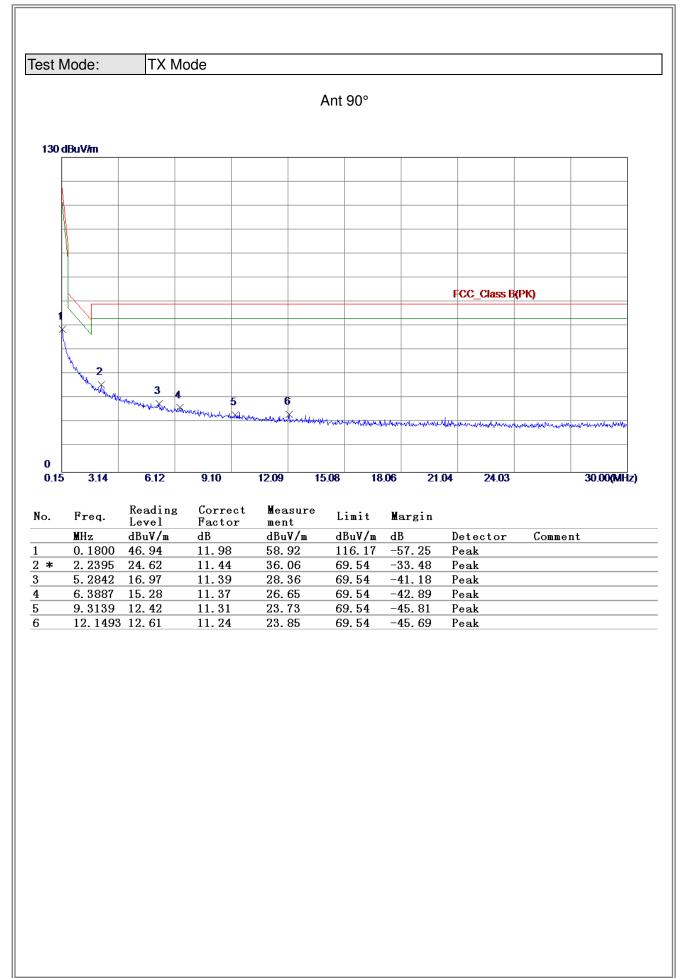






# **3**TL

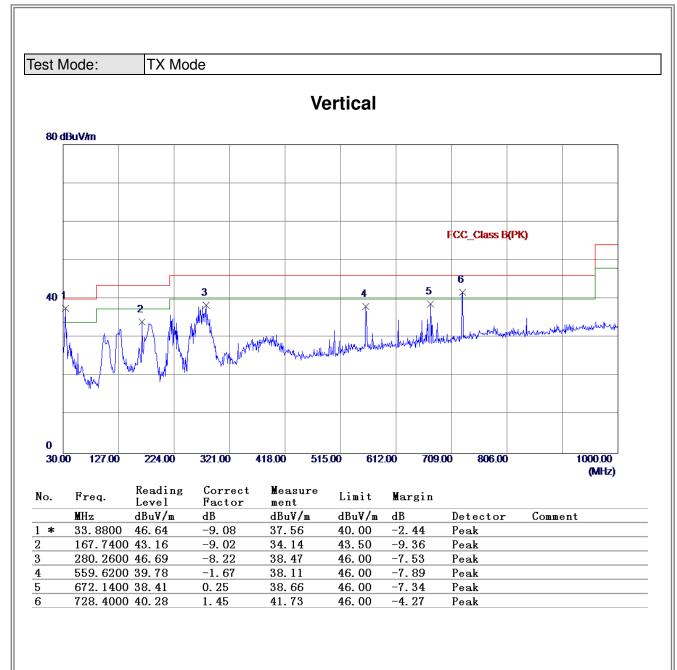




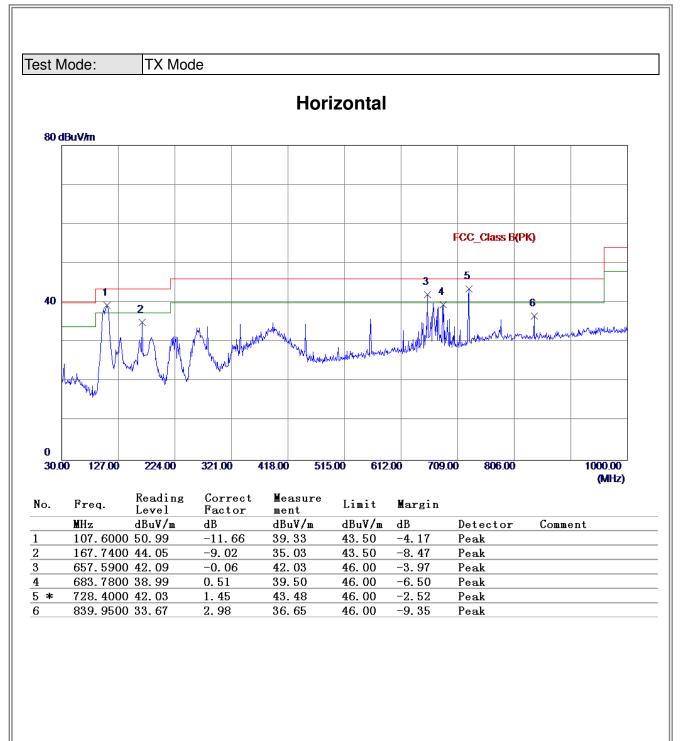


#### ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)







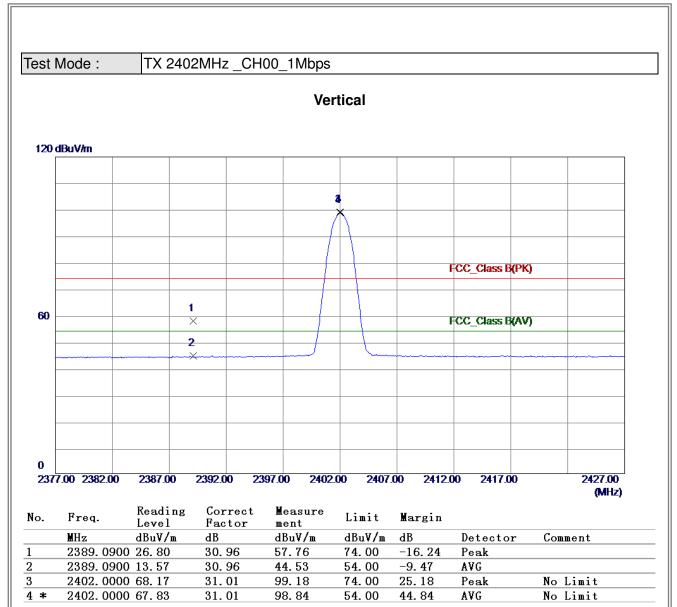




#### ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

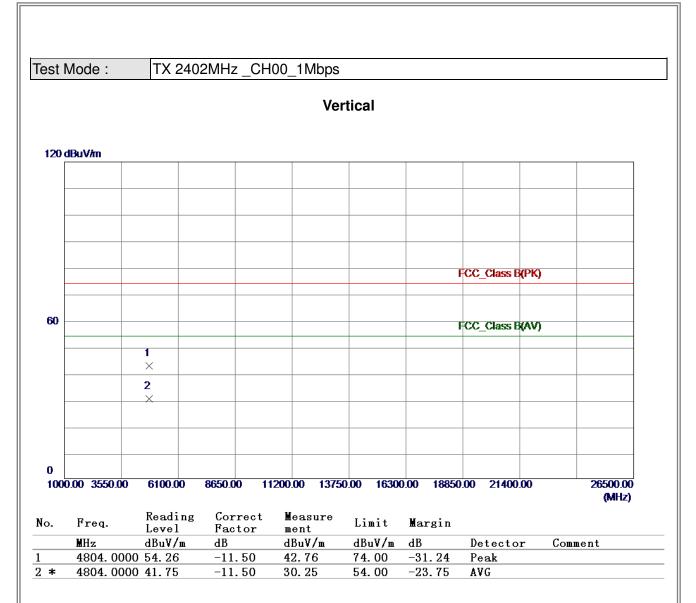






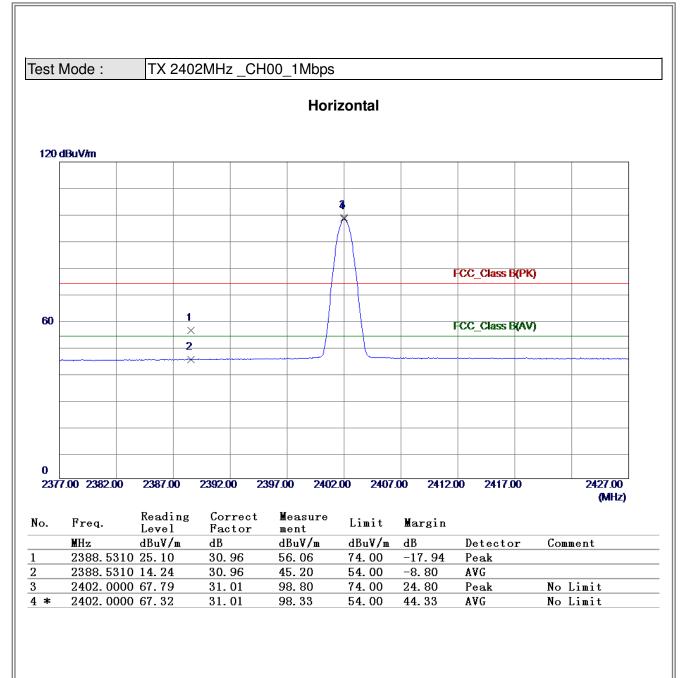






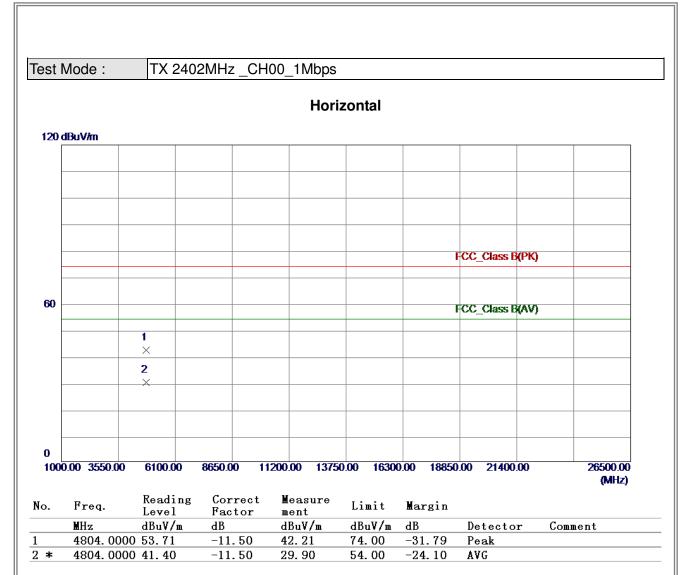






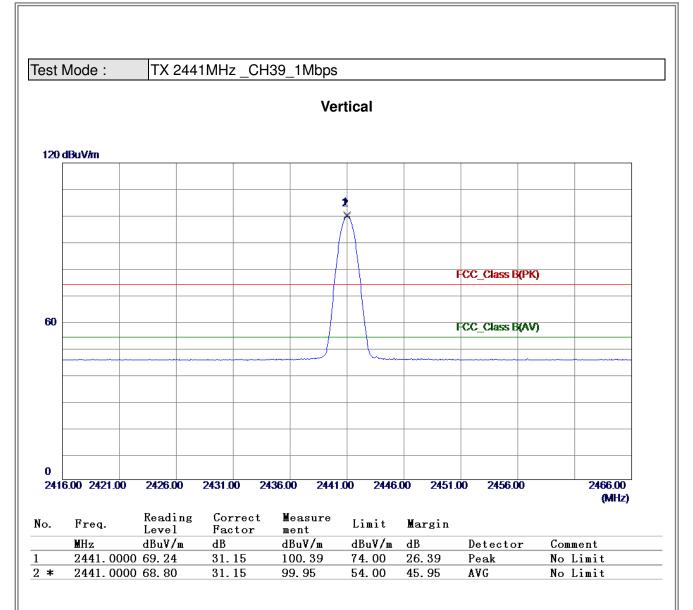






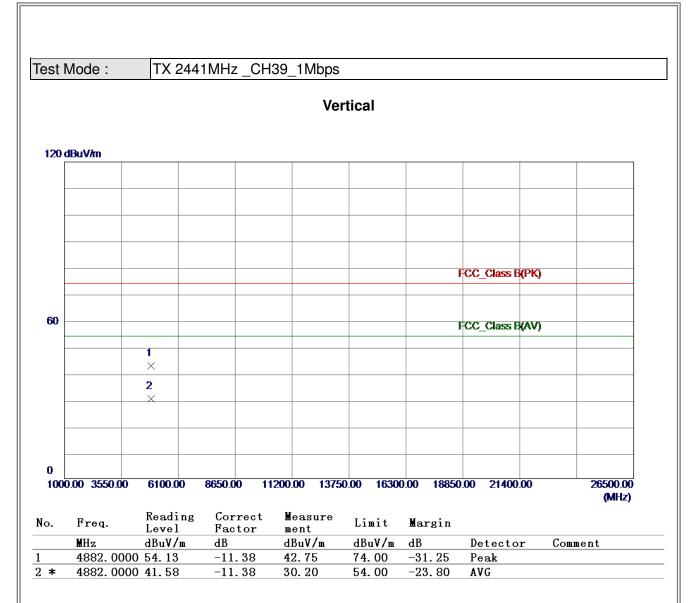






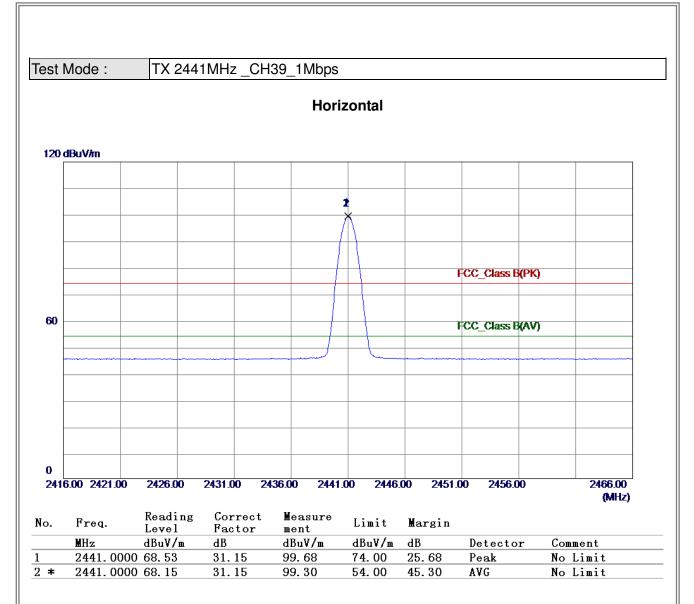






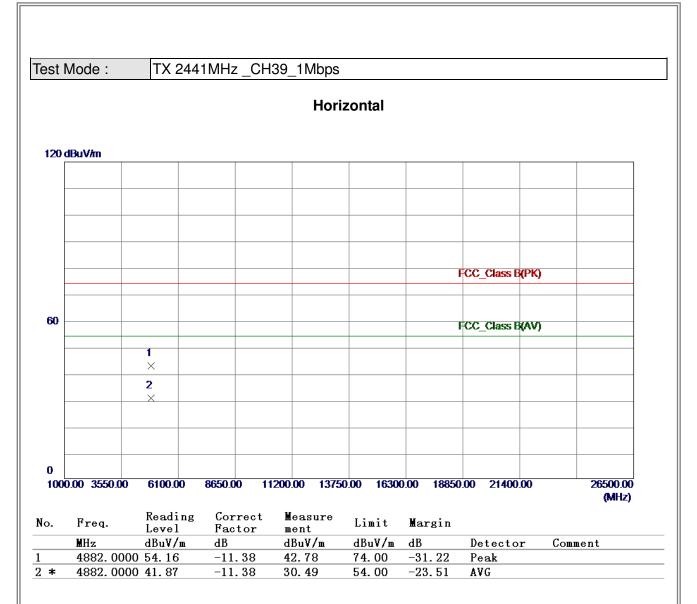






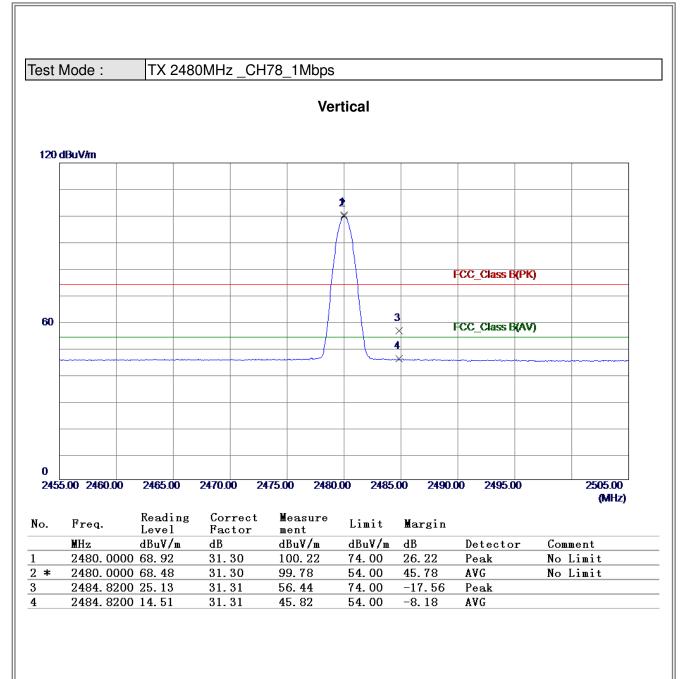






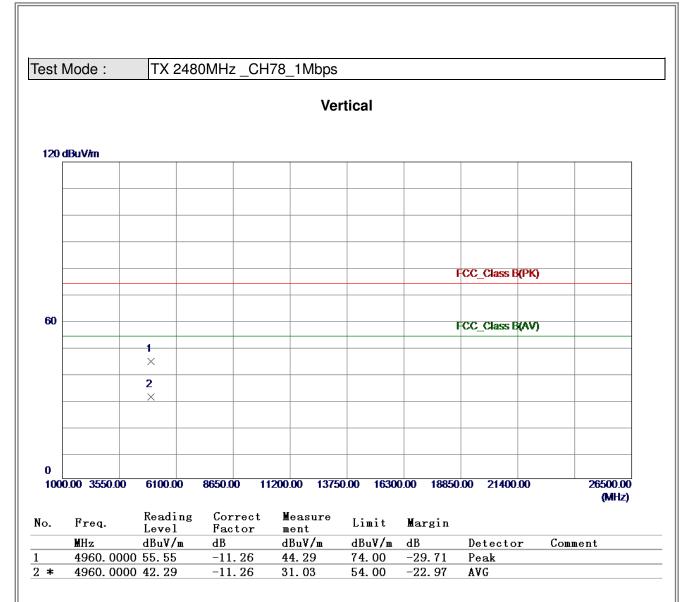






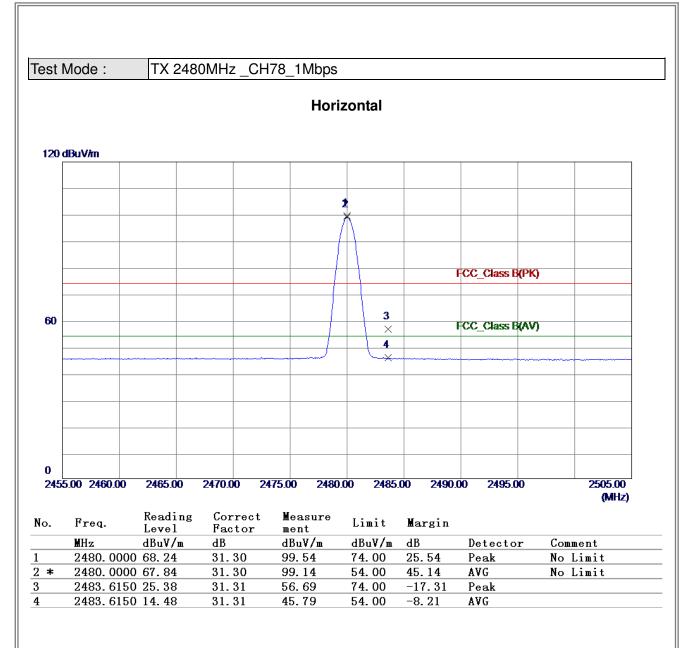






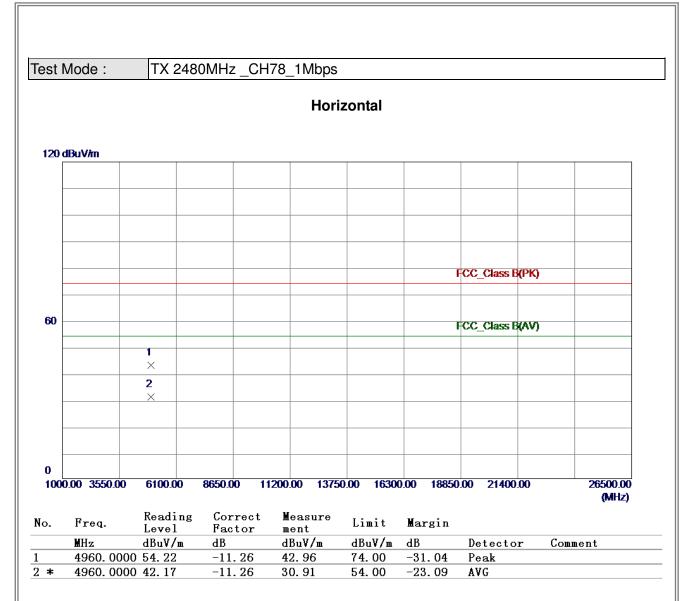






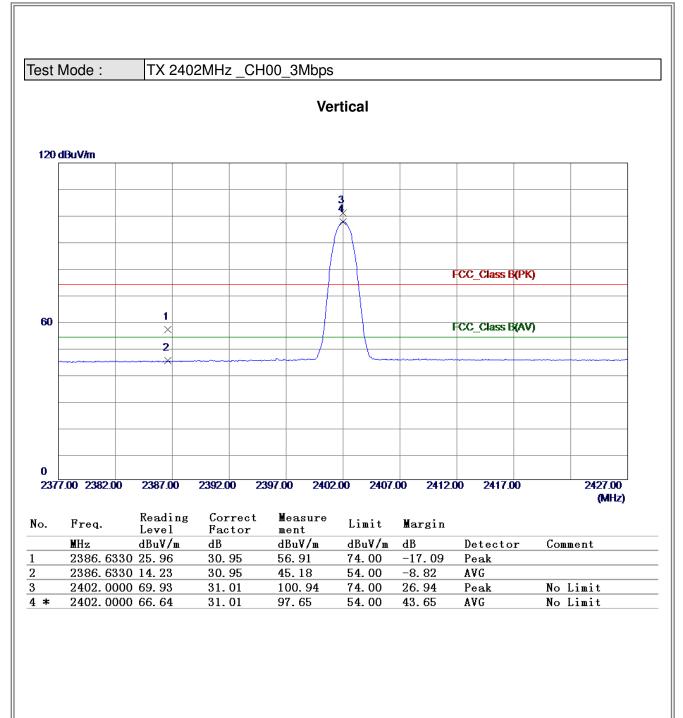






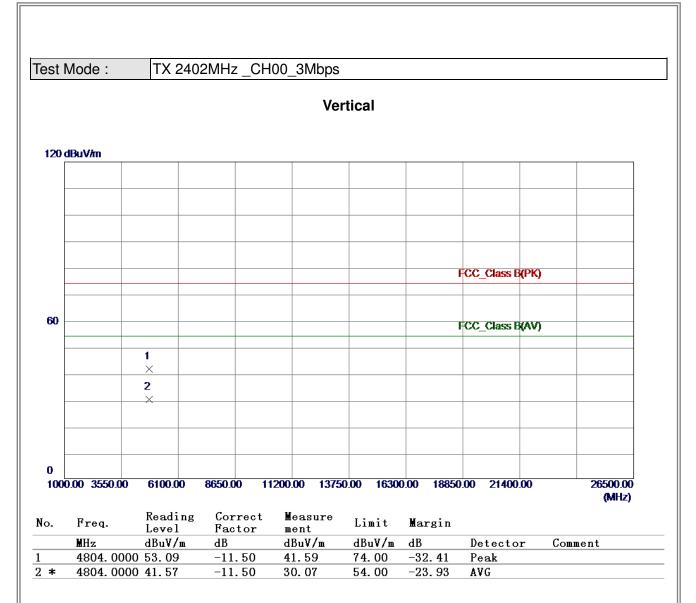






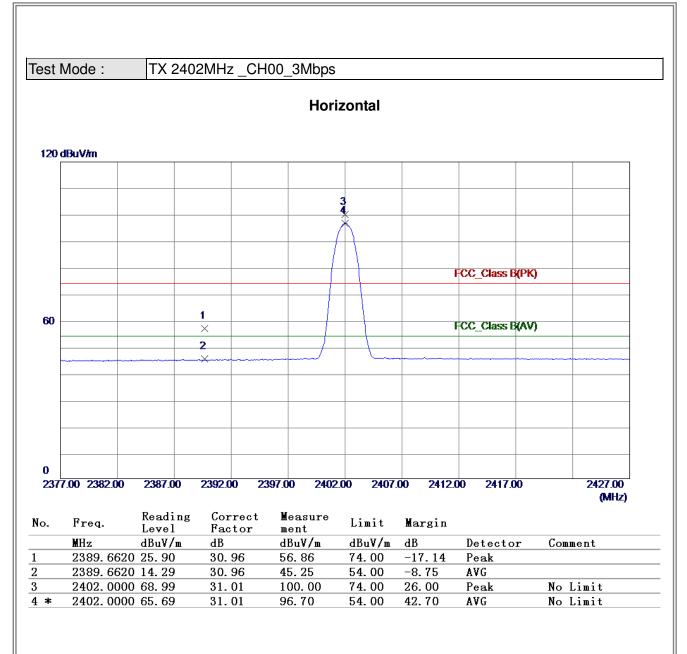






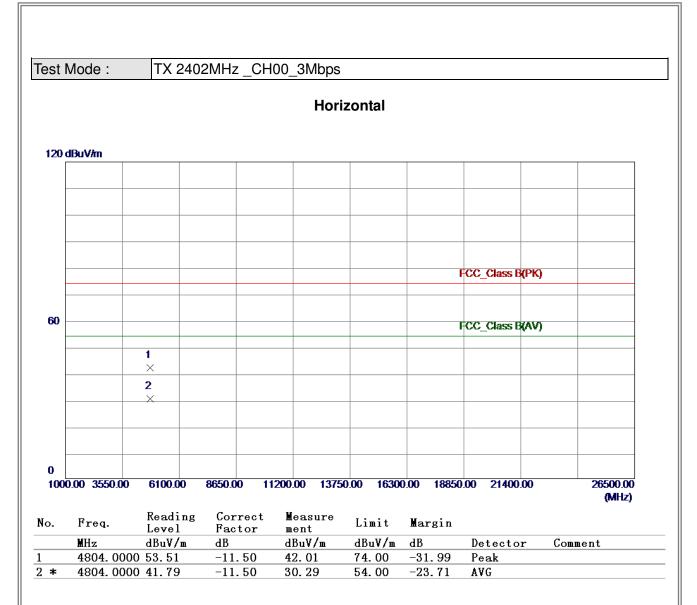






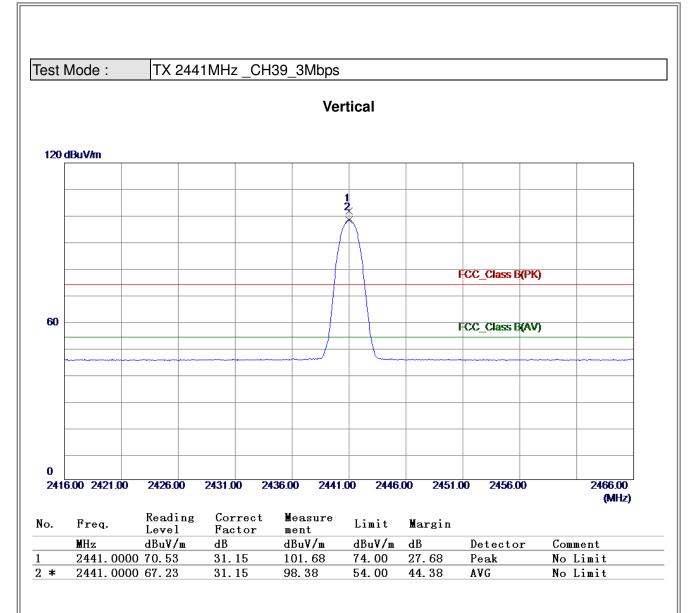






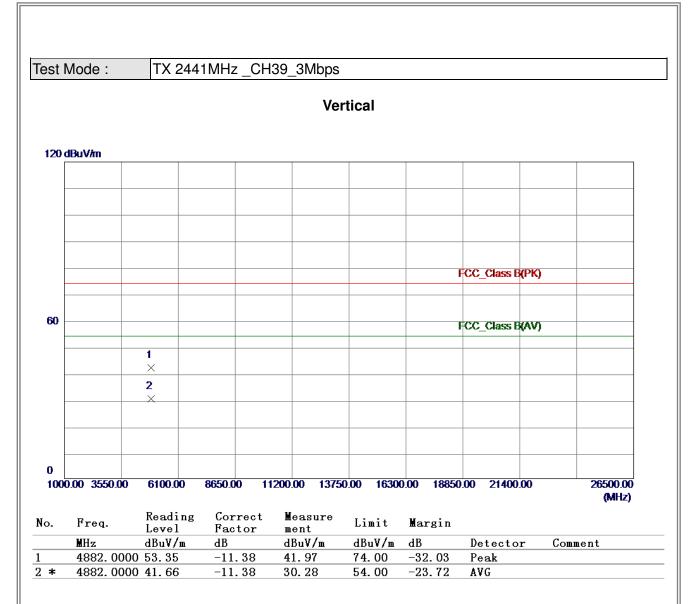






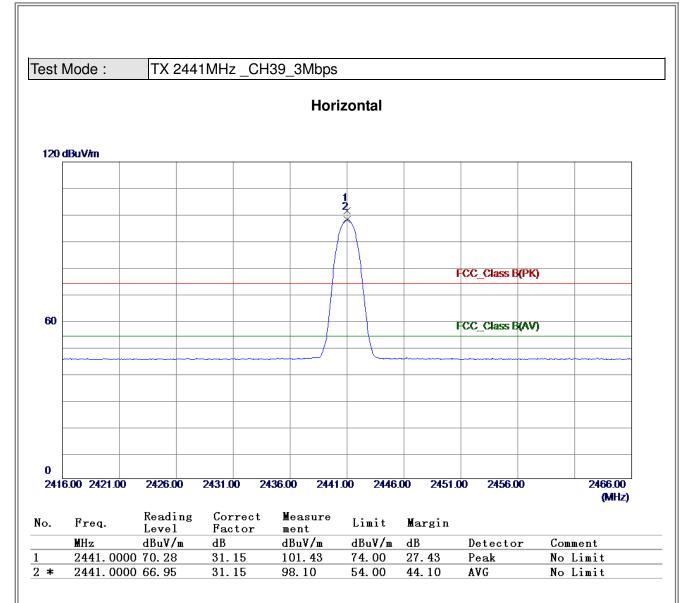






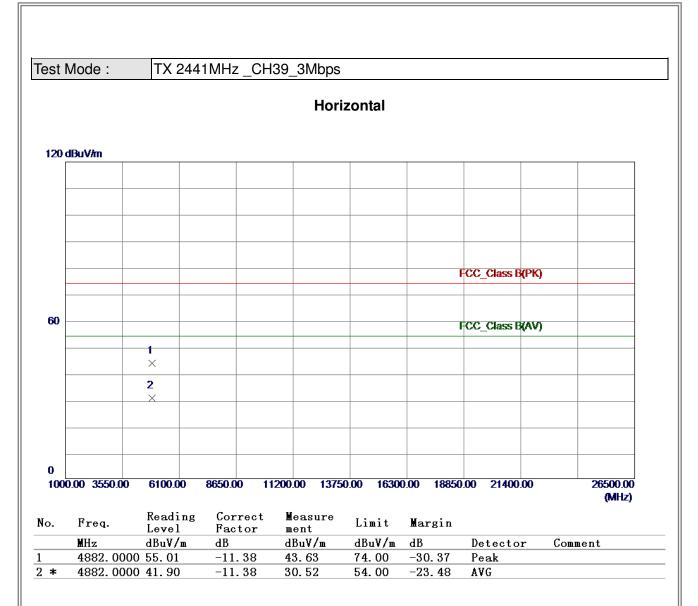






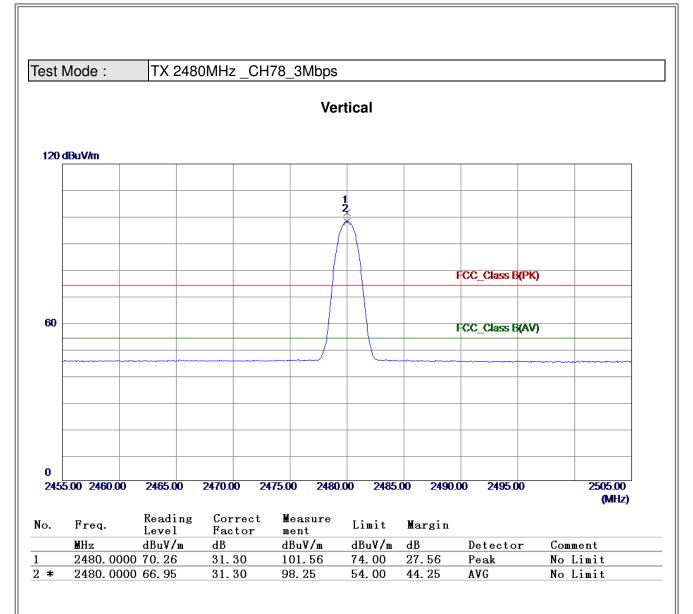






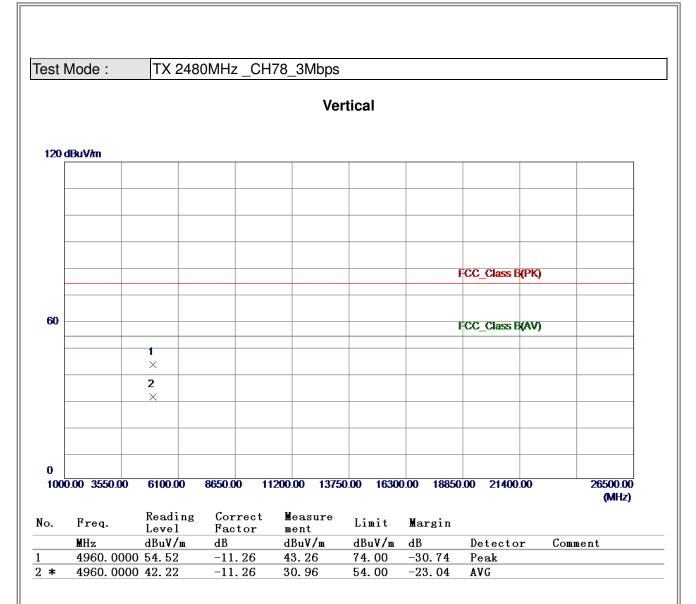






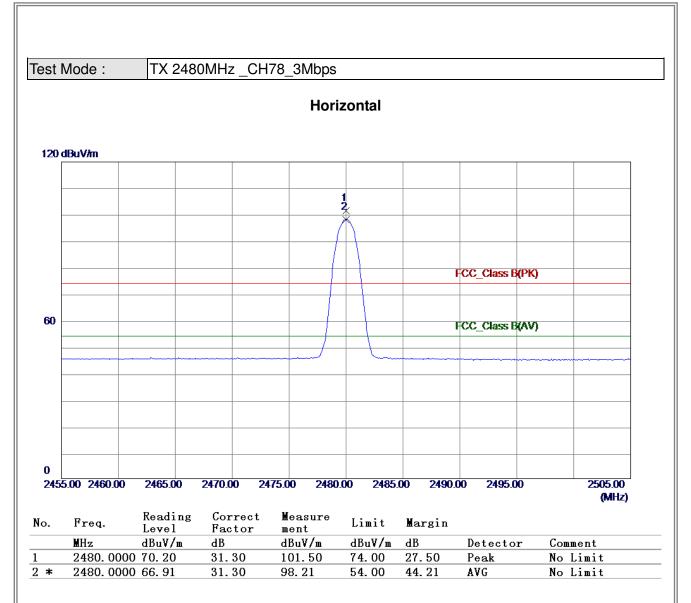






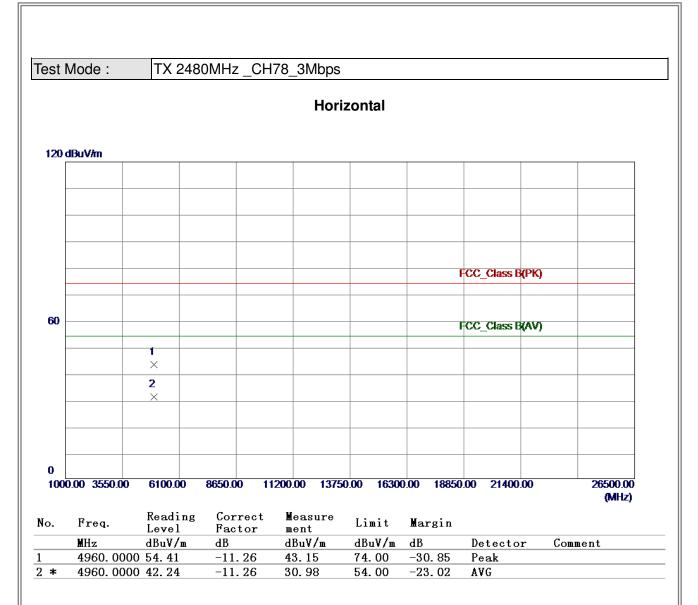














#### **ATTACHMENT E - NUMBER OF HOPPING CHANNEL**



	est Mode	Hopping Mode_	1Mbps
Number of	of Hopping Channel	79	
Keysight Spectrum Analyzer		INT SOURCE OFF ALIGN AUTO 05:34:20 PM Oct 28, 2016	Frequency
Ref Offse 10 dB/div Ref 20.0	t 2.52 dB 00 dBm	Mkr2 2.480 130 0 GHz -2.81 dBm	
10.0			Auto Tu
	งกิจกิจกิจกิจกิจกิจกิจกิจกิจกิจกิจกิจกิจก	2	Center Fi
-10.0	VITA E A COLA VITA VITA VITA VITA VITA VITA VITA VIT	ADADAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	2.441750000 G
-30.0			Start Fr
-40.0			2.40000000 G
-60.0			Stop Fr
-70.0			2.483500000 G
