FCC RADIO TEST REPORT

FCC ID	**:**	**Q3K-5XACULCHG**
Equipment	**:**	**5 GHz Outdoor PtP/PtMP High Gain Radio Unit**
Brand Name	**:**	**RADWIN 2000, RADWIN 5000**
Model Name	**:**	**Alpha INT, SU-Air INT, SU-Pro INT**
Applicant	**:**	**Radwin Ltd. Habarzel 27 Tel Aviv ISRAEL**
Manufacturer	**:**	**Radwin Ltd. Habarzel 27 Tel Aviv ISRAEL**
Standard	**:**	**FCC Part 15 Subpart E §15.407**

The product was received on Oct. 31, 2018 and testing was started from Nov. 07, 2018 and completed on Nov. 15, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Joseph Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FR8O3134B	01	Initial issue of report	Nov. 28, 2018

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403(i)	26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)	Maximum Conducted Output Power	Pass	-
3.3	15.407(a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	Under limit 0.39 dB at 5150.000 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 7.91 dB at 0.463 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 15.407(a)	Antenna Requirement	Pass	-

Declaration of Conformity:
The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.
Comments and Explanations:
None

Reviewed by: Wii Chang

Report Producer: Maggie Chiang

1 General Description

1.1 Product Feature of Equipment Under Test

Wireless 2.4GHz and Wireless 5GHz

Product Specification subjective to this standard	
Antenna Type	Wireless 2.4GHz: Printed PCB Antenna Wireless 5GHz: Integrated FP Xpole Antenna

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH05-HY	CO05-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH13-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Freq. (MHz)			
5150-5250 MHz Band 1 (U-NII-1)	5175	5180	5185	5190
	5195	5200	5205	5210
	5215	5220	5225	5230
	5235	5240	5245	

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

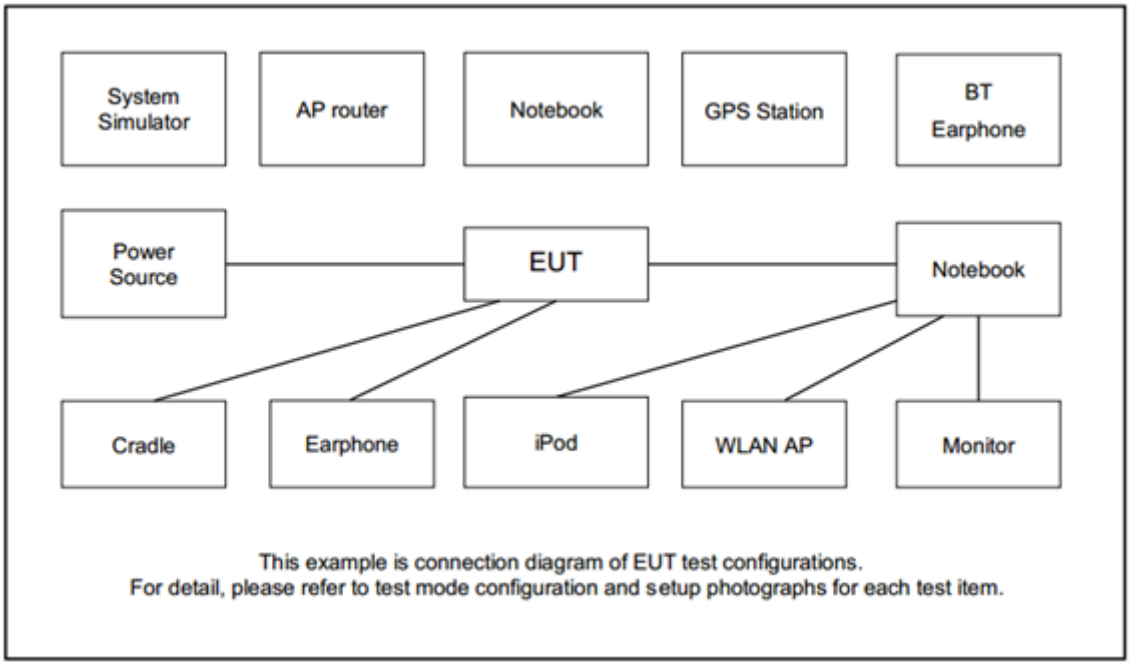
MIMO Mode

Channel Bandwidth	Data Rate
10 MHz	**MCS8**
20 MHz	**MCS8**
40 MHz	**MCS9**
80 MHz	**MCS9**

Test Cases	
AC Conducted Emission	Mode 1 : Wireless 5GHz TX + LAN Link + POE Adapter

BW		10 MHz	20 MHz	40 MHz	80 MHz
L	**Low**	5175	5180	5190	-
M	**Middle**	5210	5210	5210	5210
H	**High**	5245	5240	5230	-

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Vostro	Vostro3360	FCC DoC	N/A	AC I/P: Unshielded, 1.2m DC O/P: Shielded, 1.8m

2.5 EUT Operation Test Setup

The RF test items, utility “Radwin Radio Test Tool” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

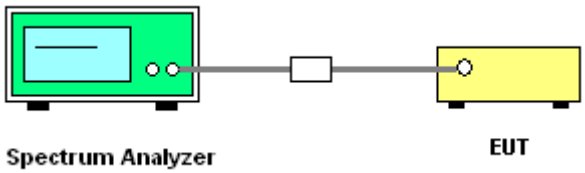
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
8. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 26dB & 99% Occupied Bandwidth

Please refer to Appendix A.

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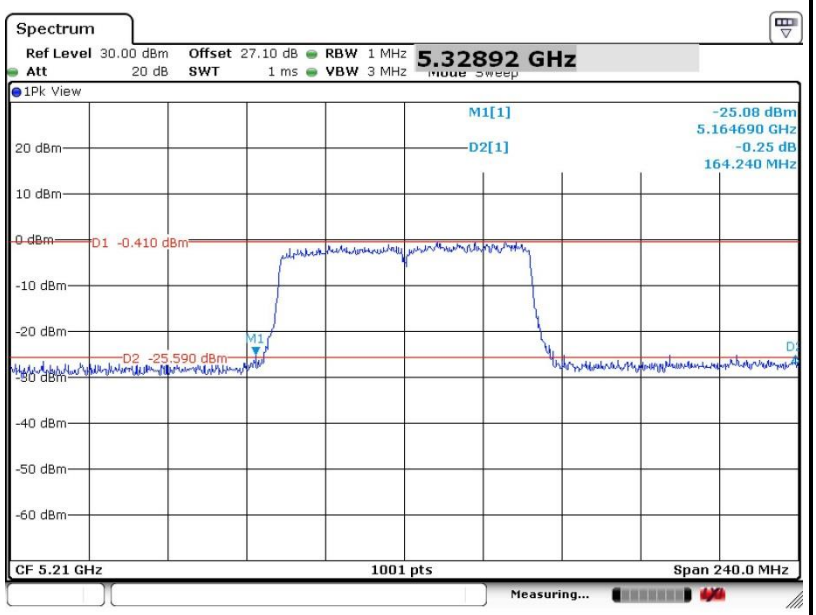
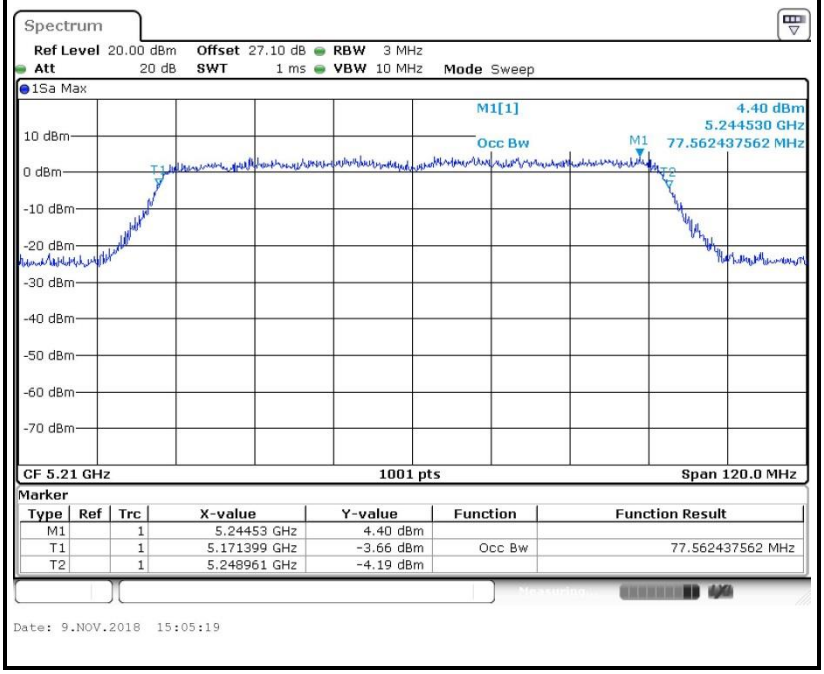
Maximum 26dB Bandwidth



Maximum 99% Occupied Bandwidth



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

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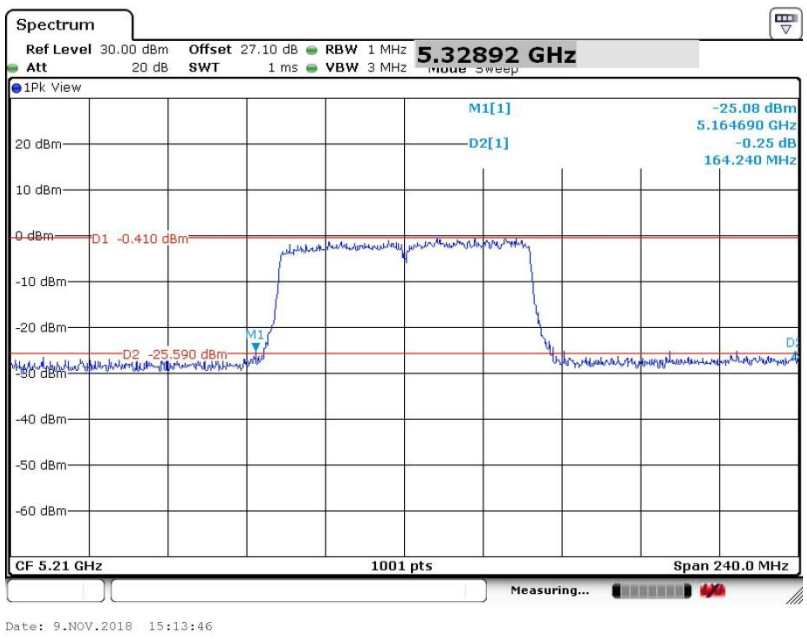
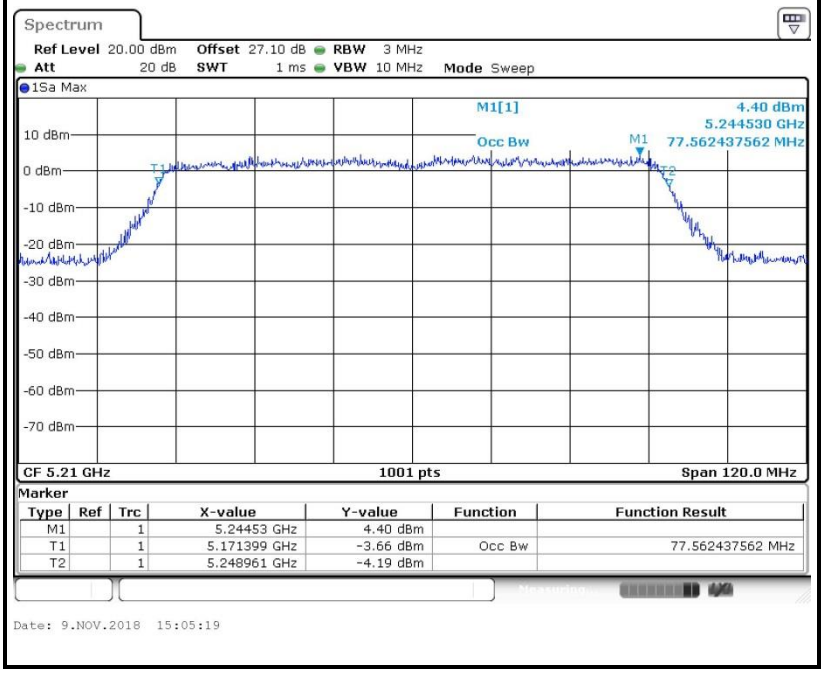
Maximum 26dB Bandwidth



Maximum 99% Occupied Bandwidth



3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For the 5.15–5.25 GHz bands:

■ For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

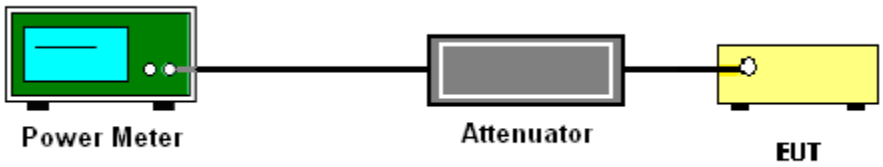
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For the 5.15–5.25 GHz bands:

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1.0 MHz band. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1.0 MHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Section F) Maximum power spectral density.

 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

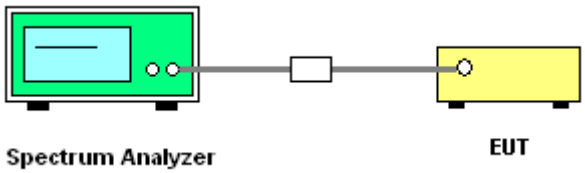
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW ≥ 3 MHz.
- Number of points in sweep ≥ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.

1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.
3. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

   Method (a): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points; the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

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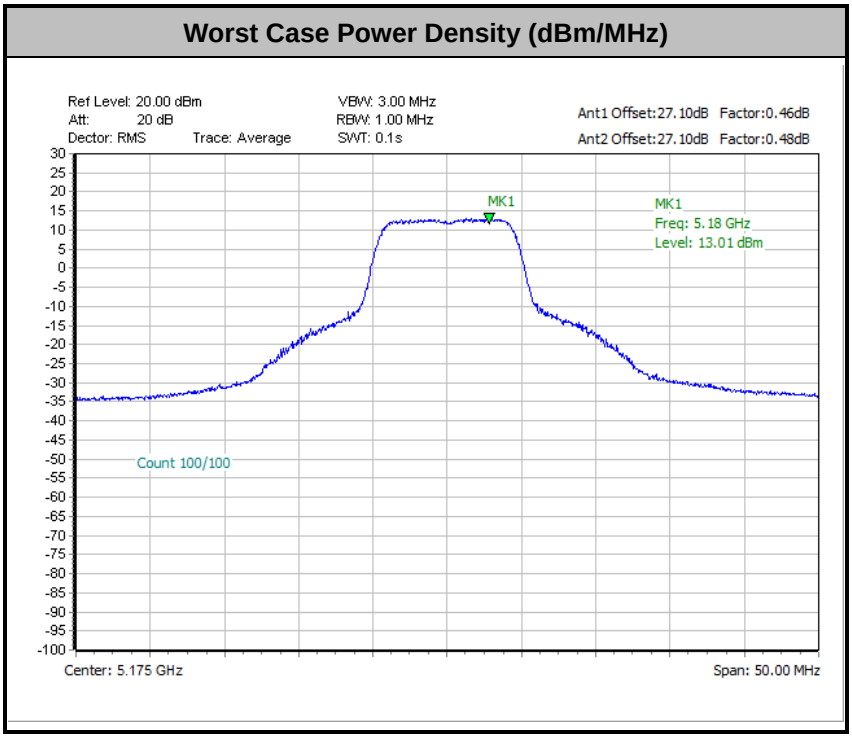

Note: Average Power Density (dB) = Measured value+ Duty Factor

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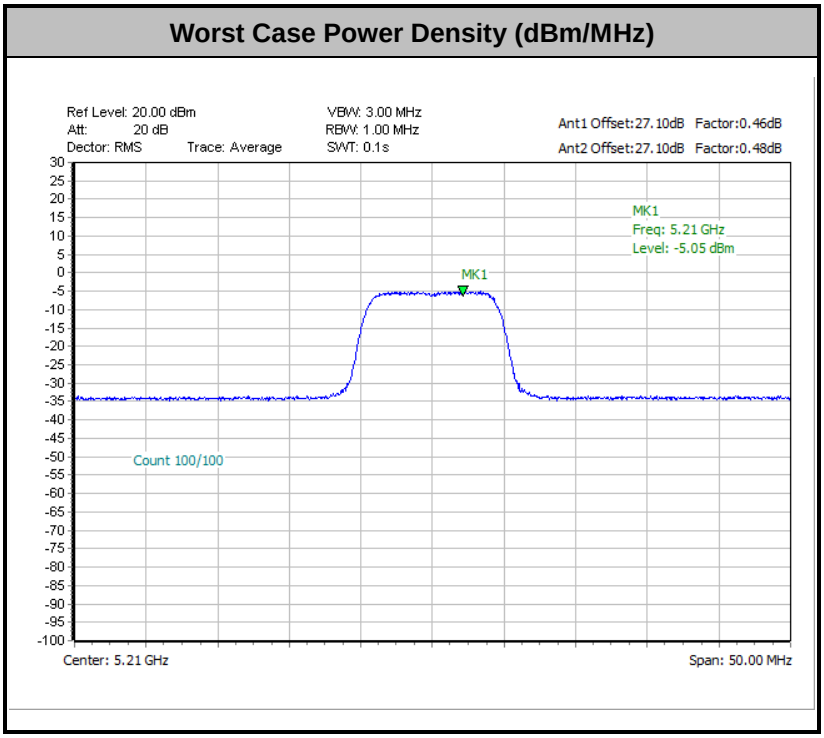


3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

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
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm/MHz)	Field Strength at 3m (dBμV/m)
- 27	68.23

(3) KDB789033 D02 v02r01 G)2)c)

(i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.[3]

(ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.[4]

Note 3: An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

Note 4: Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

   Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

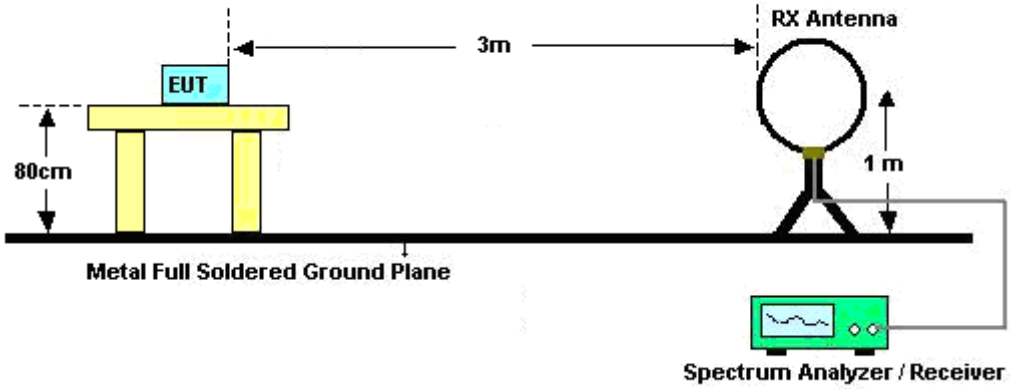
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

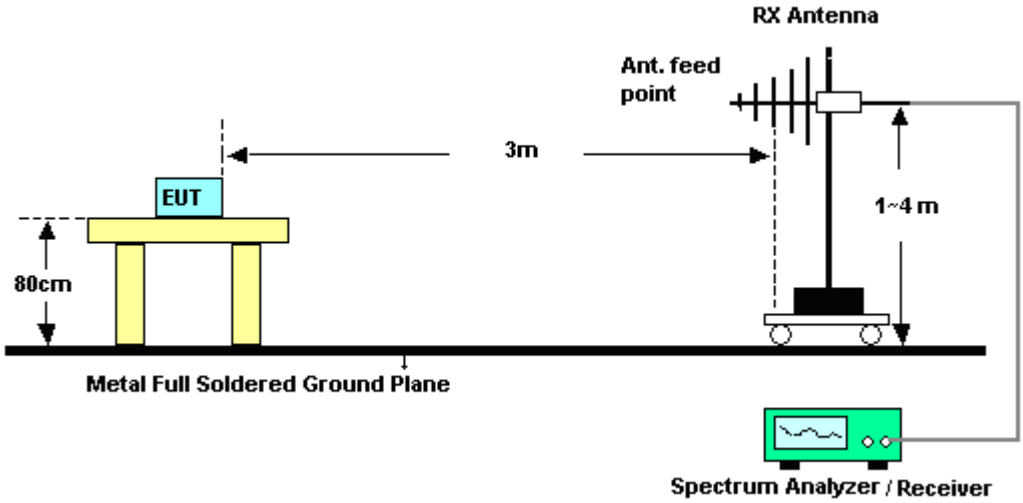
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

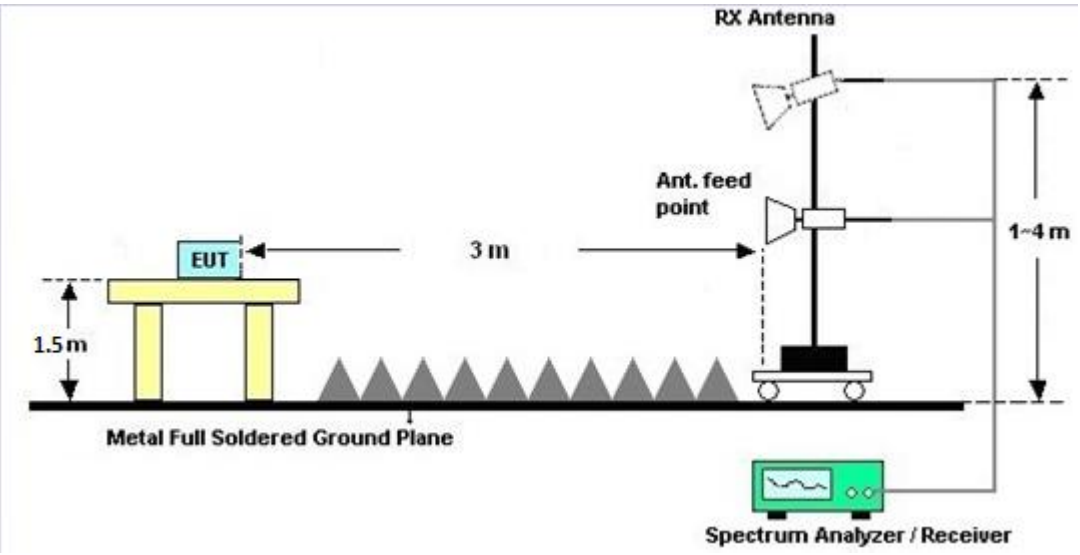
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

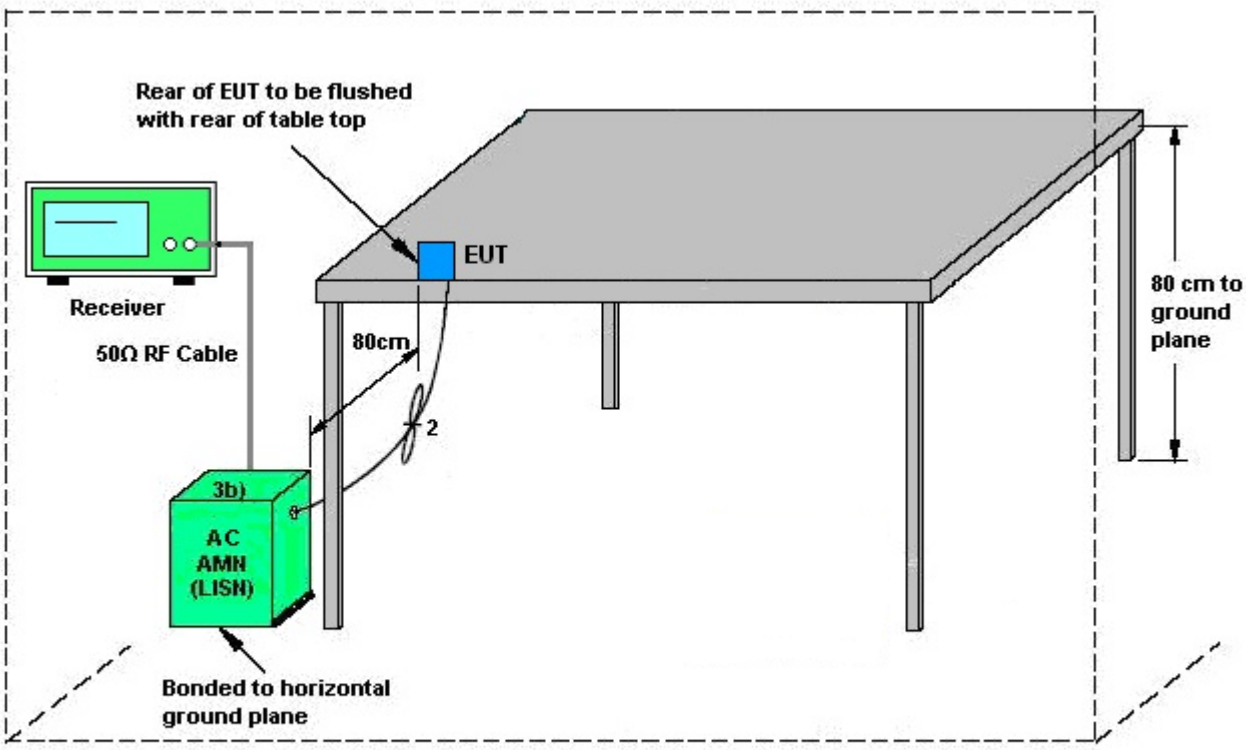
3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Automatically Discontinue Transmission

3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.7 Antenna Requirements

3.7.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(NANT/NSS=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain GANT is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

<PTP>

	Chain Port 0 Ant 1 (dBi)	Chain Port 1 Ant 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
5.2G Band	22.00	22.00	22.00	22.00	0.00	0.00

<PTMP>

	Chain Port 0 Ant 1 (dBi)	Chain Port 1 Ant 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
5.2G Band	22.00	22.00	22.00	22.00	16.00	16.00

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1218006	N/A	Oct. 08, 2018	Nov. 09, 2018~ Nov. 14, 2018	Oct. 07, 2019	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1207363	300MHz~40GHz	Oct. 08, 2018	Nov. 09, 2018~ Nov. 14, 2018	Oct. 07, 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV 30	100895	9kHz~30GHz	Apr. 20, 2018	Nov. 09, 2018~ Nov. 14, 2018	Apr. 19, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Mar. 01, 2018	Nov. 09, 2018~ Nov. 14, 2018	Feb. 28, 2019	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Nov. 08, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9KHz~3.6GHz	Dec. 08, 2017	Nov. 08, 2018	Dec. 07, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Nov. 08, 2018	Nov. 29, 2018	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Nov. 08, 2018	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Nov. 08, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Nov. 08, 2018	Jan. 02, 2019	Conduction (CO05-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	Nov. 07, 2018~ Nov. 15, 2018	Nov. 22, 2018	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800N1 D01N-06	40103&07	30MHz to 1GHz	Jan. 10, 2018	Nov. 07, 2018~ Nov. 15, 2018	Jan. 09, 2019	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1241	1GHz ~ 18GHz	Jun. 29, 2018	Nov. 07, 2018~ Nov. 15, 2018	Jun. 28, 2019	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 27, 2017	Nov. 07, 2018~ Nov. 15, 2018	Nov. 26, 2018	Radiation (03CH13-HY)
Amplifier	Sonoma-Instru ment	310 N	187282	9KHz~1GHz	Dec. 21, 2016	Nov. 07, 2018~ Nov. 15, 2018	Dec. 20, 2018	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-001018 00-30-10P	1590074	1GHz~18GHz	May 21, 2018	Nov. 07, 2018~ Nov. 15, 2018	May 20, 2019	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY53270147	1GHz~26.5GHz	Feb. 02, 2018	Nov. 07, 2018~ Nov. 15, 2018	Feb. 01, 2019	Radiation (03CH13-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 16, 2018	Nov. 07, 2018~ Nov. 15, 2018	Jul. 15, 2019	Radiation (03CH13-HY)
EMI Test Receiver	Agilent	N9038A (MXE)	MY53290053	20Hz to 26.5GHz	Jan. 16, 2018	Nov. 07, 2018~ Nov. 15, 2018	Jan. 15, 2019	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY55370526	10Hz~44GHz	Mar. 15, 2018	Nov. 07, 2018~ Nov. 15, 2018	Mar. 14, 2019	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Nov. 07, 2018~ Nov. 15, 2018	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Nov. 07, 2018~ Nov. 15, 2018	N/A	Radiation (03CH13-HY)
Filter	Wainwright	WLKS1200-8SS	SN3	1.2G Low Pass	Nov. 02, 2018	Nov. 07, 2018~ Nov. 15, 2018	Nov. 01, 2019	Radiation (03CH13-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40S T	SN4	6.75 GHz Highpass	May 22, 2018	Nov. 07, 2018~ Nov. 15, 2018	May 21, 2019	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30M-18G	Jan. 22, 2018	Nov. 07, 2018~ Nov. 15, 2018	Jan. 21, 2019	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	335041/4	30M-18G	Jan. 22, 2018	Nov. 07, 2018~ Nov. 15, 2018	Jan. 21, 2019	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/4	30M~18GHz	Jan. 22, 2018	Nov. 07, 2018~ Nov. 15, 2018	Jan. 21, 2019	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30M~40GHz	Mar. 14, 2018	Nov. 07, 2018~ Nov. 15, 2018	Mar. 13, 2019	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30M~40GHz	Mar. 14, 2018	Nov. 07, 2018~ Nov. 15, 2018	Mar. 13, 2019	Radiation (03CH13-HY)
Software	AUDIX	E3 6.2009-8-24c	RK-001124	N/A	N/A	Nov. 07, 2018~ Nov. 15, 2018	N/A	Radiation (03CH13-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.2**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.9**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.4**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.3**

Appendix A. Test Result of Conducted Test Items

<PTP>

Test Engineer:	Tommy Lee	Temperature:	21~25	°C
Test Date:	2018/11/9~2018/11/14	Relative Humidity:	51~54	%

Report Number : FR8O3134B

TEST RESULTS DATA
26dB and 99% OBW

Band I												
Ch. BW (MHz)	Data Rate	NTX	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)			Note
				Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
10	MCS8	2	5175	9.14	9.64	16.63	21.48	-		19.61			
10	MCS8	2	5210	9.34	9.79	14.94	21.88	-		19.70			
10	MCS8	2	5245	9.14	9.19	14.24	17.48	-		19.61			
20	MCS8	2	5180	17.98	18.28	25.38	33.97	-		22.55			
20	MCS8	2	5210	18.03	18.48	26.97	39.16	-		22.56			
20	MCS8	2	5240	18.03	18.33	28.72	37.76	-		22.56			
40	MCS9	2	5190	37.36	37.46	46.21	46.48	-		23.01			
40	MCS9	2	5210	37.16	37.26	46.39	50.71	-		23.01			
40	MCS9	2	5230	37.36	37.86	46.66	56.10	-		23.01			
80	MCS9	2	5210	77.56	77.44	149.37	164.24	-		23.01			

Report Number : FR8O3134B

TEST RESULTS DATA
Average Power Table

FCC Band I														
Ch. BW (MHz)	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
				Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
10	MCS8	2	5175	0.46	0.48	18.60	19.08	21.86	30.00		22.00			Pass
10	MCS8	2	5210	0.46	0.48	18.63	18.99	21.83	30.00		22.00			Pass
10	MCS8	2	5245	0.46	0.48	17.76	18.22	21.01	30.00		22.00			Pass
20	MCS8	2	5180	0.72	0.67	17.07	17.74	20.43	30.00		22.00			Pass
20	MCS8	2	5210	0.72	0.67	19.00	19.00	22.01	30.00		22.00			Pass
20	MCS8	2	5240	0.72	0.67	19.03	19.35	22.20	30.00		22.00			Pass
40	MCS9	2	5190	1.00	1.02	9.36	9.90	12.65	30.00		22.00			Pass
40	MCS9	2	5210	1.00	1.02	16.00	16.33	19.18	30.00		22.00			Pass
40	MCS9	2	5230	1.00	1.02	18.14	18.36	21.26	30.00		22.00			Pass
80	MCS9	2	5210	1.86	1.82	7.86	8.12	11.00	30.00		22.00			Pass