Start 2.40000 GHz #Res BW 100 kHz	#VBW 100 kHz	Stop 2.48350 GHz Sweep 10.13 ms (1001 pts)	CF St
MKR MODE TRC SCL 1 N 1 f 2 N 1 f	X Y 2.401 800 0 GHz -2.48 dBm	FUNCTION FUNCTION WIDTH FUNCTION VALUE	8.350000 M <u>Auto</u> N
2 N 1 f 3 4	2.480 130 0 GHz -2.81 dBm		Freq Offs
5 6 7			0
8			
10			
11 12			
		STATUS	
12	W	STATUS	
12 · · · · · · · · · · · · · · · · · · ·	π.	STATUS	
12 · · · · · · · · · · · · · · · · · · ·	est Mode	status Hopping Mode_	3Mbps
12 · · · · · · · · · · · · · · · · · · ·	est Mode	, , ,	3Mbps
12 · · · · · · · · · · · · · · · · · · ·		Hopping Mode_	_3Mbps
12         *         MSG         To         Number c         Keysight Spectrum Analyzer	of Hopping Channel	Hopping Mode_           79	0
12         * [         MSG         MS	- Swept SA 50 Q AC SENSE: t2.54 dB	Hopping Mode_ 79	
12         * [         MSG         SG         Number (         MRL         RL         RF         10 dB/div         Ref Offset         10 dB/div         A1	- Swept SA 50 Q AC SENSE: t2.54 dB	Hopping Mode_           79           INT         ALIGN AUTO         (05:25:17 PM 0ct 31, 2016           Mkr2 2.479 965 0 GHz	
12           *           MSG           Number c           Mission           Keysight Spectrum Analyzer           Keysight Spectrum Analyzer           Keysight Spectrum Analyzer           Mark         RF           SG           10 cB/cliv           Ref Offset           10 cB/cliv	Swept SA 50 Q AC SENSE: 12 54 dB	Hopping Mode_ 79 NT ALGN AUTO 05:25:17 PHORT31, 2016 Mkr2 2.479 9655 0 GHz 0.66 dBm	Frequency Auto Tu
12         * [         MSG         MSG         Number (         MR         Ref Offset         10.0         11.0	Swept SA 50 Q AC SENSE: 12 54 dB	Hopping Mode_           79           INT         ALIGN AUTO         (05:25:17 PM 0ct 31, 2016           Mkr2 2.479 965 0 GHz	Frequency Auto Tu Center F