Report Number : FR8O3134B

TEST RESULTS DATA
Power Spectral Density

FCC Band I													
Ch. BW (MHz)	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
				Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
10	MCS8	2	5175	0.46	0.48			13.01	17.00		22.00		Pass
10	MCS8	2	5210	0.46	0.48			12.83	17.00		22.00		Pass
10	MCS8	2	5245	0.46	0.48			11.89	17.00		22.00		Pass
20	MCS8	2	5180	0.72	0.67			8.56	17.00		22.00		Pass
20	MCS8	2	5210	0.72	0.67			10.55	17.00		22.00		Pass
20	MCS8	2	5240	0.72	0.67			10.33	17.00		22.00		Pass
40	MCS9	2	5190	1.00	1.02			-1.70	17.00		22.00		Pass
40	MCS9	2	5210	1.00	1.02			4.59	17.00		22.00		Pass
40	MCS9	2	5230	1.00	1.02			6.53	17.00		22.00		Pass
80	MCS9	2	5210	1.86	1.82			-6.51	17.00		22.00		Pass

Report Number : FR8O3134B

<PTMP>

Test Engineer:	Tommy Lee	Temperature:	21~25	°C
Test Date:	2018/11/9~2018/11/14	Relative Humidity:	51~54	%

TEST RESULTS DATA
26dB and 99% OBW

Band I												
Ch. BW (MHz)	Data Rate	NTX	Freq. (MHz)	99% Bandwidth (MHz)		26 dB Bandwidth (MHz)		IC 99% Bandwidth Power Limit (dBm)		IC 99% Bandwidth EIRP Limit (dBm)			Note
				Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2	Ant 1	Ant 2		
10	MCS8	2	5175	9.14	9.64	16.63	21.48	-		19.61			
10	MCS8	2	5210	9.34	9.79	14.94	21.88	-		19.70			
10	MCS8	2	5245	9.14	9.19	14.24	17.48	-		19.61			
20	MCS8	2	5180	17.98	18.28	25.38	33.97	-		22.55			
20	MCS8	2	5210	18.03	18.48	26.97	39.16	-		22.56			
20	MCS8	2	5240	18.03	18.33	28.72	37.76	-		22.56			
40	MCS9	2	5190	37.36	37.46	46.21	46.48	-		23.01			
40	MCS9	2	5210	37.16	37.26	46.39	50.71	-		23.01			
40	MCS9	2	5230	37.36	37.86	46.66	56.10	-		23.01			
80	MCS9	2	5210	77.56	77.44	149.37	164.24	-		23.01			

Report Number : FR8O3134B

TEST RESULTS DATA
Average Power Table

FCC Band I														
Ch. BW (MHz)	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
				Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
10	MCS8	2	5175	0.46	0.48	0.25	0.63	3.46	8.00		22.00			Pass
10	MCS8	2	5210	0.46	0.48	0.22	1.69	4.03	8.00		22.00			Pass
10	MCS8	2	5245	0.46	0.48	-0.29	1.88	3.94	8.00		22.00			Pass
20	MCS8	2	5180	0.72	0.67	3.67	4.01	6.85	8.00		22.00			Pass
20	MCS8	2	5210	0.72	0.67	2.44	4.13	6.38	8.00		22.00			Pass
20	MCS8	2	5240	0.72	0.67	1.94	4.17	6.21	8.00		22.00			Pass
40	MCS9	2	5190	1.00	1.02	4.10	4.55	7.34	8.00		22.00			Pass
40	MCS9	2	5210	1.00	1.02	4.50	4.72	7.62	8.00		22.00			Pass
40	MCS9	2	5230	1.00	1.02	4.62	4.87	7.76	8.00		22.00			Pass
80	MCS9	2	5210	1.86	1.86	4.50	4.83	7.67	8.00		22.00			Pass

Report Number : FR8O3134B

TEST RESULTS DATA
Power Spectral Density

FCC Band I													
Ch. BW (MHz)	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm/MHz)		DG (dBi)		Pass /Fail
				Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2	
10	MCS8	2	5175	0.46	0.48			-5.55	-5.00		22.00		Pass
10	MCS8	2	5210	0.46	0.48			-5.05	-5.00		22.00		Pass
10	MCS8	2	5245	0.46	0.48			-5.25	-5.00		22.00		Pass
20	MCS8	2	5180	0.72	0.67			-5.52	-5.00		22.00		Pass
20	MCS8	2	5210	0.72	0.67			-5.44	-5.00		22.00		Pass
20	MCS8	2	5240	0.72	0.67			-5.67	-5.00		22.00		Pass
40	MCS9	2	5190	1.00	1.02			-6.68	-5.00		22.00		Pass
40	MCS9	2	5210	1.00	1.02			-6.58	-5.00		22.00		Pass
40	MCS9	2	5230	1.00	1.02			-6.53	-5.00		22.00		Pass
80	MCS9	2	5210	1.86	1.86			-9.42	-5.00		22.00		Pass

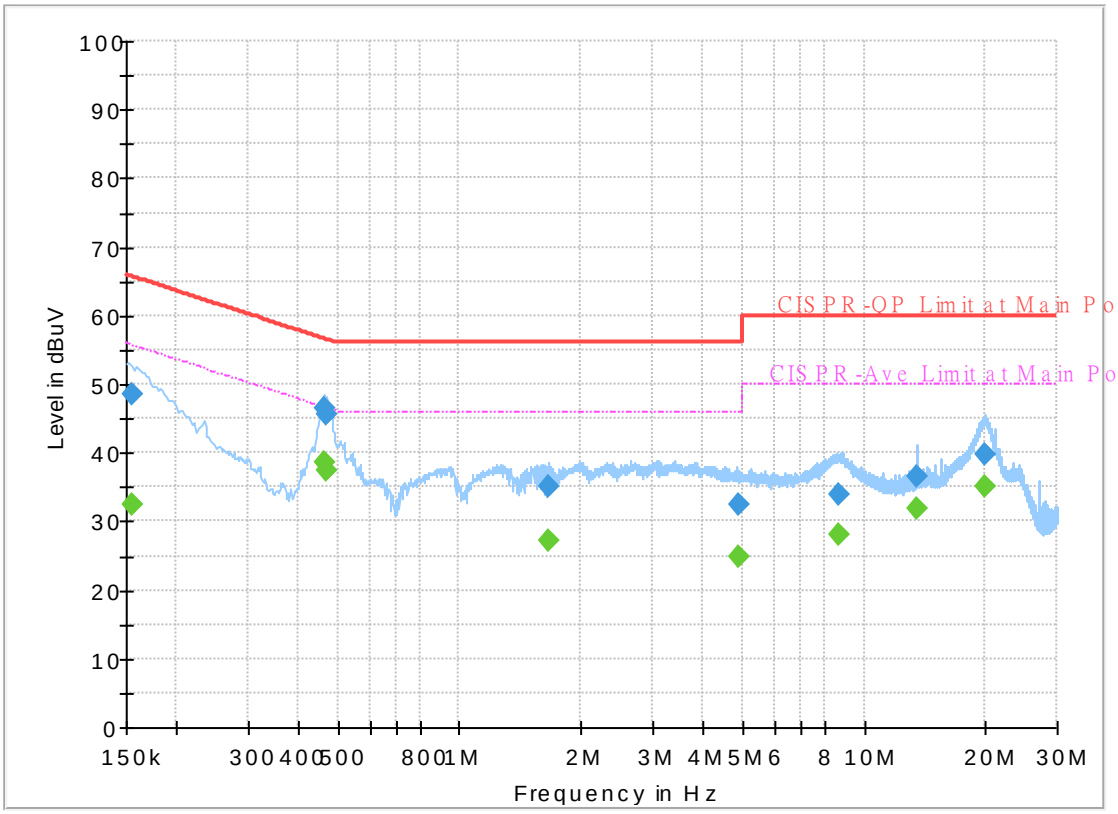
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Jimmy Chang and Rick Lin	**Temperature :**	24~26℃
		Relative Humidity :	52~53%

EUT Information

Report NO :	8O3134
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



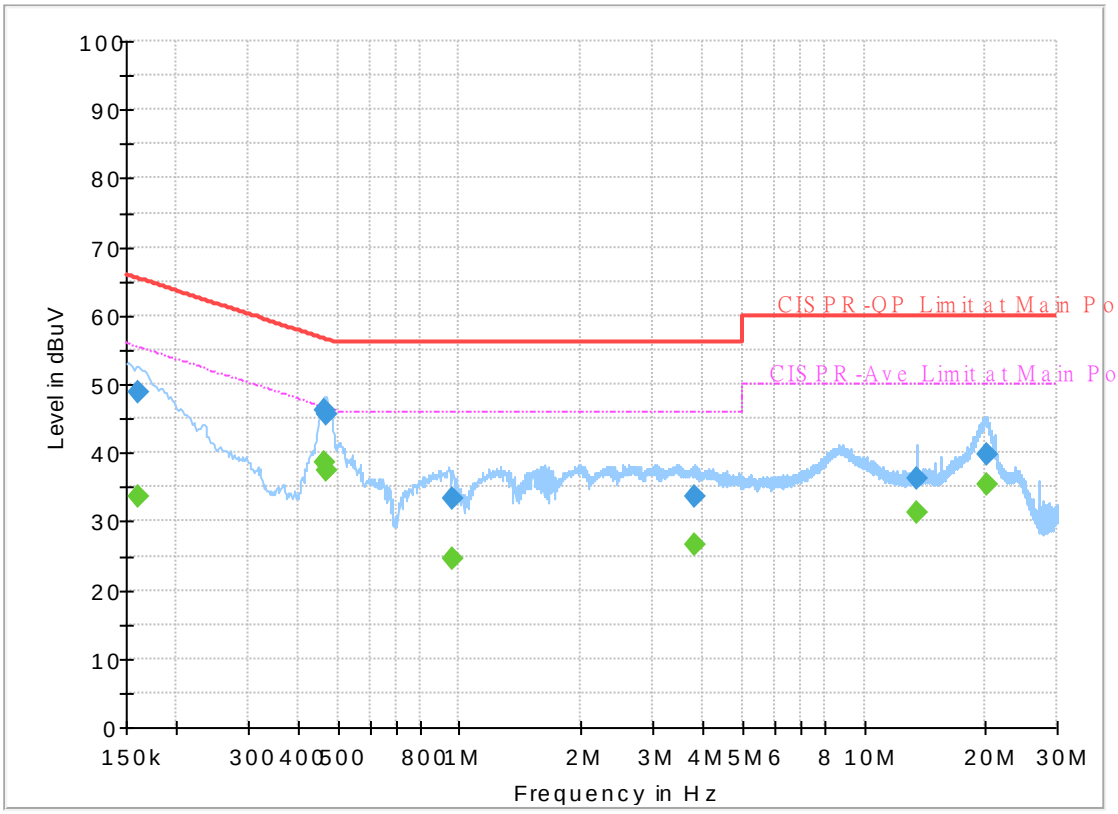
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154500	---	32.55	55.75	23.20	L1	OFF	19.5
0.154500	48.60	---	65.75	17.15	L1	OFF	19.5
0.462750	---	38.73	46.64	7.91	L1	OFF	19.5
0.462750	46.37	---	56.64	10.27	L1	OFF	19.5
0.469500	---	37.52	46.52	9.00	L1	OFF	19.5
0.469500	45.72	---	56.52	10.80	L1	OFF	19.5
1.655250	---	27.09	46.00	18.91	L1	OFF	19.6
1.655250	35.07	---	56.00	20.93	L1	OFF	19.6
4.913250	---	24.87	46.00	21.13	L1	OFF	19.6
4.913250	32.53	---	56.00	23.47	L1	OFF	19.6
8.704500	---	28.01	50.00	21.99	L1	OFF	19.7
8.704500	34.04	---	60.00	25.96	L1	OFF	19.7
13.560000	---	31.82	50.00	18.18	L1	OFF	19.7
13.560000	36.52	---	60.00	23.48	L1	OFF	19.7
19.828500	---	35.11	50.00	14.89	L1	OFF	19.8
19.828500	39.79	---	60.00	20.21	L1	OFF	19.8

EUT Information

Report NO :	8O3134
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.161250	---	33.55	55.40	21.85	N	OFF	19.5
0.161250	48.93	---	65.40	16.47	N	OFF	19.5
0.462750	---	38.62	46.64	8.02	N	OFF	19.5
0.462750	46.18	---	56.64	10.46	N	OFF	19.5
0.469500	---	37.48	46.52	9.04	N	OFF	19.5
0.469500	45.55	---	56.52	10.97	N	OFF	19.5
0.962250	---	24.52	46.00	21.48	N	OFF	19.5
0.962250	33.36	---	56.00	22.64	N	OFF	19.5
3.797250	---	26.73	46.00	19.27	N	OFF	19.6
3.797250	33.71	---	56.00	22.29	N	OFF	19.6
13.560000	---	31.23	50.00	18.77	N	OFF	19.8
13.560000	36.22	---	60.00	23.78	N	OFF	19.8
20.073750	---	35.40	50.00	14.60	N	OFF	19.9
20.073750	39.91	---	60.00	20.09	N	OFF	19.9

Appendix C. Radiated Spurious Emission

Test Engineer :	Alex Jheng, Fu Chen, and Wilson Wu	Temperature :	24.5~24.8°C
		Relative Humidity :	50~51%

Band 1 - 5150~5250MHz

Channel Bandwidth 10MHz (Band Edge @ 3m)

	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Ch. BW 10MHz 5175MHz		5150	61	-13	74	50.68	31.69	8.18	29.55	177	5	P	H
		5150	53.16	-0.84	54	42.84	31.69	8.18	29.55	177	5	A	H
	*	5175	129.16	-	-	118.79	31.71	8.21	29.55	177	5	P	H
	*	5175	121.34	-	-	110.97	31.71	8.21	29.55	177	5	A	H
													H
													H
		5149.76	56.03	-17.97	74	45.71	31.69	8.18	29.55	188	2	P	V
		5150	47.47	-6.53	54	37.15	31.69	8.18	29.55	188	2	A	V
	*	5175	128.86	-	-	118.49	31.71	8.21	29.55	188	2	P	V
	*	5175	120.89	-	-	110.52	31.71	8.21	29.55	188	2	A	V
													V
													V
Ch. BW 10MHz 5210MHz		5116.74	51.18	-22.82	74	40.91	31.67	8.14	29.54	176	4	P	H
		5149.76	43.42	-10.58	54	33.1	31.69	8.18	29.55	176	4	A	H
	*	5210	130.44	-	-	120.03	31.73	8.24	29.56	176	4	P	H
	*	5210	122.56	-	-	112.15	31.73	8.24	29.56	176	4	A	H
		5360.6	49.14	-24.86	74	38.59	31.82	8.3	29.57	176	4	P	H
		5444.04	41.22	-12.78	54	30.51	31.86	8.43	29.58	176	4	A	H
		5045.24	51.32	-22.68	74	41.18	31.63	8.05	29.54	177	0	P	V
		5150	42.38	-11.62	54	32.06	31.69	8.18	29.55	177	0	A	V
	*	5210	129.86	-	-	119.45	31.73	8.24	29.56	177	0	P	V
	*	5210	121.24	-	-	110.83	31.73	8.24	29.56	177	0	A	V
		5455.24	49.89	-24.11	74	39.15	31.87	8.46	29.59	177	0	P	V
		5458.32	41.29	-12.71	54	30.54	31.87	8.47	29.59	177	0	A	V

Ch. BW 10MHz 5245MHz		5108.42	51.63	-22.37	74	41.37	31.67	8.13	29.54	167	3	P	H
		5150	43.15	-10.85	54	32.83	31.69	8.18	29.55	167	3	A	H
	*	5245	129.75	-	-	119.3	31.75	8.26	29.56	167	3	P	H
	*	5245	121.87	-	-	111.42	31.75	8.26	29.56	167	3	A	H
		5433.12	50.8	-23.2	74	40.12	31.86	8.4	29.58	167	3	P	H
		5456.64	41.33	-12.67	54	30.59	31.87	8.46	29.59	167	3	A	H
		5117	50.68	-23.32	74	40.41	31.67	8.14	29.54	164	0	P	V
		5150	42.28	-11.72	54	31.96	31.69	8.18	29.55	164	0	A	V
	*	5245	129.32	-	-	118.87	31.75	8.26	29.56	164	0	P	V
	*	5245	121.23	-	-	110.78	31.75	8.26	29.56	164	0	A	V
		5422.76	49.22	-24.78	74	38.58	31.85	8.37	29.58	164	0	P	V
		5455.24	41.26	-12.74	54	30.52	31.87	8.46	29.59	164	0	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