12         * [         MSG         SG         Number (         Number (         Keysight Spectrum Analyzer         Ref Offset         10 dB/div         10 dB/div         10 dB/div         10 dB/div	Swept SA 50 Q AC SENSE: 12 54 dB	Hopping Mode_ 79 NT ALGN AUTO 05:25:17 PHORT31, 2016 Mkr2 2.479 9655 0 GHz 0.66 dBm	Auto Tu Center F 2.441750000 (
12         Image: Constraint of the section of th	Swept SA 50 Q AC SENSE: 12 54 dB	Hopping Mode_ 79 NT ALGN AUTO 05:25:17 PHORT31, 2016 Mkr2 2.479 9655 0 GHz 0.66 dBm	Frequency Auto Tu Center F 2.441750000 ( Start F
12         * [         Msc         Sc         Number c         It Keysight Spectrum Analyzer         Mc         RL       RF         10 dB/div       Ref Offset         10.00       10.00         10.00	Swept SA 50 Q AC SENSE: 12 54 dB	Hopping Mode_ 79 NT ALGN AUTO 05:25:17 PHORT31, 2016 Mkr2 2.479 9655 0 GHz 0.66 dBm	Frequency Auto Tu Center F 2.441750000 ( Start F
12         Image: Constraint of the section of th	Swept SA 50 Q AC SENSE: 12 54 dB 10 dBm	Hopping Mode_ 79 NT ALGN AUTO 05:25:17 PHORT31, 2016 Mkr2 2.479 9655 0 GHz 0.66 dBm	Frequency

× 2.401 800 0 GHz 2.479 965 0 GHz

N 1 f N 1 f

Alignment Completed

2.56 dBm 0.66 dBm

STATUS

Freq Offset 0 Hz



#### **ATTACHMENT F - AVERAGE TIME OF OCCUPANCY**

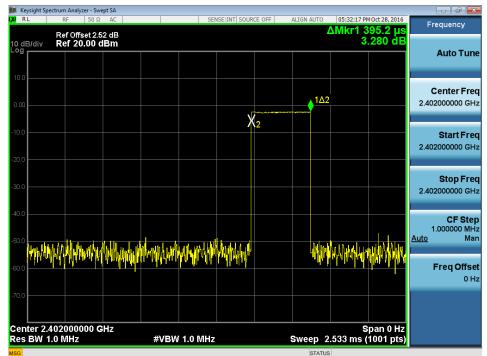




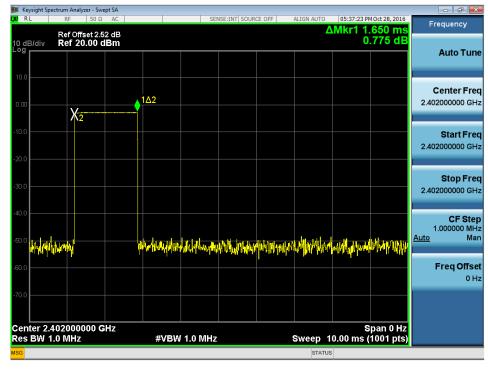
Test Mode :	TX Mode_1Mbps				
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.9000	0.3093	0.4000	Pass
DH3	2402	1.6500	0.2640	0.4000	Pass
DH1	2402	0.3952	0.1265	0.4000	Pass
DH5	2441	2.9000	0.3093	0.4000	Pass
DH3	2441	1.6500	0.2640	0.4000	Pass
DH1	2441	0.3952	0.1265	0.4000	Pass
DH5	2480	2.9000	0.3093	0.4000	Pass
DH3	2480	1.6500	0.2640	0.4000	Pass
DH1	2480	0.3927	0.1257	0.4000	Pass





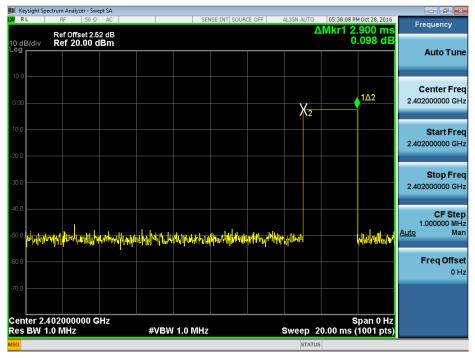


# CH00-DH3

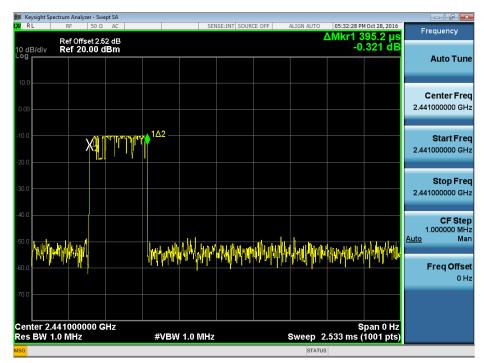








CH39-DH1





Frequency

 Keysight Spectrum Analyzer - Swept SA

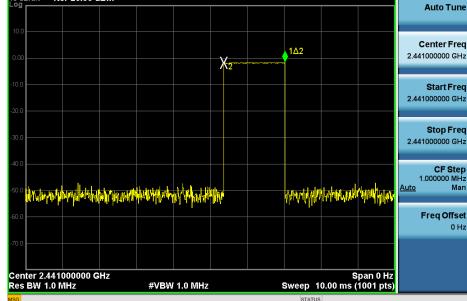
 RL
 RF
 50 O
 AC

0 dB/di

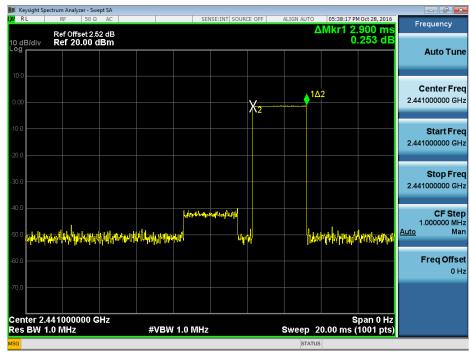
Ref Offset 2.52 dB Ref 20.00 dBm



# **CH39-DH3**

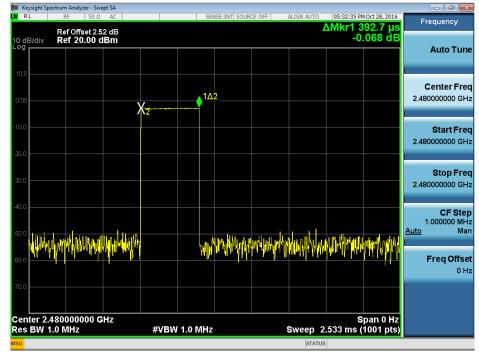


## **CH39-DH5**

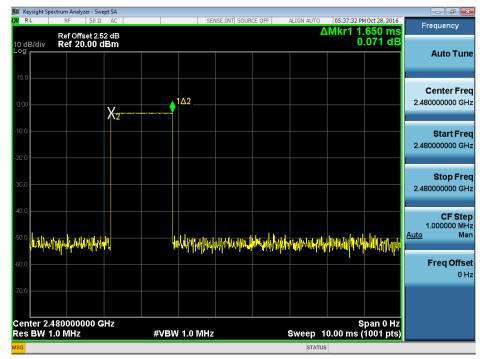






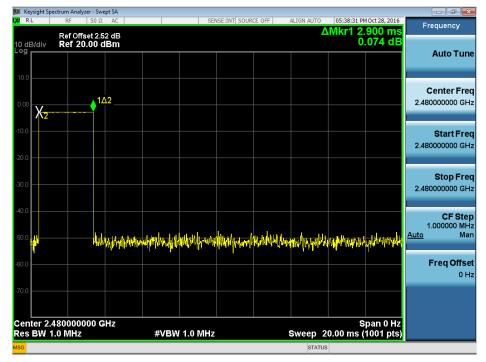


CH78-DH3





# CH78-DH5





Test Mode :	TX Mode_3Mbps				
		_	-	-	
Data Packet	Fraguanay	Pulse	Dwell	Limits(s)	Tost Posult
Dala Fackel	Frequency	Duration(ms)	Time(s)	LIIIIIS(S)	Test Result
DH5	2402	2.9200	0.3115	0.4000	Pass
DH3	2402	1.6600	0.2656	0.4000	Pass
DH1	2402	0.4003	0.1281	0.4000	Pass
DH5	2441	2.9000	0.3093	0.4000	Pass
DH3	2441	1.6200	0.2592	0.4000	Pass
DH1	2441	0.4003	0.1281	0.4000	Pass
DH5	2480	2.9200	0.3115	0.4000	Pass
DH3	2480	1.6200	0.2592	0.4000	Pass
DH1	2480	0.3724	0.1192	0.4000	Pass



### CH00-DH1 alyzer - Swept SA 05:23:20 PM Oct 31, 2016 RI Frequency ΔMkr1 400.3 μs 0.884 dB Ref Offset 2.54 dB Ref 20.00 dBm 10 dB/div Log Auto Tune $1\Delta 2$ **Center Freq** el de la partir a 2.402000000 GHz Start Freq 2.402000000 GHz Stop Freq 2.402000000 GHz CF Step 1.000000 MHz Man hiteen herrestaal betaan konstansisse taste van verker van de kerker provinse of the bestaan verker van de ser Auto MUM Freq Offset 0 Hz Center 2.402000000 GHz Res BW 1.0 MHz Span 0 Hz Sweep 2.533 ms (1001 pts)

# CH00-DH3

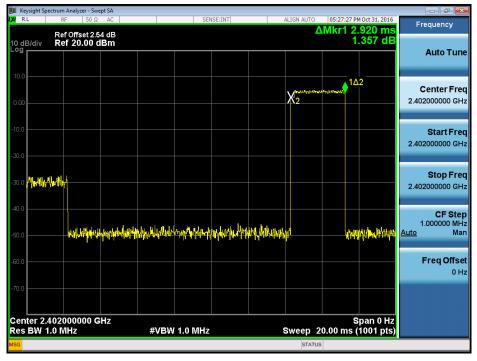
STATUS

#VBW 1.0 MHz

	ectrum Analyzer - Swept S									
LXU RL	RF 50 Ω 4			SEI	ISE:INT		ALIGN AUTO		MOct 31, 2016	Frequency
10 dB/div Log	Ref Offset 2.54 c Ref 20.00 dB	iB m						0	.790 dB	Auto Tune
10.0 0.00				X2	เป็นหมูกสารสารการ	1Δ2				<b>Center Fre</b> 2.402000000 GH
-10.0										<b>Start Fre</b> 2.402000000 GH
-30.0										<b>Stop Fre</b> 2.402000000 G⊦
-40.0 -50.0 <mark>m/////</mark>	yddyddarlafurglangu ar	uhhundundu	wellenterter	i <sup>r</sup> h		₽ a <b>y ku<sup>1</sup>k a</b> nta	AN WARK	hatal yilar	allanan da an	CF Ste 1.000000 MH <u>Auto</u> Ma
-60.0										Freq Offse 0 H
-70.0										
Center 2. Res BW 1	402000000 GHz 1.0 MHz	Z	#VBW	1.0 MHz			Sweep 1	s 0.00 ms (	pan 0 Hz 1001 pts)	
MSG							STATUS			