Channel Bandwidth 10MHz (Harmonic @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Ch. BW 10MHz 5175MHz		10350	52.42	-15.78	68.2	57.31	39.73	12.34	56.96	100	0	P	H
		15525	60.92	-13.08	74	64.32	38.66	14.61	56.67	191	35	P	H
		15525	48.11	-5.89	54	51.51	38.66	14.61	56.67	191	35	A	H
													H
		10350	50.24	-17.96	68.2	55.13	39.73	12.34	56.96	100	0	P	V
		15525	63.08	-10.92	74	66.48	38.66	14.61	56.67	202	7	P	V
		15525	49.65	-4.35	54	53.05	38.66	14.61	56.67	202	7	A	V
													V
Ch. BW 10MHz 5210MHz		10420	53.95	-14.25	68.2	58.67	39.85	12.36	56.93	100	0	P	H
		15630	68.31	-5.69	74	71.83	38.37	14.65	56.54	191	41	P	H
		15630	53.49	-0.51	54	57.01	38.37	14.65	56.54	191	41	A	H
													H
		10420	54.91	-13.29	68.2	59.63	39.85	12.36	56.93	100	0	P	V
		15630	61.39	-12.61	74	64.91	38.37	14.65	56.54	200	26	P	V
		15630	47.72	-6.28	54	51.24	38.37	14.65	56.54	200	26	A	V
													V
Ch. BW 10MHz 5245MHz		10490	51.19	-17.01	68.2	55.74	39.97	12.38	56.9	100	0	P	H
		15735	65.97	-8.03	74	69.58	38.12	14.69	56.42	201	6	P	H
		15735	50.29	-3.71	54	53.9	38.12	14.69	56.42	201	6	A	H
													H
		10490	49.34	-18.86	68.2	53.89	39.97	12.38	56.9	100	0	P	V
		15735	61.46	-12.54	74	65.07	38.12	14.69	56.42	201	12	P	V
		15735	46.36	-7.64	54	49.97	38.12	14.69	56.42	201	12	A	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

Channel Bandwidth 20MHz (Band Edge @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Ch. BW 20MHz 5180MHz		5147.94	60.44	-13.56	74	50.13	31.69	8.17	29.55	180	7	P	H
		5150	53.61	-0.39	54	43.29	31.69	8.18	29.55	180	7	A	H
	*	5180	124.96	-	-	114.58	31.71	8.22	29.55	180	7	P	H
	*	5180	117.29	-	-	106.91	31.71	8.22	29.55	180	7	A	H
													H
													H
		5150	59.32	-14.68	74	49	31.69	8.18	29.55	182	4	P	V
		5150	48.77	-5.23	54	38.45	31.69	8.18	29.55	182	4	A	V
	*	5180	124.5	-	-	114.12	31.71	8.22	29.55	182	4	P	V
	*	5180	116.54	-	-	106.16	31.71	8.22	29.55	182	4	A	V
													V
													V
Ch. BW 20MHz 5210MHz		5149.5	55.01	-18.99	74	44.69	31.69	8.18	29.55	176	3	P	H
		5150	46.85	-7.15	54	36.53	31.69	8.18	29.55	176	3	A	H
	*	5210	126.06	-	-	115.65	31.73	8.24	29.56	176	3	P	H
	*	5210	118.43	-	-	108.02	31.73	8.24	29.56	176	3	A	H
		5395.32	49.94	-24.06	74	39.37	31.84	8.31	29.58	176	3	P	H
		5451.88	41.26	-12.74	54	30.53	31.87	8.45	29.59	176	3	A	H
		5099.06	52.12	-21.88	74	41.89	31.66	8.11	29.54	166	0	P	V
		5150	43.59	-10.41	54	33.27	31.69	8.18	29.55	166	0	A	V
	*	5210	127.08	-	-	116.67	31.73	8.24	29.56	166	0	P	V
	*	5210	119.37	-	-	108.96	31.73	8.24	29.56	166	0	A	V
		5437.88	50.64	-23.36	74	39.95	31.86	8.41	29.58	166	0	P	V
		5447.4	41.35	-12.65	54	30.62	31.87	8.44	29.58	166	0	A	V

Ch. BW 20MHz 5240MHz		5122.2	51.95	-22.05	74	41.69	31.67	8.14	29.55	179	2		H
		5150	43.39	-10.61	54	33.07	31.69	8.18	29.55	179	2		H
	*	5240	127.97	-	-	117.54	31.74	8.25	29.56	179	2		H
	*	5240	120.27	-	-	109.84	31.74	8.25	29.56	179	2		H
		5421.08	49.73	-24.27	74	39.09	31.85	8.37	29.58	179	2		H
		5459.72	41.22	-12.78	54	30.47	31.87	8.47	29.59	179	2		H
		5133.38	51.68	-22.32	74	41.39	31.68	8.16	29.55	165	0		V
		5149.76	42.6	-11.4	54	32.28	31.69	8.18	29.55	165	0		V
	*	5240	127.15	-	-	116.72	31.74	8.25	29.56	165	0		V
	*	5240	119.46	-	-	109.03	31.74	8.25	29.56	165	0		V
		5449.36	49.7	-24.3	74	38.97	31.87	8.44	29.58	165	0		V
		5459.44	41.28	-12.72	54	30.53	31.87	8.47	29.59	165	0		V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

Channel Bandwidth 20MHz (Harmonic @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Ch. BW 20MHz 5180MHz		10360	46.77	-21.43	68.2	51.63	39.76	12.34	56.96	100	0	P	H
		15540	55.45	-18.55	74	58.86	38.62	14.62	56.65	191	42	P	H
		15540	42.43	-11.57	54	45.84	38.62	14.62	56.65	191	42	A	H
													H
		10360	47.25	-20.95	68.2	52.11	39.76	12.34	56.96	100	0	P	V
		15540	54.52	-19.48	74	57.93	38.62	14.62	56.65	205	7	P	V
		15540	42.3	-11.7	54	45.71	38.62	14.62	56.65	205	7	A	V
													V
Ch. BW 20MHz 5210MHz		10420	50.7	-17.5	68.2	55.42	39.85	12.36	56.93	100	0	P	H
		15630	63.79	-10.21	74	67.31	38.37	14.65	56.54	194	42	P	H
		15630	50.67	-3.33	54	54.19	38.37	14.65	56.54	194	42	A	H
													H
		10420	50.5	-17.7	68.2	55.22	39.85	12.36	56.93	100	0	P	V
		15630	56.79	-17.21	74	60.31	38.37	14.65	56.54	301	34	P	V
		15630	44.96	-9.04	54	48.48	38.37	14.65	56.54	301	34	A	V
													V
Ch. BW 20MHz 5240MHz		10480	52.04	-16.16	68.2	56.61	39.97	12.37	56.91	100	0	P	H
		15720	63.96	-10.04	74	67.55	38.16	14.69	56.44	191	22	P	H
		15720	50.89	-3.11	54	54.48	38.16	14.69	56.44	191	22	A	H
													H
		10480	52.39	-15.81	68.2	56.96	39.97	12.37	56.91	100	0	P	V
		15720	58.8	-15.2	74	62.39	38.16	14.69	56.44	201	49	P	V
		15720	46.55	-7.45	54	50.14	38.16	14.69	56.44	201	49	A	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

Channel Bandwidth 40MHz (Band Edge @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Ch. BW 40MHz 5190MHz		5150	58.04	-15.96	74	47.72	31.69	8.18	29.55	184	6	P	H
		5149.76	53.26	-0.74	54	42.94	31.69	8.18	29.55	184	6	A	H
	*	5190	115.56	-	-	105.17	31.71	8.23	29.55	184	6	P	H
	*	5190	108.24	-	-	97.85	31.71	8.23	29.55	184	6	A	H
		5427.24	50.33	-23.67	74	39.68	31.85	8.38	29.58	184	6	P	H
		5450.2	42.13	-11.87	54	31.4	31.87	8.45	29.59	184	6	A	H
		5147.42	54.73	-19.27	74	44.42	31.69	8.17	29.55	192	1	P	V
		5150	48.59	-5.41	54	38.27	31.69	8.18	29.55	192	1	A	V
	*	5190	114.46	-	-	104.07	31.71	8.23	29.55	192	1	P	V
	*	5190	107.42	-	-	97.03	31.71	8.23	29.55	192	1	A	V
		5437.32	50.25	-23.75	74	39.56	31.86	8.41	29.58	192	1	P	V
		5440.68	41.96	-12.04	54	31.26	31.86	8.42	29.58	192	1	A	V
Ch. BW 40MHz 5210MHz		5150	66.06	-7.94	74	55.74	31.69	8.18	29.55	189	4	P	H
		5150	52.93	-1.07	54	42.61	31.69	8.18	29.55	189	4	A	H
	*	5210	122.76	-	-	112.35	31.73	8.24	29.56	189	4	P	H
	*	5210	115.08	-	-	104.67	31.73	8.24	29.56	189	4	A	H
		5447.4	50.37	-23.63	74	39.64	31.87	8.44	29.58	189	4	P	H
		5455.52	42.1	-11.9	54	31.36	31.87	8.46	29.59	189	4	A	H
		5149.76	59.73	-14.27	74	49.41	31.69	8.18	29.55	184	2	P	V
		5149.76	47.82	-6.18	54	37.5	31.69	8.18	29.55	184	2	A	V
	*	5210	121.36	-	-	110.95	31.73	8.24	29.56	184	2	P	V
	*	5210	114.39	-	-	103.98	31.73	8.24	29.56	184	2	A	V
		5442.08	49.23	-24.77	74	38.53	31.86	8.42	29.58	184	2	P	V
		5459.72	41.83	-12.17	54	31.08	31.87	8.47	29.59	184	2	A	V

Ch. BW 40MHz 5230MHz		5149.76	62.24	-11.76	74	51.92	31.69	8.18	29.55	178	4	P	H
		5150	52.18	-1.82	54	41.86	31.69	8.18	29.55	178	4	A	H
	*	5230	124.44	-	-	114.01	31.74	8.25	29.56	178	4	P	H
	*	5230	117.58	-	-	107.15	31.74	8.25	29.56	178	4	A	H
		5448.24	50.63	-23.37	74	39.9	31.87	8.44	29.58	178	4	P	H
		5455.8	42.23	-11.77	54	31.49	31.87	8.46	29.59	178	4	A	H
		5150	57.4	-16.6	74	47.08	31.69	8.18	29.55	173	2	P	V
		5150	47.5	-6.5	54	37.18	31.69	8.18	29.55	173	2	A	V
	*	5230	123.27	-	-	112.84	31.74	8.25	29.56	173	2	P	V
	*	5230	116	-	-	105.57	31.74	8.25	29.56	173	2	A	V
		5458.88	49.86	-24.14	74	39.11	31.87	8.47	29.59	173	2	P	V
		5456.08	41.79	-12.21	54	31.05	31.87	8.46	29.59	173	2	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

Channel Bandwidth 40MHz (Harmonic @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Ch. BW 40MHz 5190MHz		10380	46.67	-21.53	68.2	51.49	39.79	12.34	56.95	100	0	P	H
		15570	46.34	-27.66	74	49.81	38.53	14.62	56.62	100	0	P	H
													H
													H
		10380	46.32	-21.88	68.2	51.14	39.79	12.34	56.95	100	0	P	V
		15570	46.7	-27.3	74	50.17	38.53	14.62	56.62	100	0	P	V
													V
													V
Ch. BW 40MHz 5210MHz		10420	48	-20.2	68.2	52.72	39.85	12.36	56.93	100	0	P	
		15630	52.48	-21.52	74	56	38.37	14.65	56.54	196	43	P	
		15630	40.63	-13.37	54	44.15	38.37	14.65	56.54	196	43	A	
		10420	47.44	-20.76	68.2	52.16	39.85	12.36	56.93	100	0	P	
		15630	45.2	-28.8	74	48.72	38.37	14.65	56.54	100	0	P	
Ch. BW 40MHz 5230MHz		10460	49.94	-18.26	68.2	54.58	39.91	12.37	56.92	100	0	P	H
		15690	58.72	-15.28	74	62.28	38.24	14.67	56.47	200	6	P	H
		15690	45.33	-8.67	54	48.89	38.24	14.67	56.47	200	6	A	H
													H
		10460	49.9	-18.3	68.2	54.54	39.91	12.37	56.92	100	0	P	V
		15690	54.08	-19.92	74	57.64	38.24	14.67	56.47	202	27	P	V
		15690	42.44	-11.56	54	46	38.24	14.67	56.47	202	27	A	V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

Channel Bandwidth 80MHz (Band Edge @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Ch. BW 80MHz 5210MHz		5149.24	59.26	-14.74	74	48.94	31.69	8.18	29.55	180	4	P	H
		5149.76	53.01	-0.99	54	42.69	31.69	8.18	29.55	180	4	A	H
	*	5210	111.83	-	-	101.42	31.73	8.24	29.56	180	4	P	H
	*	5210	105.21	-	-	94.8	31.73	8.24	29.56	180	4	A	H
		5425.84	50.23	-23.77	74	39.58	31.85	8.38	29.58	180	4	P	H
		5447.68	43.4	-10.6	54	32.67	31.87	8.44	29.58	180	4	A	H
		5147.42	54.33	-19.67	74	44.02	31.69	8.17	29.55	171	2	P	V
		5149.76	48.93	-5.07	54	38.61	31.69	8.18	29.55	171	2	A	V
	*	5210	109.76	-	-	99.35	31.73	8.24	29.56	171	2	P	V
	*	5210	103.35	-	-	92.94	31.73	8.24	29.56	171	2	A	V
		5437.88	49.71	-24.29	74	39.02	31.86	8.41	29.58	171	2	P	V
		5458.04	43.5	-10.5	54	32.75	31.87	8.47	29.59	171	2	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

Channel Bandwidth 80MHz (Harmonic @ 3m)

Ant. 1+2	Note	Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Ch. BW 80MHz 5210MHz		10420	47.1	-21.1	68.2	51.82	39.85	12.36	56.93	100	0	P	H
		15630	45.36	-28.64	74	48.88	38.37	14.65	56.54	100	0	P	H
													H
													H
		10420	47.05	-21.15	68.2	51.77	39.85	12.36	56.93	100	0	P	V
		15630	45.29	-28.71	74	48.81	38.37	14.65	56.54	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Emission below 1GHz

Channel Bandwidth 20MHz (LF @ 3m)

	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Ch. BW 20MHz LF		92.91	34.22	-9.28	43.5	49.83	15.35	1.33	32.29	-	-	P	H
		107.49	38.32	-5.18	43.5	52.58	16.66	1.37	32.29	100	0	P	H
		120.18	33.36	-10.14	43.5	46.93	17.34	1.38	32.29	-	-	P	H
		332.9	31.98	-14.02	46	41.98	19.92	2.22	32.14	-	-	P	H
		820.1	32.25	-13.75	46	32.67	28.02	3.45	31.89	-	-	P	H
		948.2	33.59	-12.41	46	30.42	30.53	3.71	31.07	-	-	P	H
													H
													H
													H
													H
													H
													H
		58.89	32.56	-7.44	40	51.73	12.16	0.98	32.31	-	-	P	V
		92.64	34.42	-9.08	43.5	50.05	15.33	1.33	32.29	-	-	P	V
		107.76	36.59	-6.91	43.5	50.84	16.67	1.37	32.29	100	0	P	V
		366.5	34.36	-11.64	46	43.23	20.93	2.34	32.14	-	-	P	V
		766.9	35.14	-10.86	46	35.72	28.18	3.29	32.05	-	-	P	V
		866.3	34.63	-11.37	46	33.7	29.07	3.53	31.67	-	-	P	V
													V
													V
													V
													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **over limit** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1+2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 01 2412MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is "PASS".