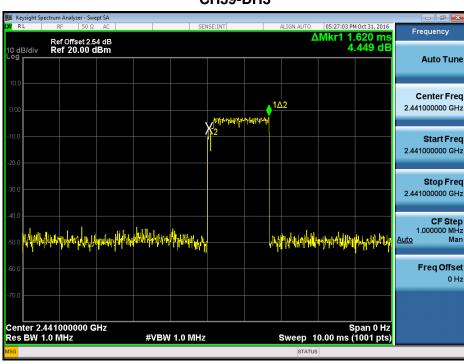




CH39-DH1





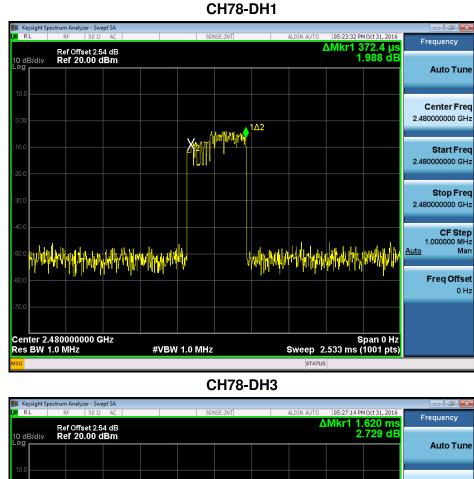


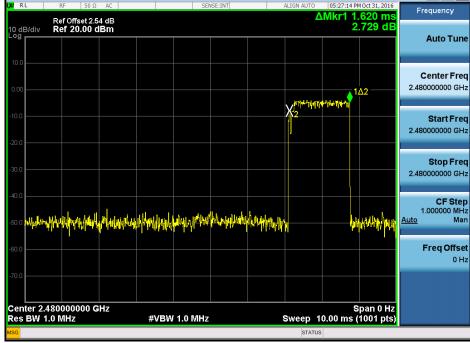
# CH39-DH3

# CH39-DH5

🎉 Keysight Spectrum Analyzer - S						
LXI RL RF 50	Ω AC	SENSE:INT		ALIGN AUTO	05:27:35 PM Oct 31, 2016	Frequency
Ref Offset 2 10 dB/div Ref 20.00	:.54 dB dBm			Δ	Mkr1 2.900 ms 1.048 dB	Auto Tune
10.0					162	
0.00						2.441000000 GHz
-10.0						<b>Start Freq</b> 2.441000000 GHz
-30.0						<b>Stop Fred</b> 2.441000000 GHz
<0.0 -50.0 printry it play here for a	nyekkistali alimetra interpertation	herityaballopatelah <mark>e</mark> tika	philipping in the	champerciple	hū <sup>ya</sup> ,	CF Step 1.000000 MH <u>Auto</u> Mar
-60.0						Freq Offset 0 Hz
Center 2.441000000	GHz				Span 0 Hz	
Res BW 1.0 MHz		/ 1.0 MHz		Sweep 20	0.00 ms (1001 pts)	
MSG				STATUS		

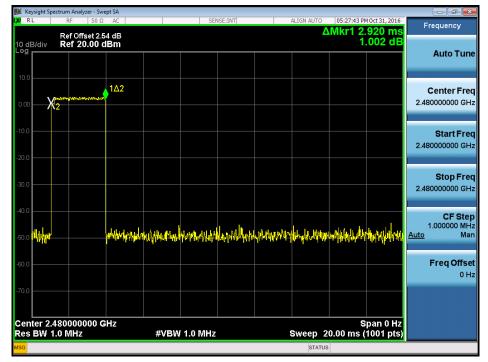








# CH78-DH5





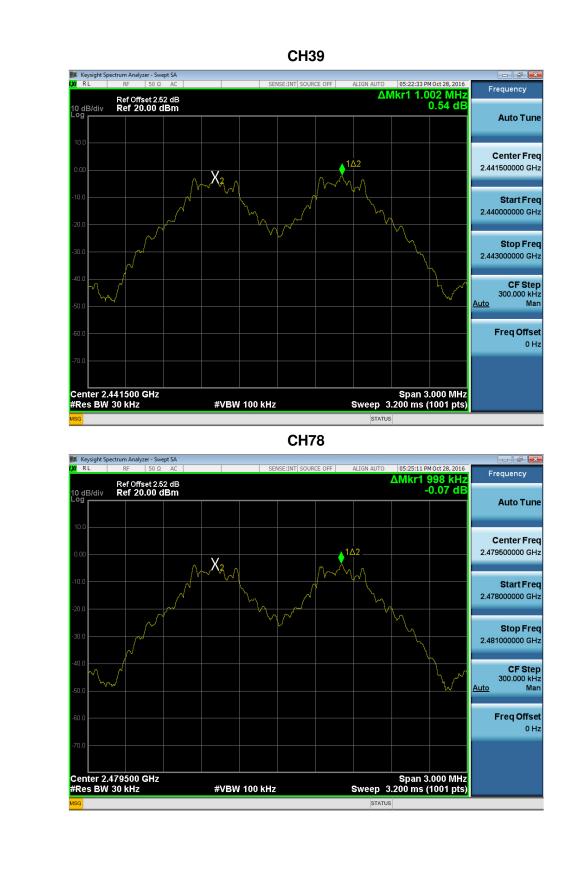
# ATTACHMENT G - HOPPING CHANNEL SEPARATION MEASUREMENT





Mode : H	lopping on _1Mbps		
Frequency	Channel Separation	2/3 of 20dB Bandwidth	Test Result
(MHz)	(MHz)	(MHz)	Test Result
2402	1.002	0.630	Pass
2441	1.002	0.629	Pass
2480	0.998	0.631	Pass
10.0 0.00 -10.0 -20.0 -30.0 -40.0	X2 X2 X2 X2 X2 X2 X2 X2 X2 X2		Center Freq 2.402500000 GHz Start Freq 2.401000000 GHz Stop Freq 2.404000000 GHz
-50.0 -60.0 -70.0 Center 2.40	2500 GHz	Span 3.000 MHz Sweep 3.200 ms (1001 pts)	300.000 kHz <u>ato</u> Man Freq Offset 0 Hz









est Mode : H	lopping on _3Mbps		
Frequency	Channel Separation	2/3 of 20dB Bandwidth	Test Result
(MHz)	(MHz)	(MHz)	
2402	0.998	0.863	Pass
2441	0.999	0.866	Pass
2480	1.003	0.863	Pass
LXI RL	um Analyzer - Swept SA RF 50 Ω AC SENSE:INT	H00 ALIGN AUTO 05:16:17 PM Oct 31, 2016 A Mikr 1 998 kH 7	Frequency
III. Kevsight Spect		H00	
LX RL	um Analyzer - Swept SA		
10 dB/div	um Analyzer - Swept SA RF   50 Ω AC   SENSE:INT  Ref Offset 2,54 dB	ALIGN AUTO 05:16:17 PM Oct 31, 2016	Frequency Auto Tune
10 dB/div	um Analyzer - Swept SA RF   50 Ω AC   SENSE:INT  Ref Offset 2,54 dB	ALIGN AUTO 05:16:17 PM Oct 31, 2016 <b>ΔMkr1 998 kHz</b> -0.03 dB	Frequency
10.0 0.00 -10.0	um Analyzer - Swept SA RF   50 Ω AC   SENSE:INT   Ref Offset 2.54 dB Ref 20.00 dBm	ALIGN AUTO 05:16:17 PM Oct 31, 2016 <b>ΔMkr1 998 kHz</b> -0.03 dB -0.03 db -0.04 db -0.04 db -0.05 db -0	Frequency Auto Tune Center Freq
10 dB/div	um Analyzer - Swept SA RF   50 Ω AC   SENSE:INT   Ref Offset 2.54 dB Ref 20.00 dBm	ALIGN AUTO 05:16:17 PM Oct 31, 2016 AMkr1 998 kHz -0.03 dB	Frequency Auto Tune Center Freq 2.402500000 GHz Start Freq 2.401000000 GHz
10.0 -10.0 -20.0	um Analyzer - Swept SA RF   50 Ω AC   SENSE:INT   Ref Offset 2.54 dB Ref 20.00 dBm	ALIGN AUTO 05:16:17 PM Oct 31, 2016 AMkr1 998 kHz -0.03 dB	Frequency Auto Tune Center Freq 2.402500000 GHz Start Freq 2.401000000 GHz



Span 3.000 MHz Sweep 3.200 ms (1001 pts)

STATUS

Freq Offset 0 Hz







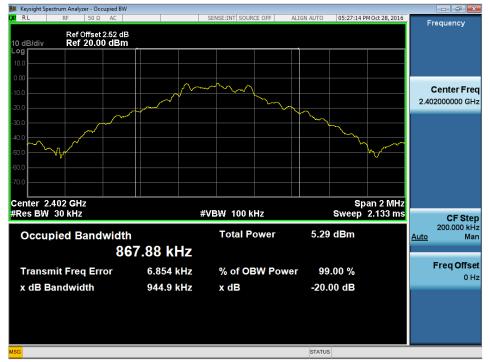
# **ATTACHMENT H - BANDWIDTH**





Test Mode :	TX Mode _1Mbps								
Frequency	20dB Bandwidth	99% Occupied BW	Test Result						
(MHz)	(MHz)	(MHz)	Test nesult						
2402	0.945	0.868	Pass						
2441	0.943	0.875	Pass						
2480	0.947	0.879	Pass						

















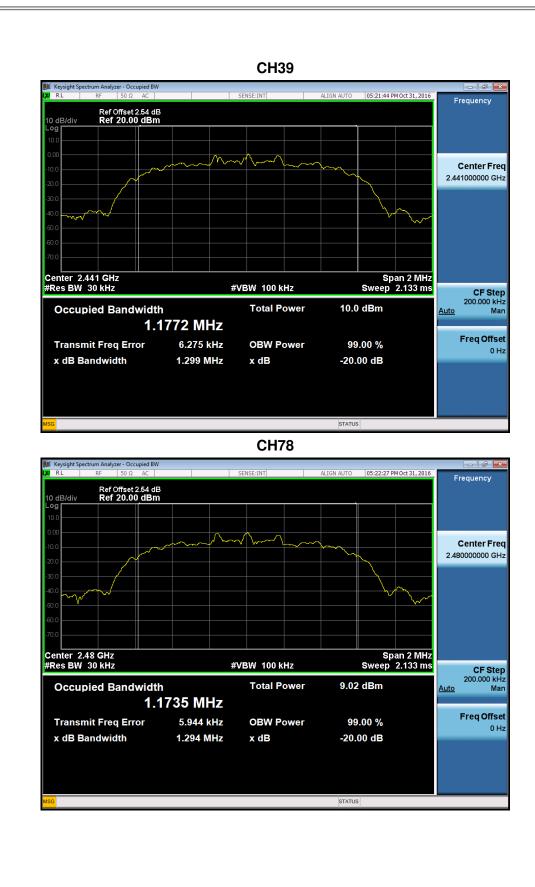


Test Mode :	TX Mode _3Mbps		
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	1.295	1.175	Pass
2441	1.299	1.177	Pass
2480	1.294	1.174	Pass











# **ATTACHMENT I - PEAK OUTPUT POWER**





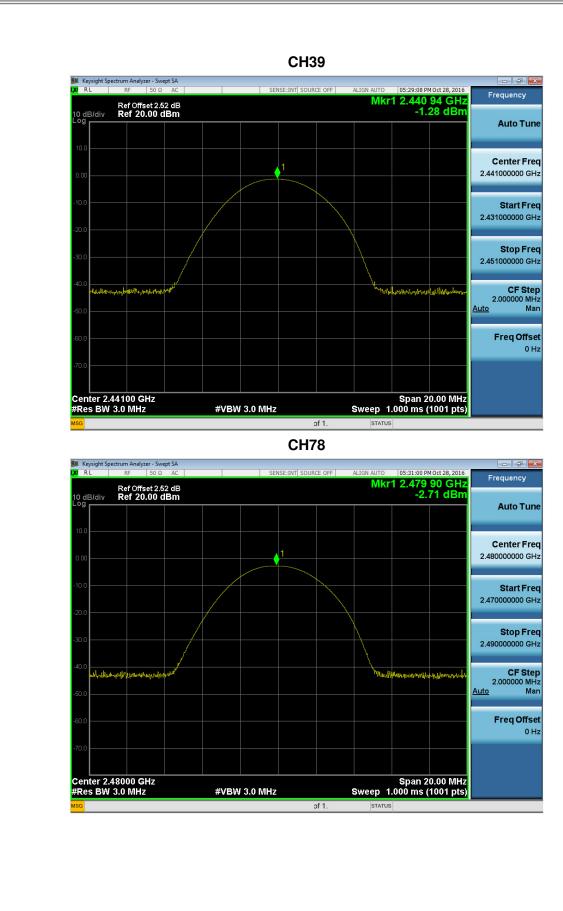
Test Mode :	TX Mode _1Mb	OS			
Frequency	Conducted Power	Conducted Power	Max. Limit	Max. Limit	Test Result
(MHz) 2402	(dBm) -2.32	(W) 0.0006	(dBm) 29.50	(W) 0.89	Pass
2441	-1.28	0.0007	29.50	0.89	Pass
2480	-2.71	0.0005	29.50	0.89	Pass







# **B**TL

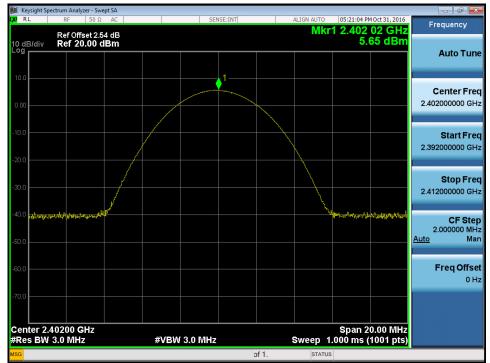






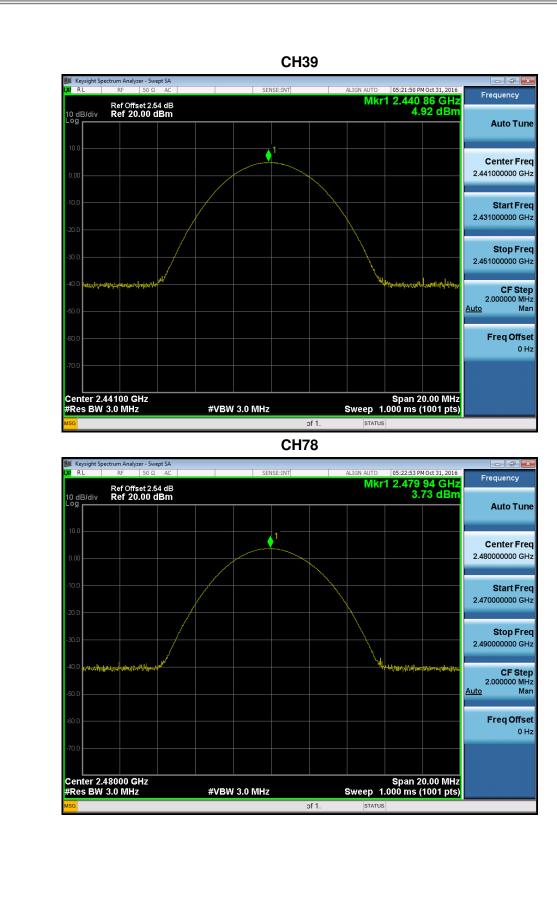
Test Mode :	TX Mode _3Mb	os			
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	5.65	0.0037	29.50	0.89	Pass
2441	4.92	0.0031	29.50	0.89	Pass
2480	3.73	0.0024	29.50	0.89	Pass