Appendix D. Radiated Spurious Emission

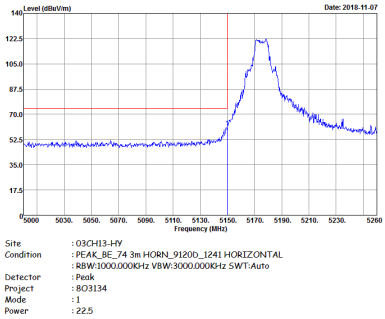
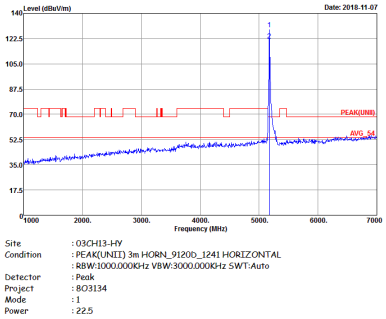
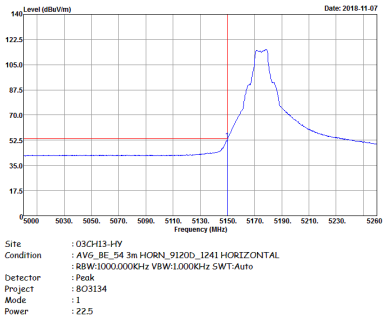
Test Engineer :	Alex Jheng, Fu Chen, and Wilson Wu	**Temperature :**	24.5~24.8°C
		Relative Humidity :	50~51%

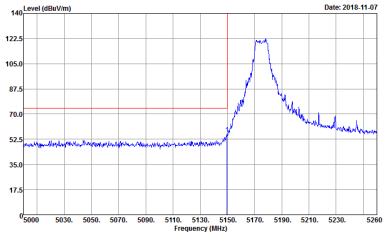
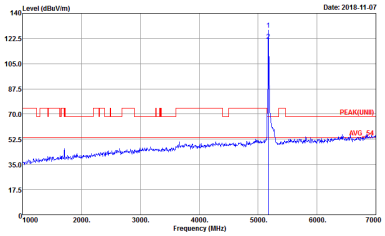
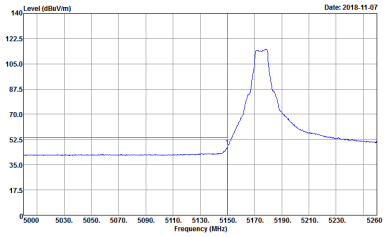
Note symbol

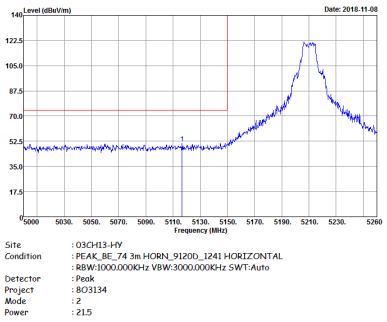
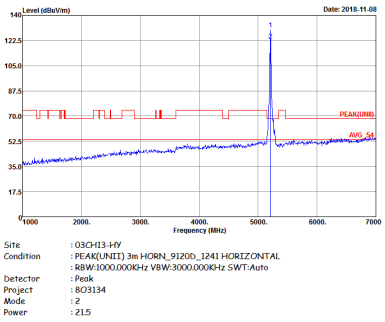
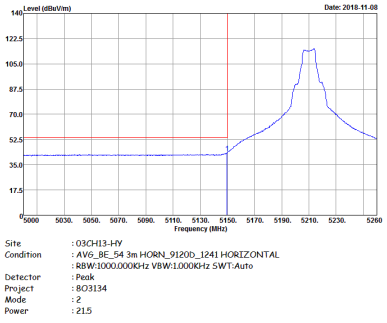
-L	**Low channel location**
-R	**High channel location**

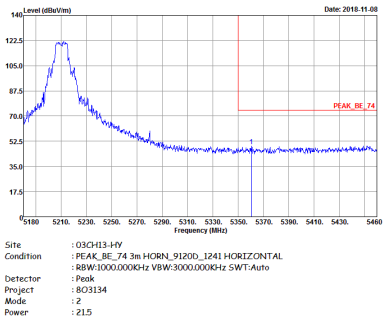
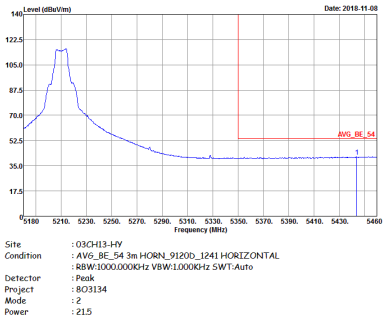
Band 1 - 5150~5250MHz

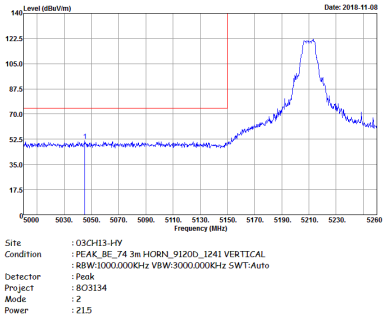
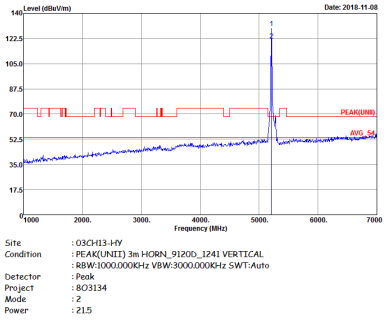
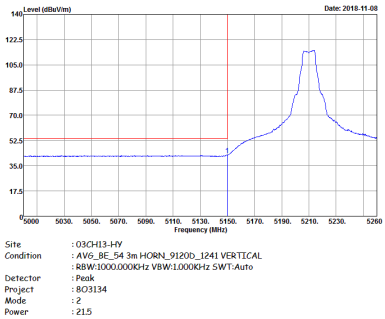
Channel Bandwidth 10MHz (Band Edge @ 3m)

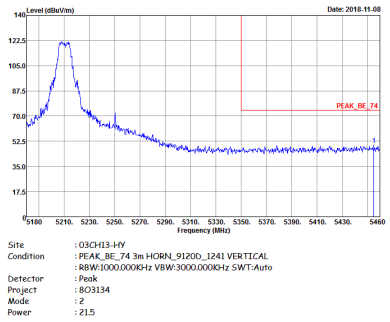
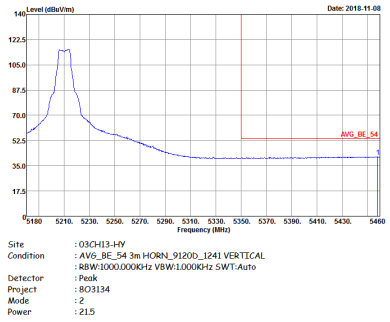
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5175MHz	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

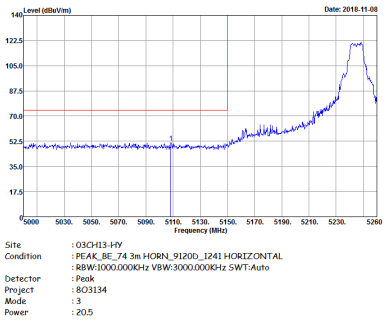
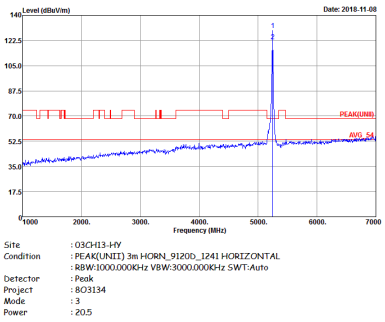
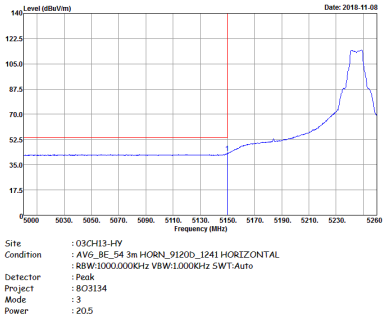
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5175MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 1 Power : 22.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 1 Power : 22.5
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 1 Power : 22.5	Left blank

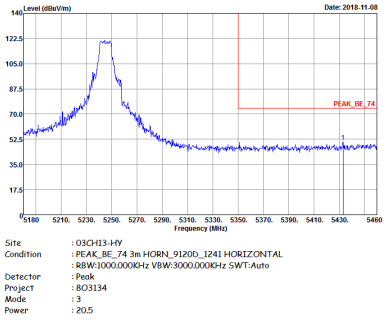
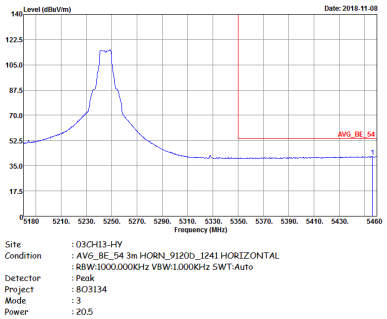
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5210MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 2 Power : 21.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 2 Power : 21.5
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 2 Power : 21.5	Left blank

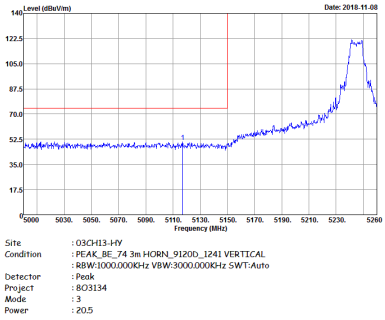
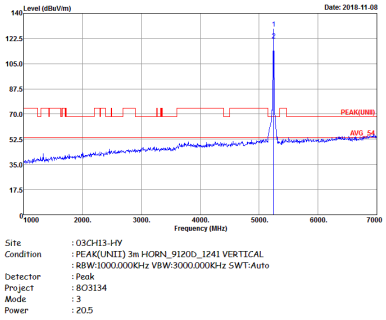
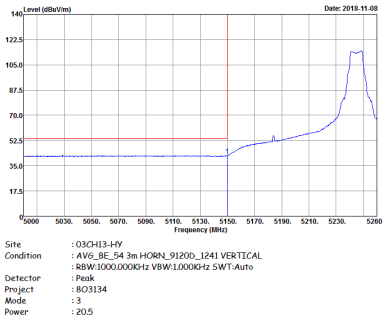
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5210MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 2 Power : 21.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 2 Power : 21.5	Left blank

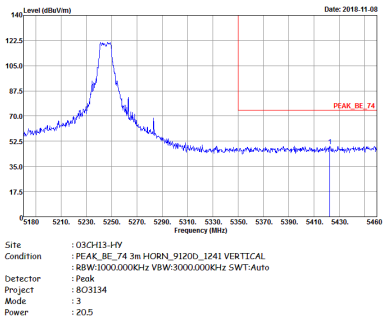
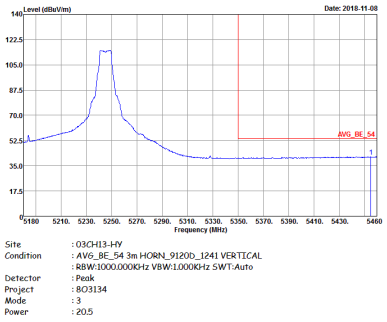
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5210MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank

	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5210MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 2 Power : 21.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 2 Power : 21.5	Left blank

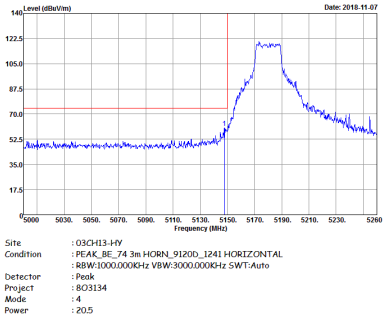
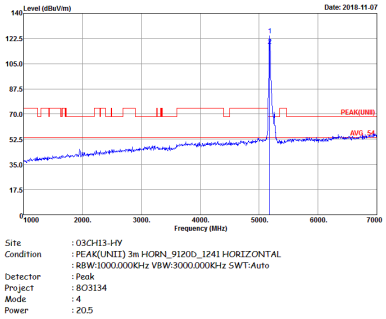
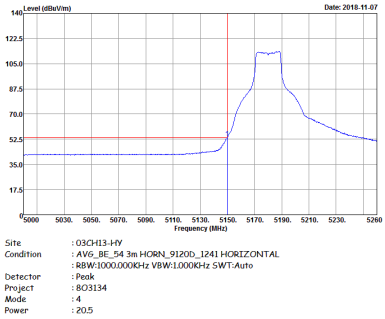
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5245MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 3 Power : 20.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 3 Power : 20.5
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 3 Power : 20.5	Left blank

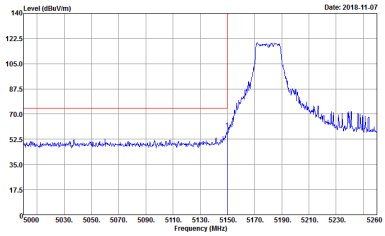
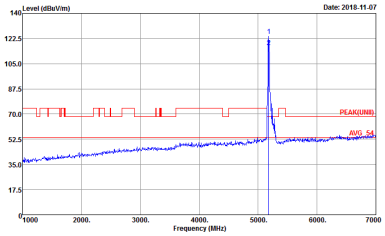
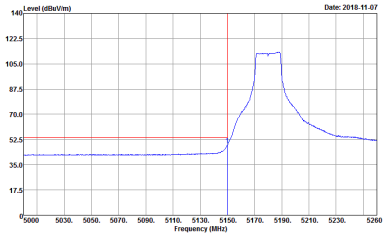
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5245MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 3 Power : 20.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 3 Power : 20.5	Left blank

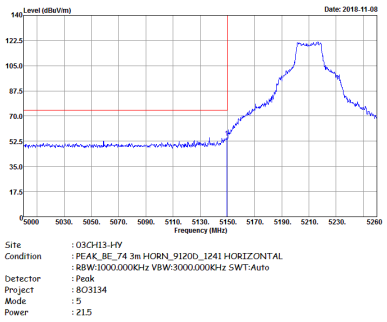
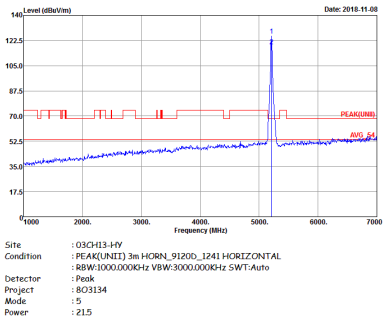
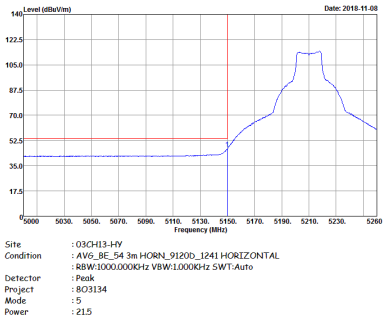
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5245MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank

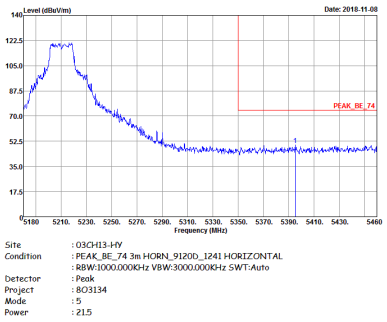
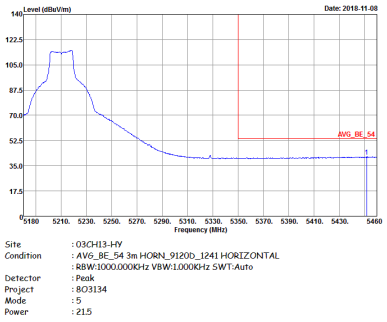
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 10MHz 5245MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 3 Power : 20.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 3 Power : 20.5	Left blank

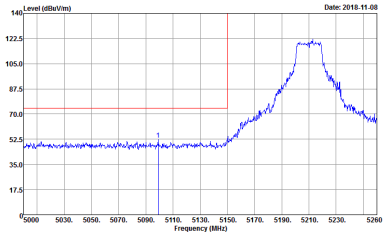
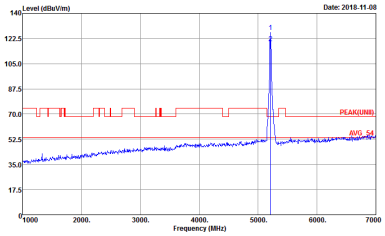
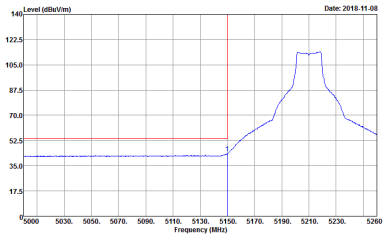
Band 1 5150~5250MHz
Channel Bandwidth 20MHz (Band Edge @ 3m)