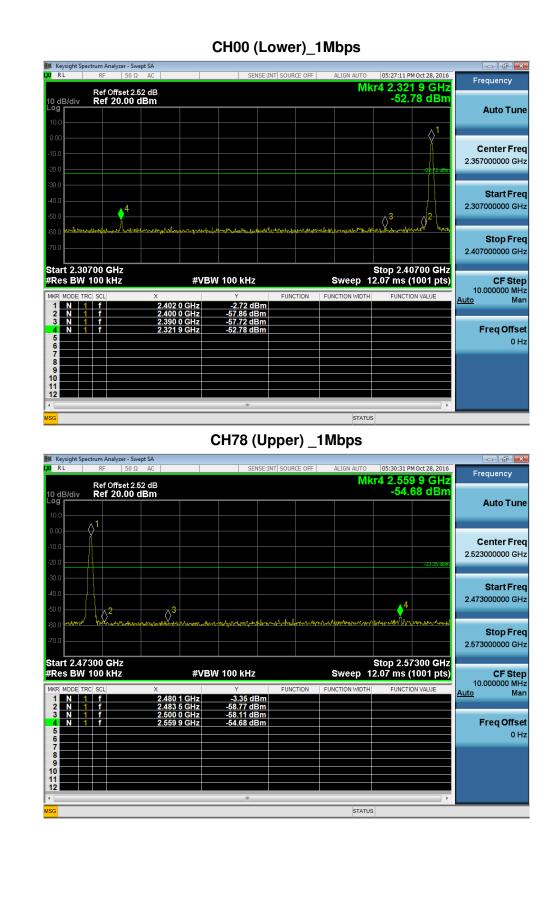




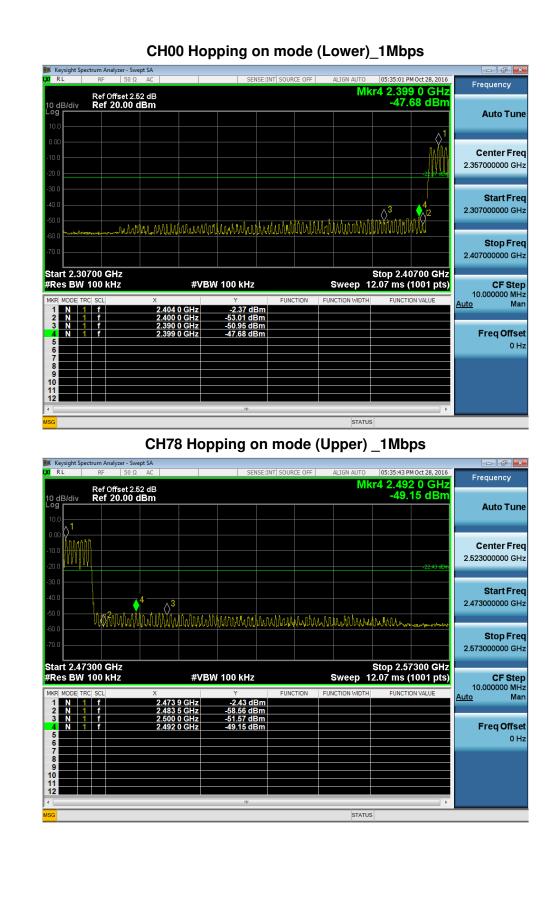
# ATTACHMENT J - ANTENNA CONDUCTED SPURIOUS EMISSION











Keysight Spo RL	RF 50Ω A	IC		SE	ENSE:INT  SOUR	CE OFF	ALIGN AUTO			Frequency
	Ref Offset 2.52 of	IB					Mł	r2 2.48	3 2 GHz 05 dBm	Troquerrey
0 dB/div . <sup>og</sup> r	Ref 20.00 dBi	m						-45.	US UBIII	Auto Tu
										71410 14
10.0										
										Center Fr
0.00										1.515000000 G
10.0										Start Fr
										30.000000 N
20.0									-22.67 dBm	
										Oton F
30.0										Stop Fr 3.00000000 G
										3.000000000
40.0										05.00
								<b>2</b>		CF St 297.000000 M
50.0										<u>Auto</u> N
								like date	فالمحاف والله	
50.0	win for the shirt with	www.hhly	helm developed	ale de la contraction	all marken and	defnal the	181 March 18. all wells	Wahnam	and the fall that have a fall	Freq Off
- And	HAMART And manufactures									0
70.0										
tart 0.03								Stop 7	.000 GHz	
Res BW			#VBW	100 kHz			Sweep 3			
					4					
SG	100 KH2				<u> </u>		STATUS			
<mark>SG</mark>										
SG Keysight Spi	ectrum Analyzer - Swept S RF 50 Ω A					CE OFF	STATUS		M Oct 28, 2016	
SG Keysight Spi	ectrum Analyzer - Swept S RF 50 Ω A	IC .				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency
SG I Keysight Sp RL	ectrum Analyzer - Swept S	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency
SG I Keysight Sp RL	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency
G Keysight Sp RL 0 dB/div	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency
SG Keysight Sp RL 0 dB/div 0 g	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency Auto Tu
SG Keysight Spi RL O dB/div O dB/div	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency Auto Tu Center F
SG Keysight Spi RL O dB/div O dB/div	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency Auto Tu Center F
C dB/div	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B					STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency Auto Tu Center Fr 9.000000000 0
C dB/div	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency Auto Tu Center F 9.000000000 Start F
G         Keysight Spid           R L         0           O dB/div         9           10.0         0           10.0         0	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B					STATUS ALIGN AUTO	05:27:29 P kr1 14.1	Mott 28, 2016 148 GHz 45 dBm	Frequency Auto Tu Center Fr 9.00000000 0 Start Fr
G         Keysight Spid           R L         0           O dB/div         9           10.0         0           10.0         0	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B				CE OFF	STATUS ALIGN AUTO	05:27:29 P kr1 14.1	M Oct 28, 2016	Frequency Auto Tu Center Fr 9.000000000 C Start Fr 3.000000000 C
G         Keysight Spip           RL         Image: Comparison of the spin of the s	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B					STATUS ALIGN AUTO	05:27:29 P kr1 14.1	Mott 28, 2016 148 GHz 45 dBm	Frequency Auto Tu Center Fr 9.00000000 C Start Fr 3.00000000 C
G         Keysight Spip           RL         Image: Comparison of the spin of the s	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B					STATUS ALIGN AUTO	05:27:29 P kr1 14.1	Mott 28, 2016 148 GHz 45 dBm	Frequency Auto Tu Center Fr 9.00000000 C Start Fr 3.00000000 C
SG         Keysight Spin           RL         RL           0         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B					STATUS ALIGN AUTO	05:27:29 P kr1 14.1	Mott 28, 2016 148 GHz 45 dBm	Frequency Auto Tu <u>Center Fr</u> 9.000000000 0 Start Fr 3.000000000 0 Stop Fr 15.000000000 0
SG         Keysight Spin           RL         RL           0         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0           0.00         0	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B					STATUS ALIGN AUTO	05:27:29 P kr1 14.1	Mott 28, 2016 148 GHz 45 dBm	Frequency Auto Tu Center Fi 9.00000000 0 Start Fi 3.000000000 0 Stop Fi 15.000000000 0
SG         Keysight Spin           RL         RL           O dB/div         0           0.00         0           10.0         0           20.0         0           30.0         0	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c	B					STATUS ALIGN AUTO	05:27:29 P kr1 14.1	Mott 28, 2016 148 GHz 45 dBm	Frequency Auto Tu Center Fr 9.00000000 c Start Fr 3.000000000 c Stop Fr 15.000000000 c
SG         Keysight Spring           RL         RL           O dB/div         0           0.00	ectrum Analyzer - Swept 3 RF 50 Ω A Ref Offfset 2.52 c Ref 20.00 dB1			SE			ALIGN AUTO	05:27:29 P kr1 14.1 -54.	MOCT 28, 2016 <b>148 GHz</b> <b>45 dBm</b> -22.67 dBm -22.67 dBm	Frequency Auto Tu Center Fr 9.00000000 c Start Fr 3.000000000 c Stop Fr 15.000000000 c
SG         Keysight Spring           RL         RL           O dB/div         0           0.00	ectrum Analyzer - Swept 3 RF 50 Ω A Ref Offfset 2.52 c Ref 20.00 dB1			SE			ALIGN AUTO	05:27:29 P kr1 14.1 -54.	MOCT 28, 2016 <b>148 GHz</b> <b>45 dBm</b> -22.67 dBm -22.67 dBm	Frequency Auto Tu Center Fr 9.000000000 C Start Fr 3.000000000 C Stop Fr 15.00000000 C CF St 1.200000000 C
SG         Keysight Spring           RL         RL           O dB/div         0           0.00	ectrum Analyzer - Swept S RF 50 Ω A Ref Offset 2.52 c			SE			STATUS ALIGN AUTO	05:27:29 P kr1 14.1 -54.	MOCT 28, 2016 <b>148 GHz</b> <b>45 dBm</b> -22.67 dBm -22.67 dBm	Frequency           Auto Tu           Center Fil           9.000000000 c           Start Fil           3.000000000 c           Stop Fil           15.000000000 c           Auto Tu           CF St           1.200000000 c           Auto Tu           Freq Offs
SG         Keysight Spi RL           RL         I           OdB/div         I           10.0         I	ectrum Analyzer - Swept 3 RF 50 Ω A Ref Offfset 2.52 c Ref 20.00 dB1			SE			ALIGN AUTO	05:27:29 P kr1 14.1 -54.	MOCT 28, 2016 <b>148 GHz</b> <b>45 dBm</b> -22.67 dBm -22.67 dBm	Frequency           Auto Tu           Center Fil           9.000000000 c           Start Fil           3.000000000 c           Stop Fil           15.000000000 c           Auto Tu           CF St           1.200000000 c           Auto Tu           Freq Offs
SG         Keysight Spr           RL         RL           O dB/div         0           0.00	ectrum Analyzer - Swept 3 RF 50 Ω A Ref Offfset 2.52 c Ref 20.00 dB1			SE			ALIGN AUTO	05:27:29 P kr1 14.1 -54.	MOCT 28, 2016 <b>148 GHz</b> <b>45 dBm</b> -22.67 dBm -22.67 dBm	Frequency           Auto Tu           Center Fil           9.000000000 c           Start Fil           3.000000000 c           Stop Fil           15.000000000 c           Auto Tu           CF St           1.200000000 c           Auto Tu           Freq Offs
SG         Keysight Spi RL           RL         I           OdB/div         I           10.0         I	ectrum Analyzer - Swept 3 RF 50 Ω A Ref Offfset 2.52 c Ref 20.00 dB1			SE			ALIGN AUTO	05:27:29 P kr1 14.1 -54.	MOCT 28, 2016 <b>148 GHz</b> <b>45 dBm</b> -22.67 dBm -22.67 dBm	Frequency           Auto Tu           Center Fil           9.000000000 c           Start Fil           3.000000000 c           Stop Fil           15.000000000 c           Auto Tu           CF St           1.200000000 c           Auto Tu           Freq Offs
SG         Keysight Spi           I         Keysight Spi           R         I           O         O           IO         O     <	ectrum Analyzer - Swept S RF 50 0 # Ref Offset 2.52 c Ref 20.00 dB1			SE				05:27:29P kr1 14.1 -54.	MOCT 28, 2016 <b>148 GHz</b> <b>45 dBm</b> -22.67 dBm -22.67 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF St           1.200000000 G