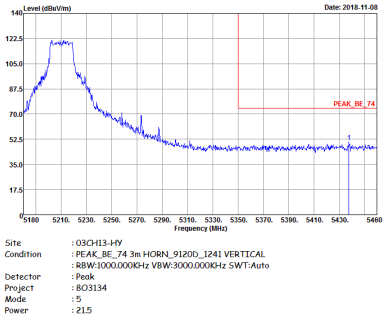
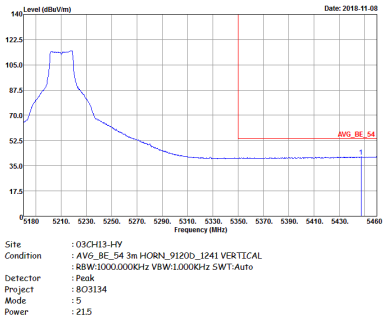
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5180MHz	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

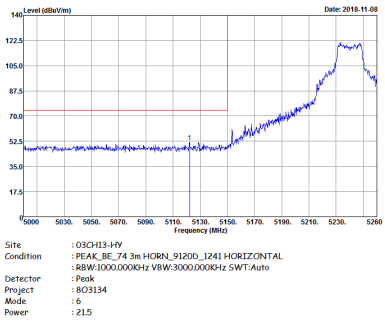
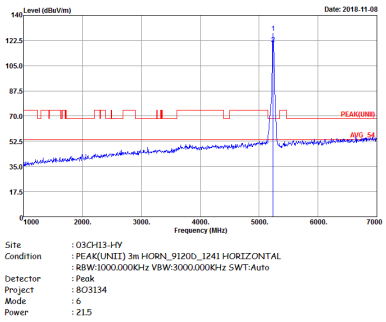
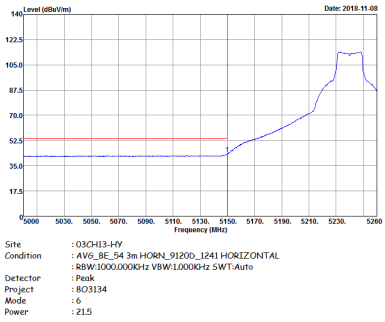
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5180MHz	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 4 Power : 20.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 4 Power : 20.5
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 4 Power : 20.5	Left blank

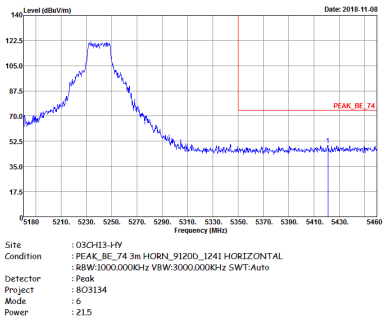
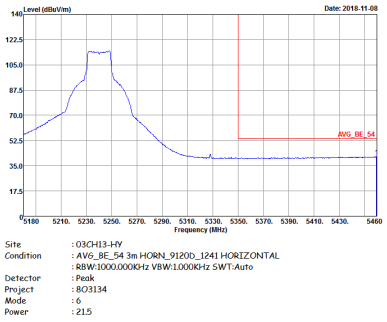
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5210MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

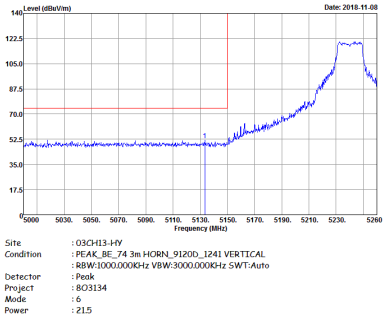
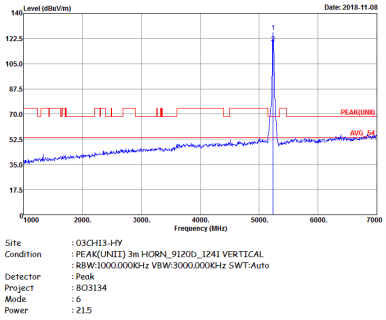
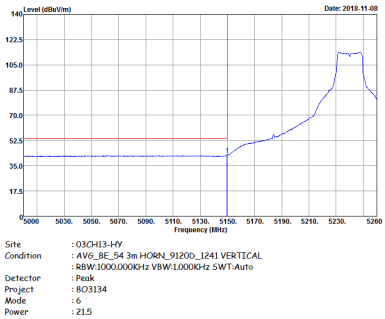
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5210MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 5 Power : 21.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 5 Power : 21.5	Left blank

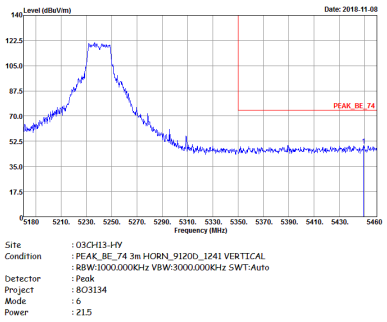
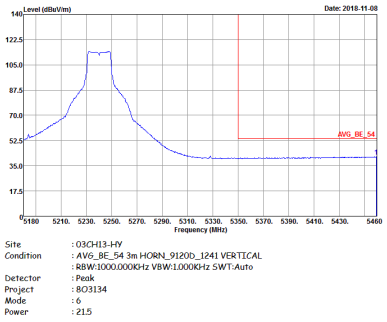
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5210MHz - L	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 5 Power : 21.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 5 Power : 21.5
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 5 Power : 21.5	Left blank

	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5210MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 5 Power : 21.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 5 Power : 21.5	Left blank

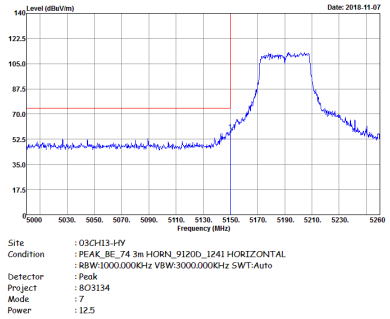
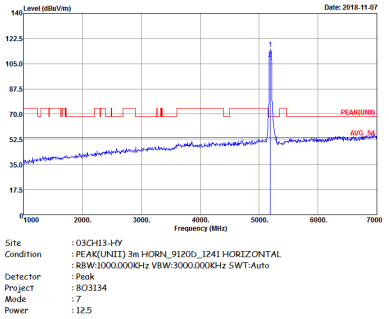
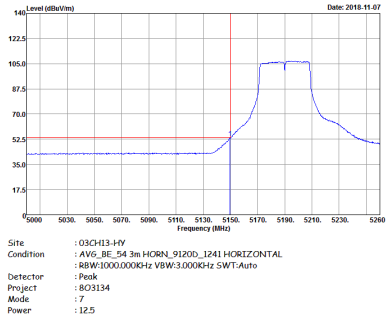
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5240MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

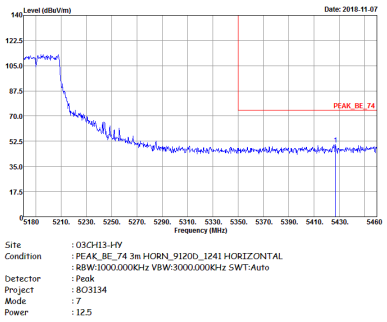
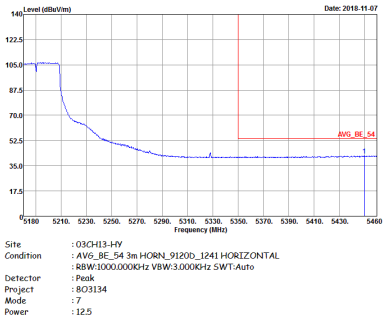
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5240MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 6 Power : 21.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 6 Power : 21.5	Left blank

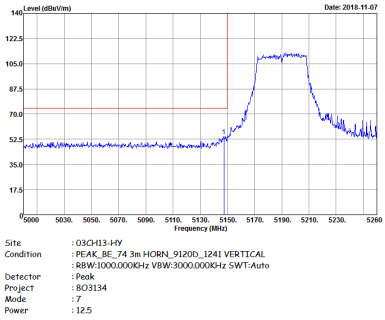
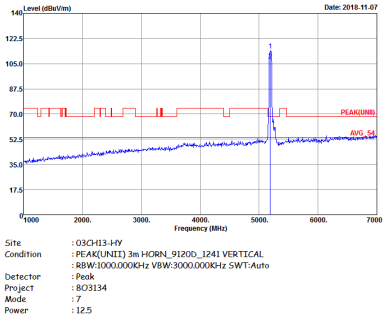
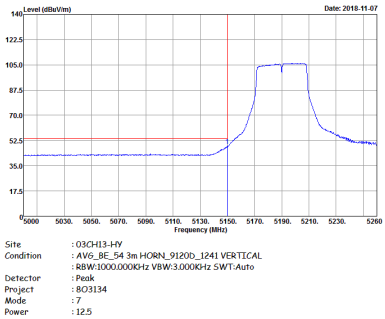
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5240MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank

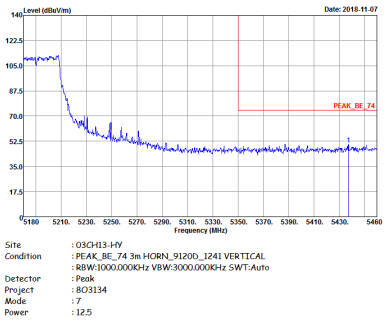
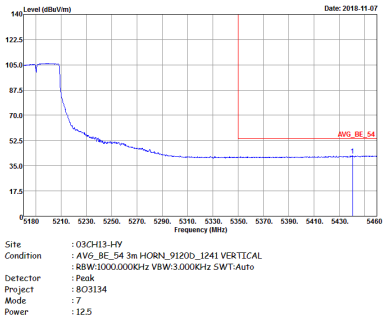
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 20MHz 5240MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 6 Power : 21.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:1.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 6 Power : 21.5	Left blank

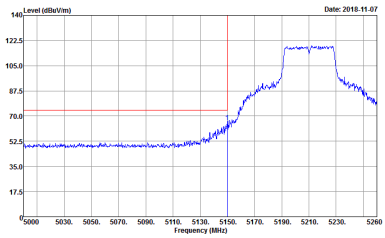
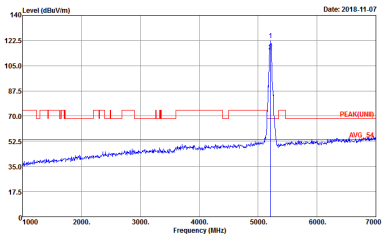
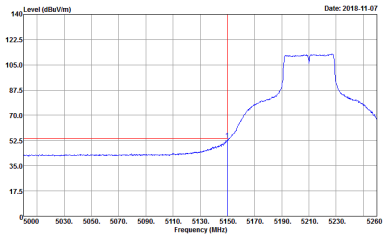
Band 1 5150~5250MHz
Channel Bandwidth 40MHz (Band Edge @ 3m)

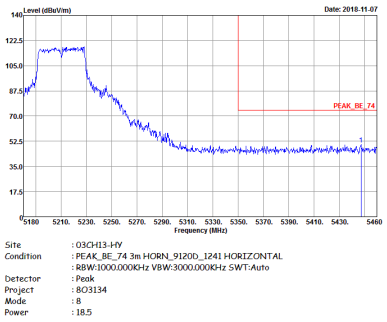
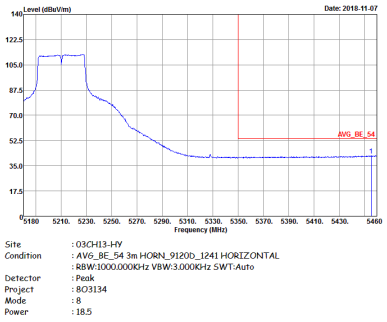
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5190MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

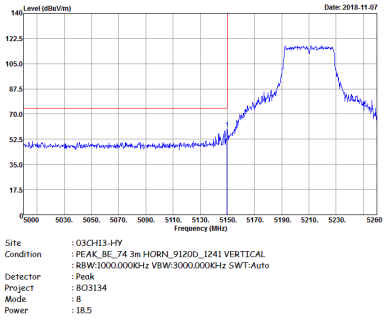
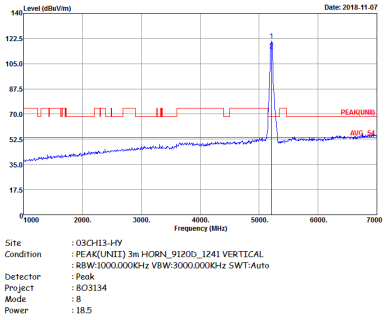
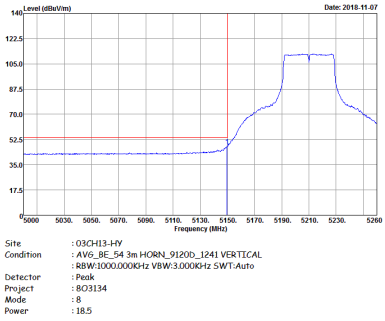
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5190MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 7 Power : 12.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 7 Power : 12.5	Left blank

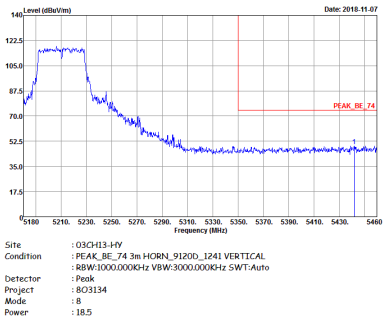
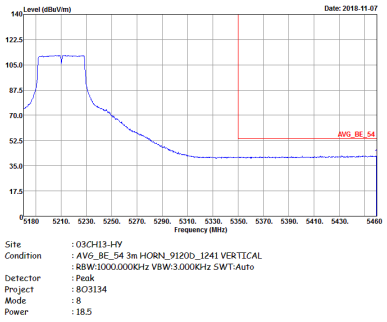
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5190MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank

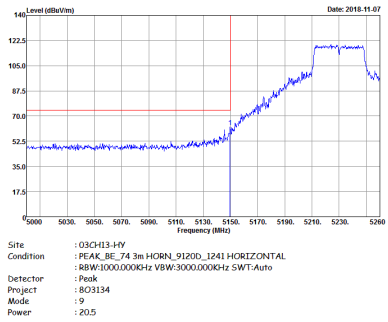
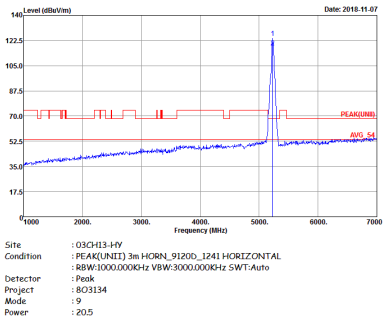
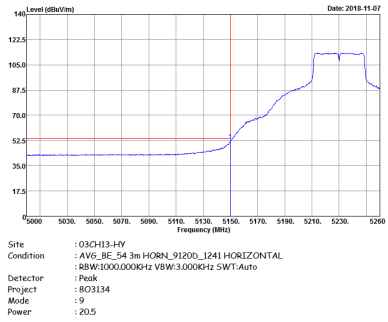
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5190MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 7 Power : 12.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 7 Power : 12.5	Left blank

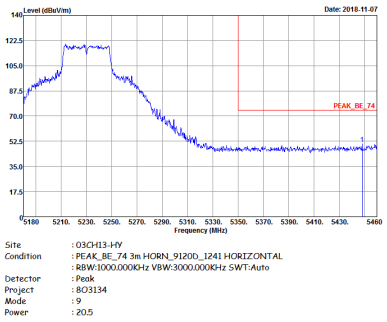
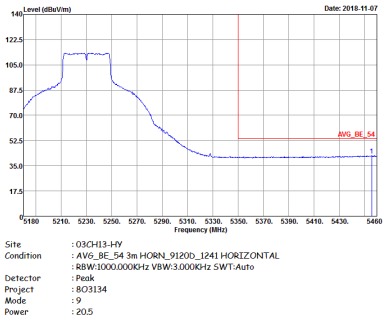
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5210MHz - L	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 8 Power : 18.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 8 Power : 18.5
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 8 Power : 18.5	Left blank

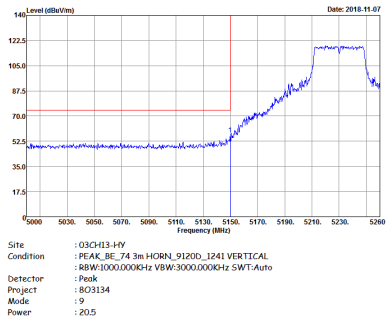
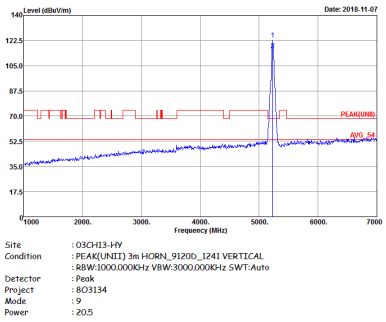
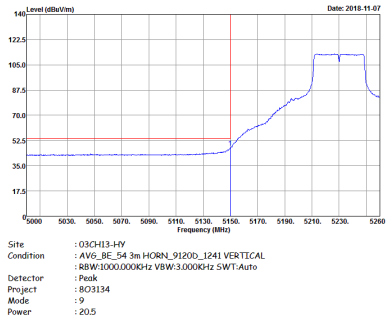
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5210MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 8 Power : 18.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 8 Power : 18.5	Left blank

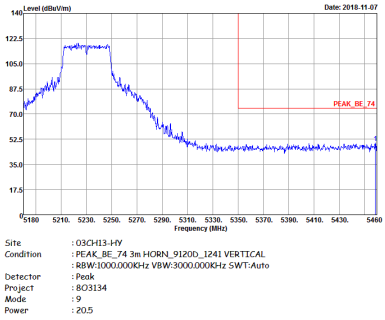
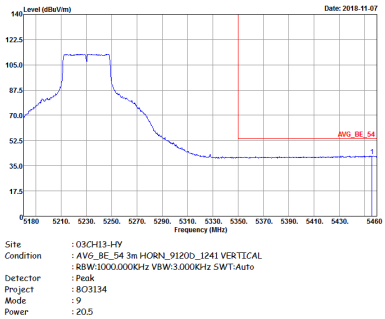
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5210MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank

	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5210MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 8 Power : 18.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 8 Power : 18.5	Left blank

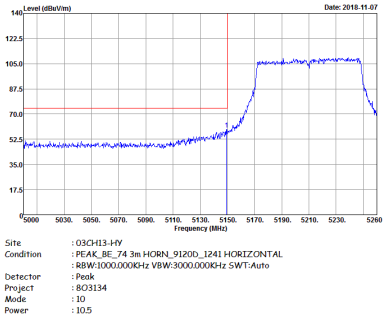
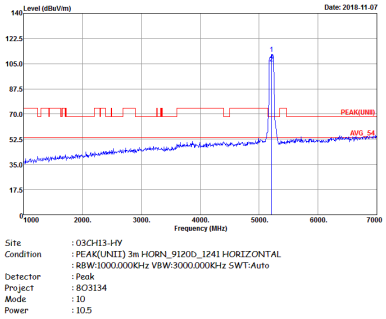
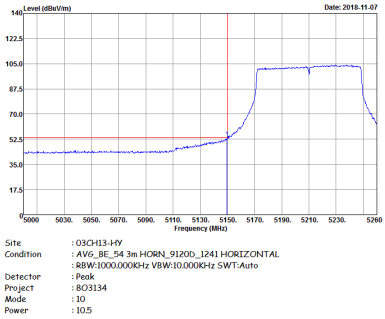
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5230MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

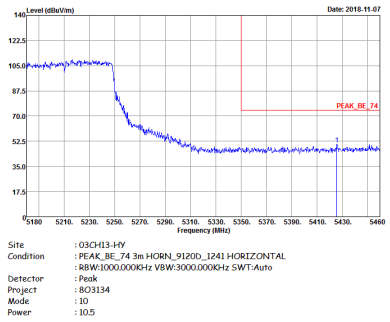
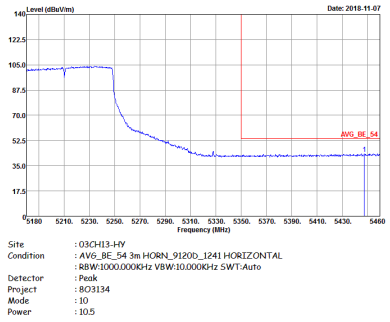
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5230MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 9 Power : 20.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 9 Power : 20.5	Left blank

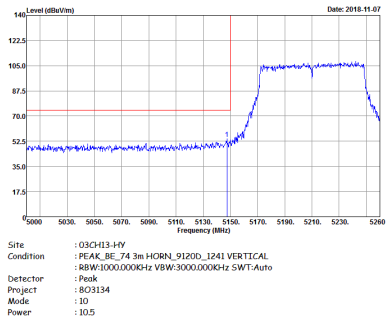
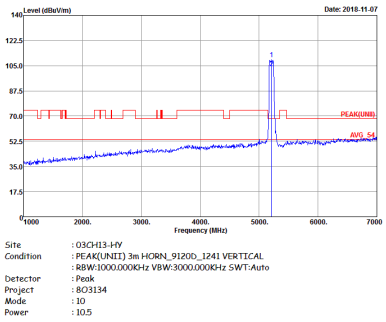
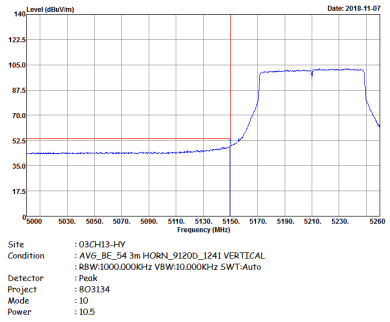
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5230MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank

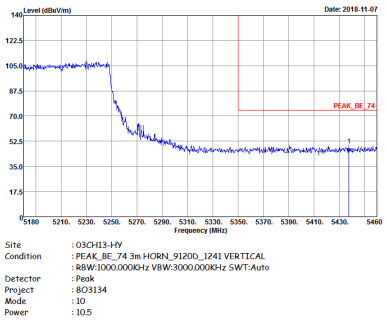
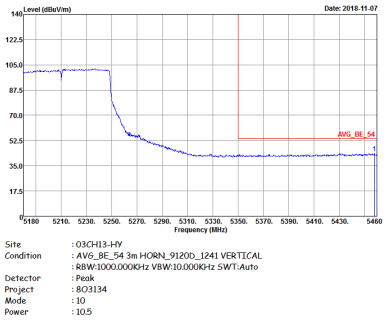
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 40MHz 5230MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 9 Power : 20.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 9 Power : 20.5	Left blank

Band 1 5150~5250MHz
Channel Bandwidth 80MHz (Band Edge @ 3m)

	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 80MHz 5210MHz - L	
1+2	Horizontal	Fundamental
Peak		
Avg.		Left blank

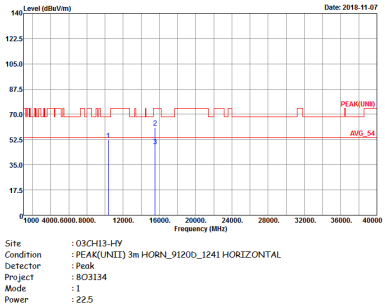
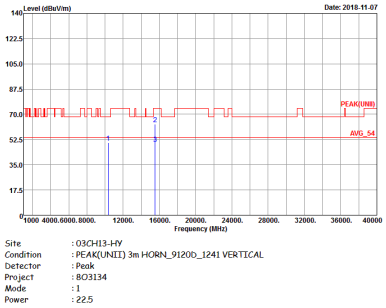
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 80MHz 5210MHz - R	
1+2	Horizontal	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 10 Power : 10.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 10 Power : 10.5	Left blank

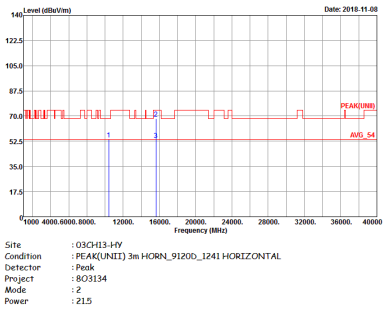
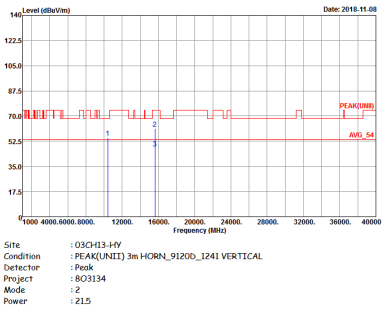
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 80MHz 5210MHz - L	
1+2	Vertical	Fundamental
Peak		
Avg.		Left blank

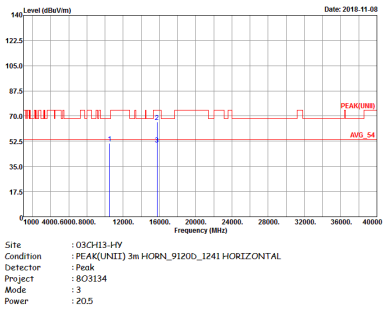
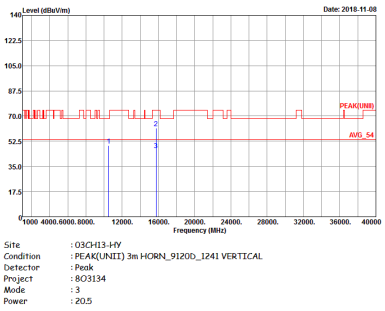
	Band 1 5150~5250MHz Band Edge @ 3m	
ANT	Ch. BW 80MHz 5210MHz - R	
1+2	Vertical	Fundamental
Peak	 Site : 03CH13-HY Condition : PEAK_BE_74 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 10 Power : 10.5	Left blank
Avg.	 Site : 03CH13-HY Condition : AVG_BE_54 3m HORN_9120D_1241 VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8O3134 Mode : 10 Power : 10.5	Left blank

Band 1 - 5150~5250MHz

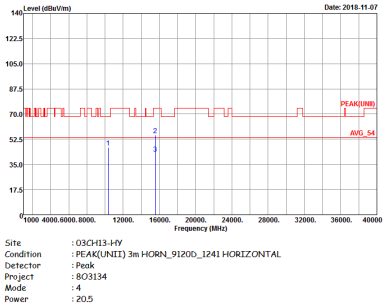
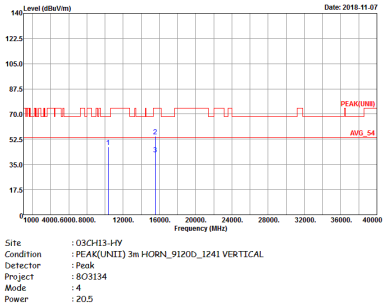
Channel Bandwidth 10MHz (Harmonic @ 3m)

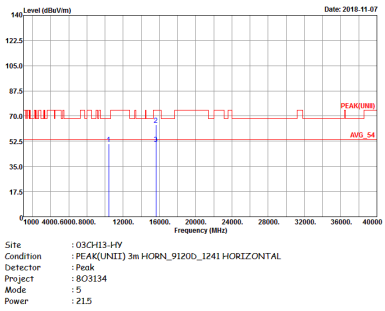
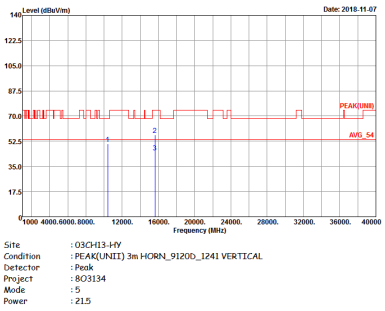
	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 10MHz 5175MHz	
1+2	Horizontal	Vertical
Peak Avg.		

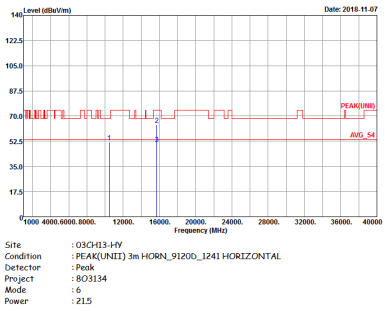
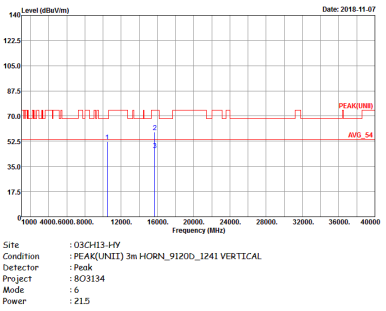
	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 10MHz 5210MHz	
1+2	Horizontal	Vertical
Peak Avg.		

	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 10MHz 5245MHz	
1+2	Horizontal	Vertical
Peak Avg.		

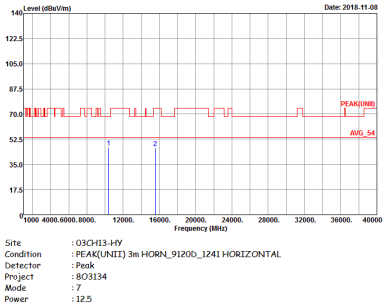
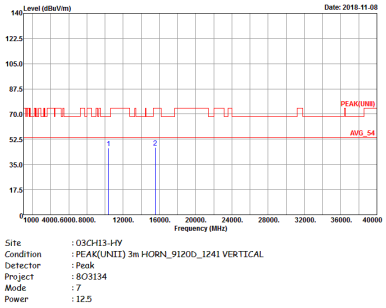
Band 1 5150~5250MHz
Channel Bandwidth 20MHz (Harmonic @ 3m)

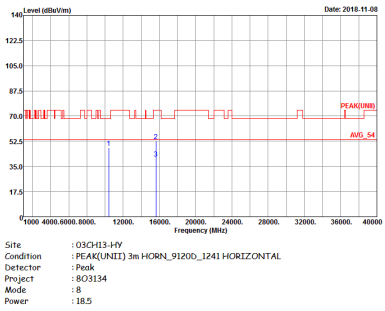
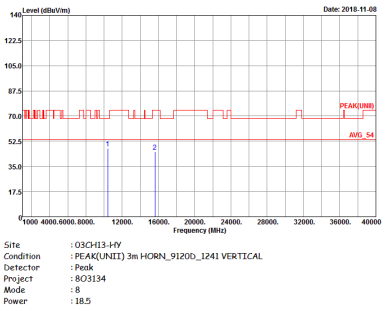
	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 20MHz 5180MHz	
1+2	Horizontal	Vertical
Peak Avg.		

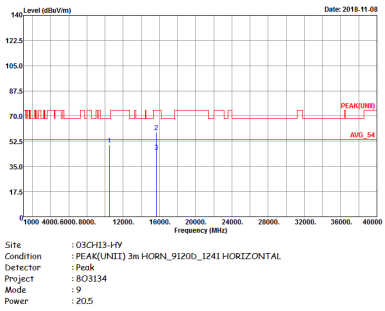
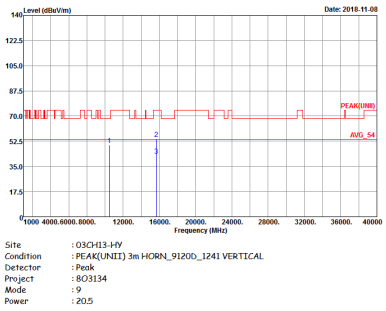
	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 20MHz 5210MHz	
1+2	Horizontal	Vertical
Peak Avg.		

	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 20MHz 5240MHz	
1+2	Horizontal	Vertical
Peak Avg.	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 HORIZONTAL Detector : Peak Project : 8O3134 Mode : 6 Power : 21.5	 Site : 03CH13-HY Condition : PEAK(UNII) 3m HORN_9120D_1241 VERTICAL Detector : Peak Project : 8O3134 Mode : 6 Power : 21.5

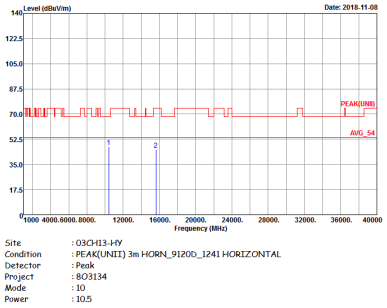
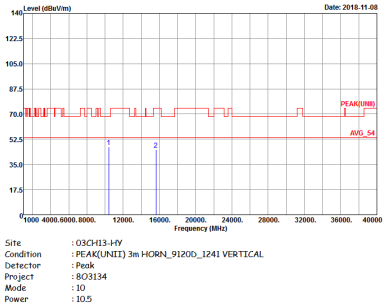
Band 1 5150~5250MHz
Channel Bandwidth 40MHz (Harmonic @ 3m)

	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 40MHz 5190MHz	
1+2	Horizontal	Vertical
Peak Avg.		