# CH00 (10 Harmonic of the frequency) \_1Mbps



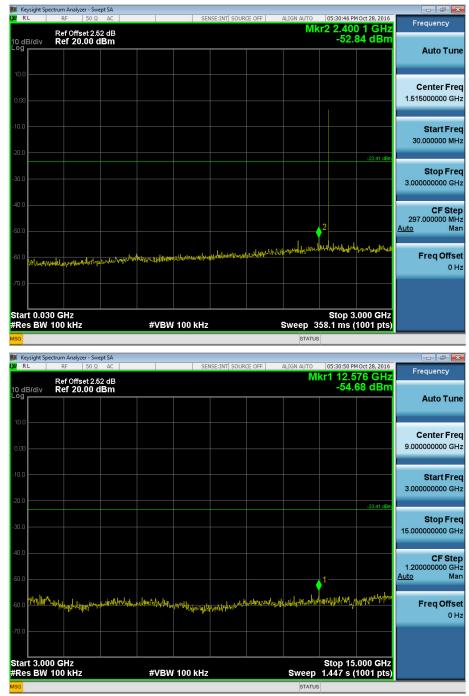
R L	ectrum Analyzer - RF 50	Swept SA Ω AC		SEN	ISE:INT SOUR	CE OFF	ALIGN AUTO	05:27:34 P	M Oct 28, 2016	
) dB/div	Ref Offset: Ref 20.00	2.52 dB						kr1 25.5	592 GHz 58 dBm	Frequency
g										Auto Tu
0.0										<b>Center Fr</b> 20.750000000 G
).0 ——— ).0 ———									-22.67 dBm	<b>Start Fr</b> 15.000000000 G
D.O										<b>Stop Fr</b> 26.50000000 G
).0 ).0					المراد	Mit 1449 <sup>lu</sup> u sellastu	on the new Wy	and the second states of the s	1 hunthelapope	CF St 1.150000000 G <u>Auto</u> N
	ajilan sihan di kanadahan	gelfter gegeldet og det	pholodiumic philodowick	.kn/Matheway.es	an adulta da					Freq Off 0
	000 GHz							Stop 26	.500 GHz	
es BW	100 kHz		#VBW	100 kHz			Sweep	1.387 s	(1001 pts)	

# CH39 (10 Harmonic of the frequency) \_1Mbps





R L	ectrum Analyzer - Swep RF 50 Ω	AC		SEI	NSE:INT SOUR	CE OFF	ALIGN AUTO		M Oct 28, 2016	
	Ref Offset 2.52	2 dB					N		600 GHz	Frequency
0 dB/div og	Ref 20.00 dl	Bm						-55.	14 dBm	Auto T
										Auton
10.0										
										Center F
0.00										9.000000000
10.0										Start F
										3.000000000
20.0									22.07 dBm	0.000000000
									-22.07 dbm	
30.0										Stop F
										15.000000000
40.0										
										CF S 1.200000000
50.0	1									Auto
50.0 <b>14441</b>	AL AND	<b>el.</b> Hillion	Matherita	alater ( and use	a dala John Market	4 May August	if a she had	at Mary May	harmontalida	Freq Of
				. Han Med	WH-Donie and L					
70.0										
itart 3.00								Stop 15	.000 GHz	
			-40 (1914)	400 1.11-						
	100 kHz		#VBW	100 kHz					(1001 pts)	
			#VBW	100 kHz			Sweep Status		(1001 pts)	
<b>Res BW</b> SG	100 kHz		#VBW				STATUS			
Res BW <sup>sg</sup>	100 kHz ectrum Analyzer - Swep RF 50 Ω	AC	#VBW		NSE:INT SOUR	CE OFF	STATUS ALIGN AUTO	05:29:00 P	M Oct 28, 2016	Frequency
Res BW SG Keysight Sp RL	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS ALIGN AUTO	05:29:00 P kr1 25.6	M Oct 28, 2016	
Res BW SG Keysight Sp RL	100 kHz ectrum Analyzer - Swep RF 50 Ω	AC 2 dB	#VBW			CE OFF	STATUS ALIGN AUTO	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency
Res BW SG Keysight Sp RL	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS ALIGN AUTO	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency
Res BW	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS ALIGN AUTO	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency
<b>Res BW</b> SG	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS ALIGN AUTO	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency Auto T Center F
Res BW	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS ALIGN AUTO	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency Auto T Center F
Res BW	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS ALIGN AUTO	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency Auto T Center F
Res BW SG RL O dB/div O dB/div	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency Auto T Center F 20.75000000 Start F
Res BW	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency Auto T Center F 20.75000000 Start F
Res BW	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW			CE OFF	STATUS	05:29:00 P kr1 25.6	M Oct 28, 2016	Frequency Auto T Center F 20.75000000 Start F
Res BW           so           It Keysight Sp           It Keysight Sp           It RL	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW				STATUS	05:29:00 P kr1 25.6	MOCT 28, 2016 338 GHz 55 dBm	Frequency Auto Tr Center F 20.750000000 Start F 15.000000000
Res BW SG C Keysight Sp RL O dB/div O G C MB/div O G C MB	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW				STATUS	05:29:00 P kr1 25.6	MOCT 28, 2016 338 GHz 55 dBm	
Res BW           sci           6           RL           0	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW				STATUS	05:29:00 P kr1 25.6	MOCT 28, 2016 338 GHz 55 dBm	Frequency Auto T Center F 20.750000000 Start F 15.000000000
Res BW           so           It Keysight Sp           It Keysight Sp           It RL	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW				STATUS	05:29:00 P kr1 25.6	MOCT 28, 2016 338 GHz 55 dBm	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S
Res BW           sci           Image: science state	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB	#VBW				ALIGN AUTO M	05:29:00 P kr1 25.6 -46.	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.00000000           Stop F           26.500000000           CF S           1.150000000
Res BW           50           51           6           6           7           7           8           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0	100 kHz ectrum Analyzer - Swee  RF 50 Ω Ref Offset 2.52 Ref 20.00 d	AC 2 dB BM		SEP	NSE:INT SOUR		ALIGN AUTO MI	05:29:00 P kr1 25.6	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S
Res BW           sci           It Reysight Spint Sp	100 kHz ectrum Analyzer - Swee  RF 50 Ω Ref Offset 2.52 Ref 20.00 d	AC 2 dB BM		SEP	NSE:INT SOUR	CE OFF	ALIGN AUTO MI	05:29:00 P kr1 25.6 -46.	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S           1.150000000           Auto
Res BW           sci           It Reysight Spint Sp	T 100 kHz ectrum Analyzer - Swep RF 50 Ω Ref Offset 2.52	AC 2 dB BM		SEP	NSE:INT SOUR		ALIGN AUTO MI	05:29:00 P kr1 25.6 -46.	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S           1.1500000000           Auto           Freq Of
Res BW           50           51           6           6           7           7           8           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0           9           10.0	100 kHz ectrum Analyzer - Swee  RF 50 Ω Ref Offset 2.52 Ref 20.00 d	AC 2 dB BM		SEP	NSE:INT SOUR		ALIGN AUTO MI	05:29:00 P kr1 25.6 -46.	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S           1.1500000000           Auto           Freq Of
Res BW           sci           It Reysight Spint Sp	100 kHz ectrum Analyzer - Swee  RF 50 Ω Ref Offset 2.52 Ref 20.00 d	AC 2 dB BM		SEP	NSE:INT SOUR		ALIGN AUTO MI	05:29:00 P kr1 25.6 -46.	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S           1.1500000000           Auto           Freq Of
Res BW           50           50           6           6           7           8           10.0	100 kHz ectrum Analyzer - Swee  RF 50 Ω Ref Offset 2.52 Ref 20.00 d	AC 2 dB BM		SEP	NSE:INT SOUR		ALIGN AUTO MI	05:29:00 P kr1 25.6 -46.	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S           1.1500000000           Auto           Freq Of
Res BW           30           6           6           7           7	100 kHz ectrum Analyzer - Siwee RF 50 Ω Ref Offset 2.52 Ref 20.00 d	AC 2 dB BM		SEP	NSE:INT SOUR		ALIGN AUTO MI	05:29:00 P kr1 25.6 -46.	Mott 28, 2016 338 GHz 55 dBm 	Frequency           Auto T           Center F           20.750000000           Start F           15.000000000           Stop F           26.500000000           CF S           1.1500000000           Auto           Freq Of
Res BW           50           50           6           6           7<	100 kHz ectrum Analyzer - Siwee RF 50 Ω Ref Offset 2.52 Ref 20.00 d	AC 2 dB BM		SEP	NSE:INT SOUR			05:29:00 P kr1 25.6 -46.	MOCT 28, 2016 338 GHz 55 dBm -22 07 dbm	Frequency           Auto T           Center F           20.750000000           Start F           15.00000000           Stop F           26.500000000           CF S           1.150000000



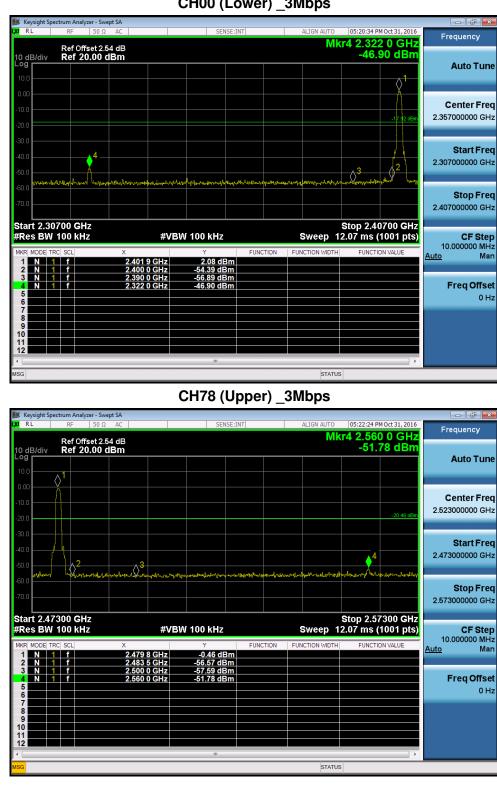
# CH78 (10 Harmonic of the frequency) \_1Mbps



RL RL	ectrum Analyzer	- Swept SA 50 Ω AC		SEN	SE:INT SOUR	CE OFE	ALIGN AUTO	05:30:55 P	M Oct 28, 2016	
) dB/div	Ref Offse Ref 20.0	t 2.52 dB		JL	SEAN SOOK			kr1 25.3	339 GHz 99 dBm	Frequency
°g	Rel 20.0									Auto Tui
0.0										<b>Center Fr</b> 20.750000000 G
0.0										<b>Start Fr</b> 15.000000000 G
0.0									-23.41 dBm	<b>Stop Fr</b> 26.50000000 G
0.0								اللغريد الجلع	1	CF St 1.150000000 G <u>Auto</u> M
0.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	NHH HAN HANNA	mumunuhu	had had a start and had had had had had had had had had ha	philippineteet	htru#Weitengry	nykyenlypet <sup>yr v</sup>	φ <i>σ</i> ' ' ' '		Freq Offs
0.0										
tart 15.0	00 GHz 100 kHz		#\/B\M	100 kHz			Sweep		).500 GHz (1001 pts)	