	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 40MHz 5210MHz	
1+2	Horizontal	Vertical
Peak Avg.		

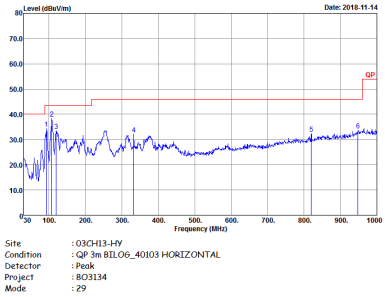
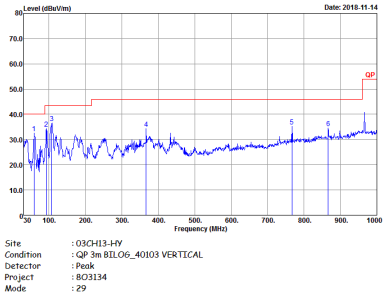
	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 40MHz 5230MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Band 1 5150~5250MHz
Channel Bandwidth 80MHz (Harmonic @ 3m)

	Band 1 5150~5250MHz Harmonic @ 3m	
ANT	Ch. BW 80MHz 5210MHz	
1+2	Horizontal	Vertical
Peak Avg.		

Emission below 1GHz

5GHz Channel Bandwidth 20MHz (LF)

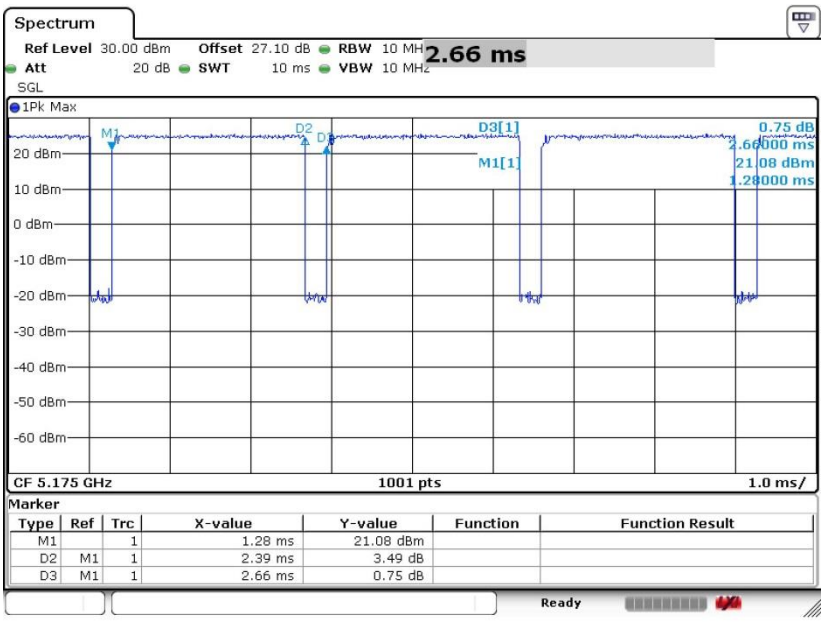
	5GHz	
ANT	Ch. BW 20MHz LF	
1+2	Horizontal	Vertical
QP / Peak		

Appendix E. Duty Cycle Plots

Antenna	Channel Bandwidth	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
1+2	10 MHz for Ant. 1	89.85	2390	0.42	1kHz	0.46
1+2	10 MHz for Ant. 2	89.47	2380	0.42	1kHz	0.48
1+2	20 MHz for Ant. 1	84.78	1170	0.85	1kHz	0.72
1+2	20 MHz for Ant. 2	85.61	1190	0.84	1kHz	0.67
1+2	40 MHz for Ant. 1	79.37	600	1.67	3kHz	1.00
1+2	40 MHz for Ant. 2	79.05	600	1.67	3kHz	1.02
1+2	80 MHz for Ant. 1	65.22	300	3.33	10kHz	1.86
1+2	80 MHz for Ant. 2	65.79	300	3.33	10kHz	1.82

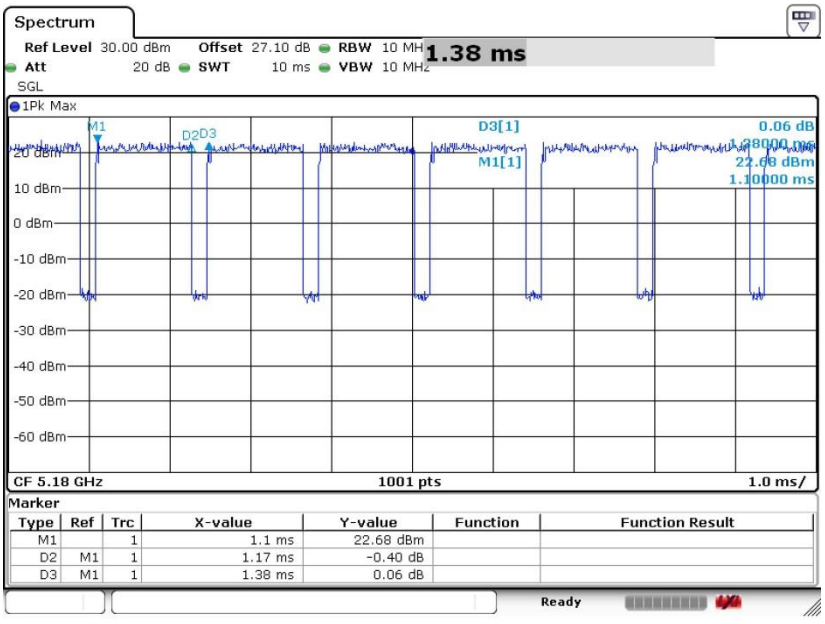
<Ant. 1>

10 MHz



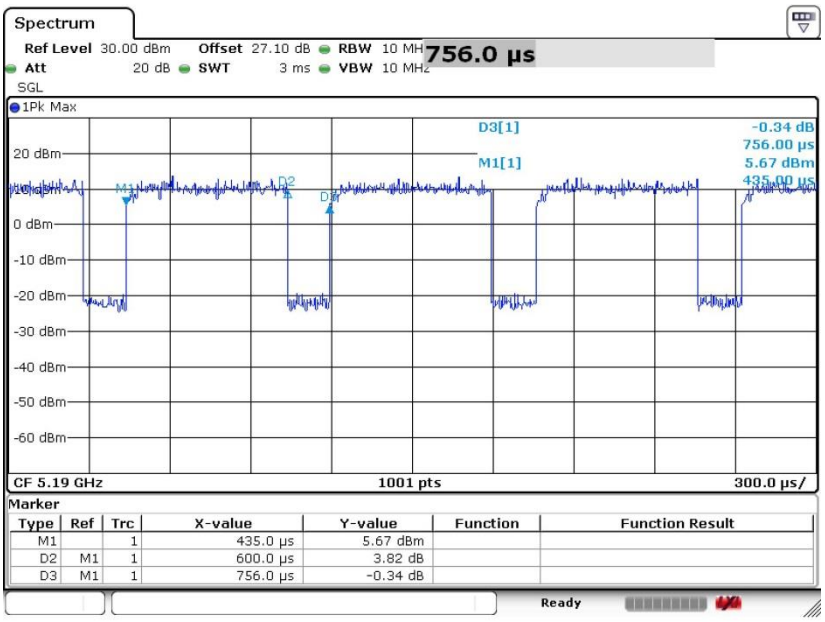
Date: 9.NOV.2018 09:50:28

20 MHz



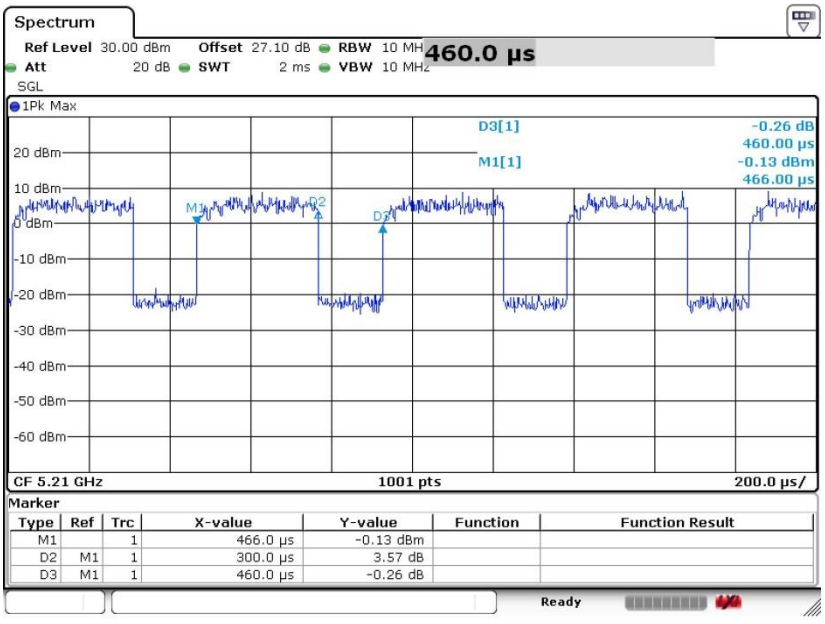
Date: 9.NOV.2018 11:35:26

40 MHz



Date: 9.NOV.2018 14:09:28

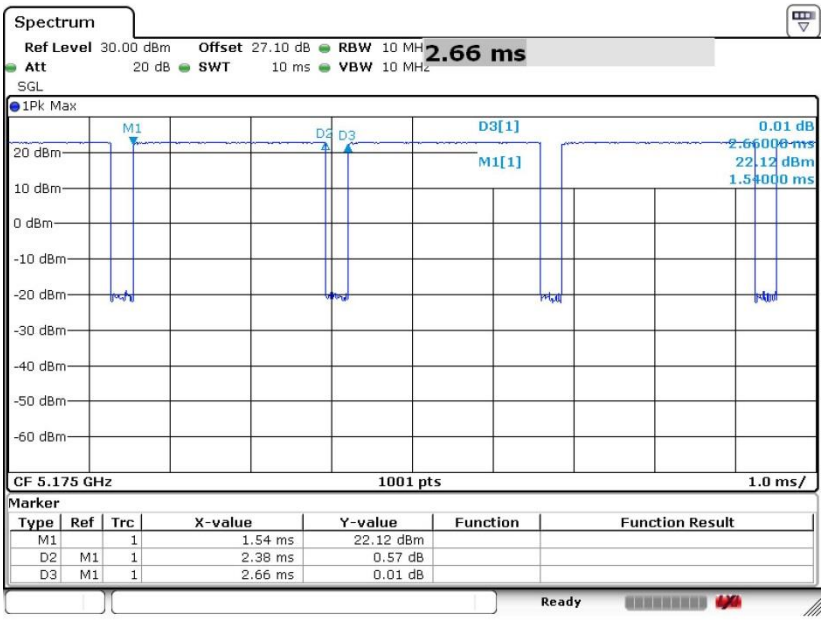
80 MHz



Date: 9.NOV.2018 14:57:32

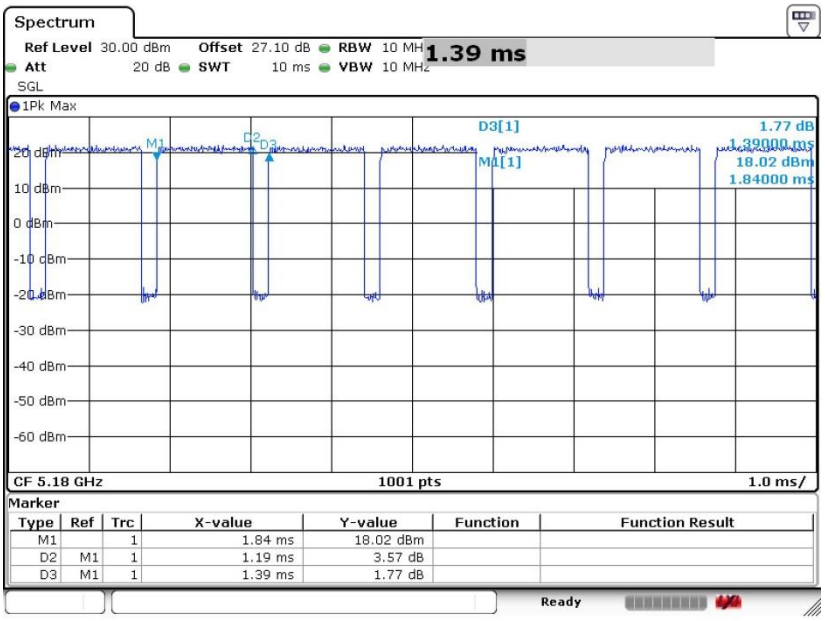
<Ant. 2>

10 MHz



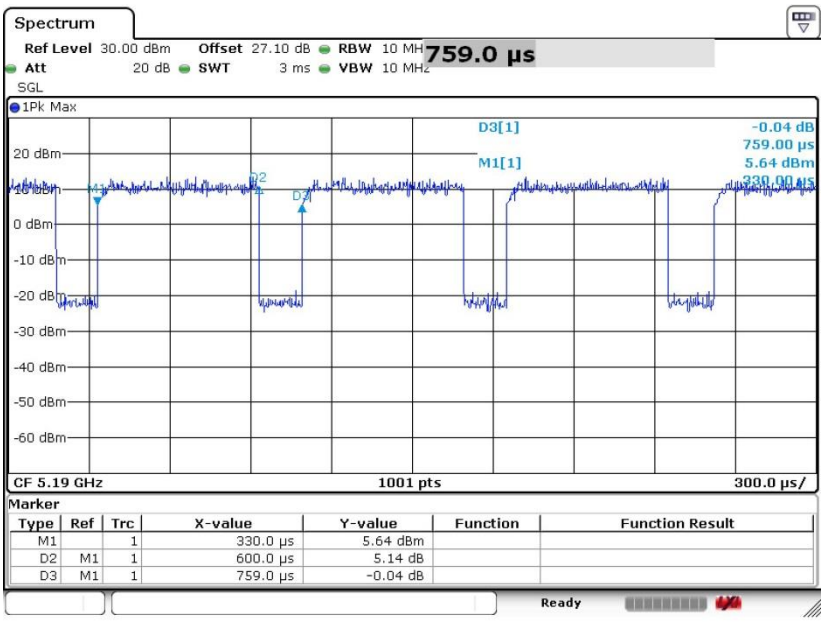
Date: 9.NOV.2018 09:51:31

20 MHz



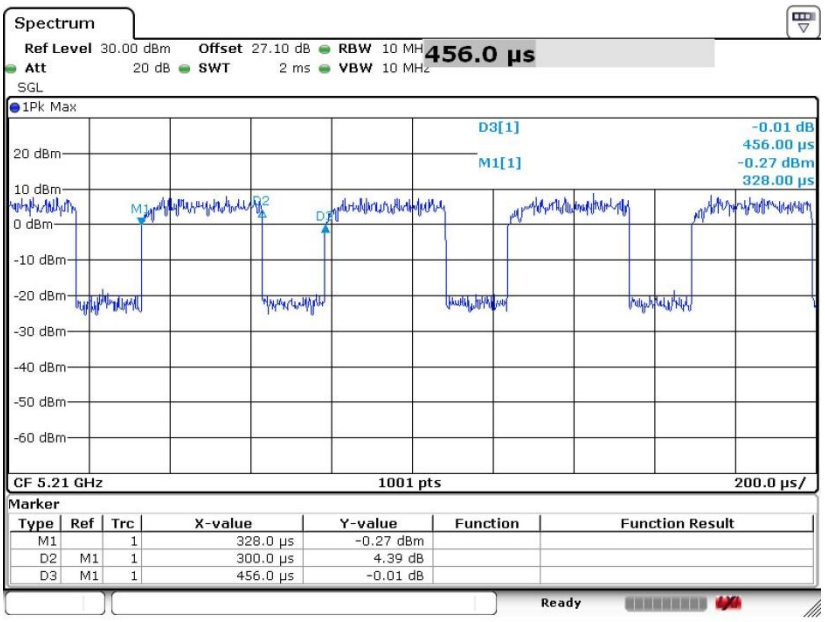
Date: 9.NOV.2018 11:36:29

40 MHz



Date: 9.NOV.2018 14:12:37

80 MHz



Date: 9.NOV.2018 14:58:54