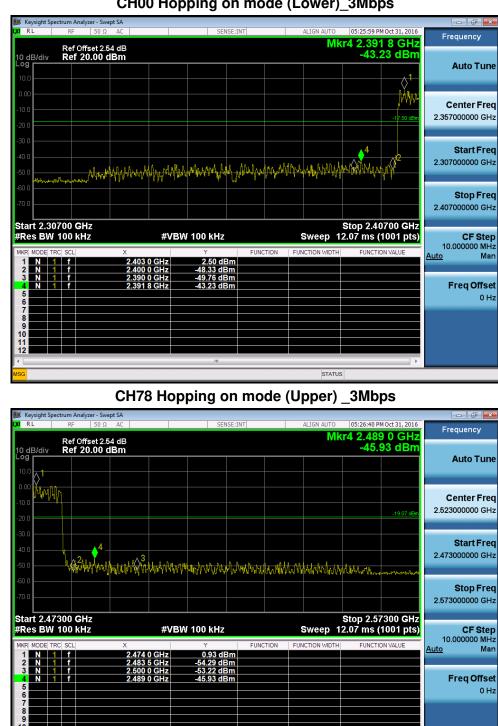






# CH00 (Lower) \_3Mbps





STATUS

# CH00 Hopping on mode (Lower)\_3Mbps

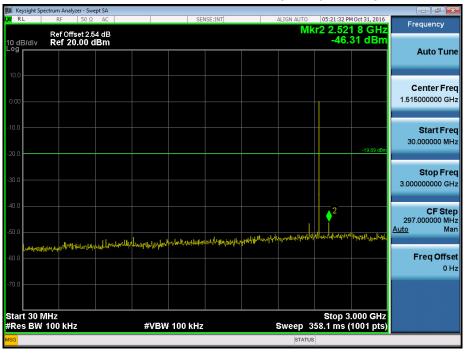
Keysight Spo KIRL	RF 50 Ω AC		SENSE:INT	A			4 Oct 31, 2016	Frequency
	Ref Offset 2.54 dB				Mk		3 2 GHz	requercy
0 dB/div .og	Ref 20.00 dBm					-47.	72 dBm	Auto Tu
								Auto Tu
10.0								
10.0								Center Fr
								1.515000000 G
0.00								1.515000000 G
10.0								Start Fr
							-17.80 dBm	30.000000 M
20.0								
30.0								Stop Fr
								3.00000000 G
40.0								
40.0						<u>^</u> 2		CF St
								297.000000 M Auto M
50.0	routfoordbegungelkodoblid		and the second of all these	And all and the second	HINGHANDARY	where the second second	hout the patients	<u>Nato</u> W
	www. Monorth upon and hard reader	and the state of the second	All and a start of the second s					
60.0								Freq Offs
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70.0		_						
							.000 GHz	
Start 30 N		#\/P\A	100 kHz		woon 2	50 1 mc /		
≉Res BW		#VBW	100 kHz	s			1001 pts)	
		#VBW	100 kHz	S	status			
# <b>Res BW</b> ISG	100 kHz ectrum Analyzer - Swept SA	#VBW			STATUS		1001 pts)	
FRes BW	100 kHz	#VBW	100 kHz		STATUS	05:20:53 PI	1001 pts)	Frequency
FRes BW	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	
FRes BW	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC	#VBW			STATUS	05:20:53 Pi	1001 pts)	Frequency
Res BW sg Keysight Sp RL	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	Frequency
SG Keysight Spo RL 0 dB/div	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	Frequency
SG Keysight Spo RL 0 dB/div	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	Frequency Auto Tu
Res BW sg Keysight Spr RL 0 dB/div og	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	Frequency Auto Tu Center Fr
Res BW sg Keysight Spr RL 0 dB/div og	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	Frequency Auto Tu Center Fr
Res BW sg C keysight Sp R R C dB/div	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	
Res BW sg Keysight Sp RL O dB/div	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	Frequency Auto Tu Center Fr 9.000000000 G
Res BW sg Keysight Sp RL O dB/div	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) <sup>40ct 31, 2016</sup> 40 GHz	Frequency Auto Tu Center Fr 9.00000000 G Start Fr
Res BW sc keysight Spig keysight Spig a RL 0 dB/div 0 dB/div 0 00 10.0	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency Auto Tu Center Fr 9.00000000 G Start Fr
Res BW sc keysight Spig keysight Spig a RL 0 dB/div 0 dB/div 0 00 10.0	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency Auto Tu Center Fr 9.00000000 G Start Fr 3.000000000 G
Res         BW           SG	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency Auto Tu Center Fr 9.00000000 G Start Fr 3.00000000 G
Res         BW           SG	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency Auto Tu Center Fr
Res         BW           S0         Resident Spin           RL         I           O dB/div         O           10.0         I           10.0         I           20.0         I           30.0         I	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency Auto Tu Center Fr 9.00000000 G Start Fr 3.00000000 G Stop Fr 15.00000000 G
Res         BW           S0         Resident Spin           RL         I           O dB/div         O           10.0         I           10.0         I           20.0         I           30.0         I	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB	#VBW			STATUS	05:20:53 Pi	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF Str
Keysight Spin           0         Closed Science           0	100 kHz  ctrum Analyzer - Swept SA  RF S0 Q AC  Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.000000000 G           Start Fr           3.000000000 G           Stop Fr           15.000000000 G           CF Sta           1.200000000 G
Res         BW           SG         Reysight Spin           RL         I           O         O           IO         O  <	100 kHz  ctrum Analyzer - Swept SA  RF S0 Q AC  Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF St           1.200000000 G
Res         BW           S0         Image: Constraint Spin (Constraint Spin (ConstraintSpin (Constraint Spin (Constraint Spin (ConstraintSpin (	100 kHz ectrum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2,54 dB		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency Auto Tu Center Fr 9.000000000 G Start Fr 3.000000000 G Stop Fr 15.00000000 G CF Stt 1.20000000 G Auto M
Res         BW           SG         RL           RL         RL           0         0           10         0           20         0           10         0           20         0           10         0           20         0           30         0           50         0           WHANG         0	100 kHz  ctrum Analyzer - Swept SA  RF S0 Q AC  Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF St           1.200000000 G           Auto Tu           Freq Offs
Res         BW           S0         Image: Constraint Spin Spin Spin Spin Spin Spin Spin Spin	100 kHz  ctrum Analyzer - Swept SA  RF S0 Q AC  Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF Stt           1.20000000 G           Auto Tu           Freq Offs
Res         BW           SG         RL           RL         RL           0         0           0.00	100 kHz  ctrum Analyzer - Swept SA  RF S0 Q AC  Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF St           1.200000000 G           Auto Tu           Freq Offs
Res         BW           SG         RL           RL         RL           0         0           0.00	100 kHz  ctrum Analyzer - Swept SA  RF S0 Q AC  Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF St           1.200000000 G           Auto Tu           Freq Offs
Res         BW           SG         Image: Constraint Spin Spin Spin Spin Spin Spin Spin Spin	100 kHz  ctrum Analyzer - Swept SA  RF S0 Q AC  Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT		STATUS	05:20:53 PI kr1 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF Stt           1.20000000 G           Auto Tu           Freq Offs
Res         BW           SG         Image: Constraint Spin Spin Spin Spin Spin Spin Spin Spin	100 kHz		SENSE:INT			05:20:53 PT در ۲۱ 13.4 -49.	1001 pts) 40ct 31, 2016 40 GHz 05 dBm	Frequency           Auto Tu           Center Fr           9.000000000 G           Start Fr           3.000000000 G           Stop Fr           15.000000000 G           CF Sta           1.200000000 G

# CH00 (10 Harmonic of the frequency) \_3Mbps



RL	RF	Analyzer - Swe 50 Ω			SEI	NSE:INT		ALIGN AUTO	05:20:59 P	M Oct 31, 2016	
0 dB/div	Ref Ref	Offset 2.5 20.00 d	4 dB Bm					М		119 GHz 21 dBm	Frequency
og											Auto Tu
).00											<b>Center Fr</b> 20.750000000 G
0.0										-17.80 dBm	<b>Start Fr</b> 15.000000000 G
0.0										▲1	<b>Stop Fr</b> 26.50000000 G
0.0 0.0	under franzischer die	herman	hilispeixadat	h Marine hundra	A.M. W. W.	phanam	Wetchiphasphashi	frankirt Marina	p Musel Mary	hilline nurder blef hat	CF St 1.150000000 G <u>Auto</u> M
0.0											Freq Offs 0
10.0	.000 G	Hz							Stop 26	.500 GHz	

# CH39 (10 Harmonic of the frequency) \_3Mbps





📕 Keysight Spe 📈 R L	ctrum Analyzer - Swo RF 50 Ω			< EI	NSE:INT		ALIGN AUTO	05:21:36 P	MOct 31 2016	
N KL				SEI	NSE:INT				88 GHz	Frequency
10 dB/div	Ref Offset 2.5 Ref 20.00 c	i4 dB IBm							69 dBm	
- <sup>og</sup>										Auto Tur
10.0										
										Center Fre
0.00										9.00000000 GI
-10.0										Start Fr
									-19.89 dBm	3.00000000 G
-20.0									10,00 40.0	
										Stop Fre
-30.0										15.00000000 GI
-40.0										CF Ste
-50.0									ľ	1.20000000 G Auto M
	and an Internet	W44 martin	Worldsteinkeltungerkikere	k and when the set	John Jum	a substitution	houtenerthal	Alun Lateral	mannahin	
-60.0	L'AND AND A CONTRACT			and the second sheet by	No. Hereit	all and differ ye	144 PT 11			Freq Offs
-00.0										0
-70.0										
-70.0										
Start 3.00								Stop 15	.000 GHz	
				400 1.11-			•			
#Res BW			#VBW	100 kHz				1.447 s (	1001 pts)	
			#VBW	100 kHz			Sweep	1.447 s (		
#Res BW <sup>-</sup> <sup>ISG</sup> Keysight Spec	100 kHz ctrum Analyzer - Swe		#VBW				STATUS	1.447 s (	1001 pts)	
#Res BW <sup>-</sup> <sup>ISG</sup> Keysight Spec	<b>100 kHz</b> ctrum Analyzer - Swr RF 50 Ω	AC	#VBW		NSE:INT		STATUS ALIGN AUTO	1.447 s (	1001 pts)	Energy
#Res BW /ISG Keysight Spec X/ RL	100 kHz ctrum Analyzer - Swe	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts)	Energy
#Res BW <sup>-</sup> <sup>ISG</sup> Keysight Spec	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency
#Res BW	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency
#Res BW /ISG Keysight Spec X/ RL	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency Auto Tu
#Res BW *	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency Auto Tur Center Fre
#Res BW	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency Auto Tur Center Fre
#Res BW 1 15 15 15 15 15 15 15 15 15 15 15 15 15	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency Auto Tur Center Fre 20.750000000 G
#Res BW *	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency Auto Tur Center Fre 20.75000000 G Start Fre
#Res BW           Keysight Spectrum           III Keysight Spectrum           III AB/div           Og           10 dB/div           Og           10 0           10 0	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) MOct 31, 2016	Frequency Auto Tur Center Fre 20.75000000 G Start Fre
#Res BW           Keysight Spectrum           III Keysight Spectrum           III AB/div           Og           10 dB/div           Og           10 0           10 0	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) Mott 31, 2016 57 GHz 25 dBm	Auto Tur Center Fr 20.75000000 G Start Fr 15.00000000 G
#Res BW 1 15 15 15 15 15 15 15 15 15 15 15 15 15	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) Mott 31, 2016 57 GHz 25 dBm	Frequency Auto Tu Center Fr 20.750000000 G Start Fr 15.00000000 G Stop Fr
#Res BW           Kcg           If Keysight Spectry           M RL           10 dB/div           og           10 0.00	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				STATUS ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5	1001 pts) Mott 31, 2016 57 GHz 25 dBm	Frequency Auto Tu Center Fr 20.750000000 G Start Fr 15.00000000 G Stop Fr
#Res BW           Kcg           If Keysight Spectry           M RL           10 dB/div           og           10 0.00	100 kHz ctrum Analyzer - Swu RF 50 Ω Ref Offset 2.5	AC	#VBW				ALIGN AUTO	1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency Auto Tu Center Fr 20.750000000 G Start Fr 15.00000000 G Stop Fr 26.500000000 G
#Res BW           Kcg           III Keysight Spectra           III Coll           IIII Coll           III Coll	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tu           Center Fr           20.75000000 G           Start Fr           15.00000000 G           Stop Fr           26.50000000 G           CF Sta
#Res BW           Kcg           III Keysight Spectra           III Coll           IIII Coll           III Coll	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tui           Center Fr           20.75000000 G           Start Fr           15.00000000 G           Stop Fr           26.500000000 G           CF Sta           1.150000000 G
#Res BW           Kcg           III Keysight Spectra           III Relation           IIII Relation           III Relation           IIII Relation           III Relation	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tur           Center Frr           20.750000000 Gi           Start Frr           15.000000000 Gi           Stop Frr           26.500000000 Gi           CF Ste           1.150000000 Gi
#Res BW           Kcg           III Keysight Spectra           III Relation           IIII Relation           III Relation           IIII Relation           III Relation	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tur           Center Frr           20.750000000 Gi           Start Frr           15.000000000 Gi           Stop Frr           26.500000000 Gi           CF Ste           1.150000000 Gi
#Res BW           Keysight Spectra           III Keysight Spectra           III R	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tur           Center Fr           20.750000000 G           Start Fr           15.00000000 G           Stop Fr           26.50000000 G           L15000000 G           Auto Tur
#Res BW           Keysight Spectra           III Keysight Spectra           III R	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tu           Center Fr           20.750000000 G           Start Fr           15.00000000 G           Stop Fr           26.50000000 G           CF Stt           1.150000000 G           Auto Tu           Preq Offs
#Res BW           453           It Reysight Spectry           It Reysight Spectry           It Rule	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tu           Center Fr           20.750000000 G           Start Fr           15.00000000 G           Stop Fr           26.50000000 G           CF Stt           1.150000000 G           Auto Tu           Preq Offs
Kess BW           Keysight Spectrum           II. Keysight Spectrum           II. Cog           III. Cog           IIII. Cog	100 kHz ctrum Analyzer - Sw RF 50 Ω Ref Offset 2.5 Ref 20.00 c	AC		SE	INSE:INT			1.447 s ( 05:21:41 P kr1 25.5 -38.	1001 pts)	Frequency           Auto Tu           Center Fr           20.750000000 G           Start Fr           15.00000000 G           Stop Fr           26.50000000 G           CF Stt           1.150000000 G           Auto Tu           Preq Offs
#Res BW           453           It Reysight Spectry           It Reysight Spectry           It Rule	100 kHz	AC		SE	NSE:INT			1.447 s (	1001 pts) Moct 31, 2016 57 GHz 25 dBm	Frequency           Auto Tu           Center Fr           20.750000000 G           Start Fr           15.00000000 G           Stop Fr           26.50000000 G           CF Stt           1.150000000 G           Auto Tu           Preq Offs

Keysight Spect	RF 50 Ω AC		SENSE:INT	ALIGN	N AUTO	05:22:38 PI	4 Oct 31, 2016	Fraguanay
	Ref Offset 2.54 dB				Mkr		0 4 GHz	Frequency
0 dB/div og	Ref 20.00 dBm					-48.	37 dBm	
°¶								Auto Tu
10.0								
10.0								Contor En
								Center Fre 1.515000000 GI
0.00								1.515000000 G
-10.0								Start Fre
								30.000000 M
20.0							-21.92 dBm	
								Stop Fr
30.0								3.000000000 GI
-40.0								CF Ste
						<b>▲</b> 2		297.000000 MI
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S0         Keysight Spect           0         BL         I           0         C         I           10         I	trum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT	ALIG	AUTO	05:22:43 PI r1 14.4 -50.	40ct 31, 2016 100 GHz 09 dBm -21 92 dBm	Frequency           Auto Tu           Center Fr           9.00000000 G           Start Fr           3.00000000 G           Stop Fr           15.00000000 G           CF Stt           1.20000000 G           Auto Tu           Freq Offs
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SO         Keysight Spect           0         CB/div	trum Analyzer - Swept SA RF 50 Ω AC Ref Offset 2.54 dB Ref 20.00 dBm		SENSE:INT			05:22:43 PI r1 14.4 -50.	40ct 31, 2016 100 GHz 09 dBm -21 92 dBm	Frequency           Auto Tui           Center Fr           9.00000000 G           Start Fr           3.000000000 G           Stop Fr           15.000000000 G           CF Sta           1.200000000 G

# CH78 (10 Harmonic of the frequency) \_3Mbps



RL	R	Analyzer - Swi 50 Ω	AC		SEI	NSE:INT		ALIGN AUTO	05:22:47 P	M Oct 31, 2016	
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