FCC Test Report

FCC ID	:	**2AT6813002019**
Equipment	:	**CBRSYS1300-WTE-3S**
Brand Name	:	**CBRSYS1300-WTE-3S**
Model Name	:	**CBRSYS1300-WTE-3S**
Applicant/ Manufacturer	:	**Celliber Technologies Private Limited 2nd Floor VYSHAK CENTRE,1027, 24th Main 11th Cross, Sector 1 HSR Layout, Bangalore 560102 India**
Standard	:	**47 CFR FCC Part 15.407**

The product was received on Mar. 13, 2020, and testing was started from Apr. 07, 2020 and completed on Apr. 08, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown 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 variant 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: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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PHOTOGRAPHS OF EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FR971005-01AN	01	Initial issue of report	May 18, 2020

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.407(a)	Emission Bandwidth	PASS	-
3.3	15.407(a)	Maximum Conducted Output Power	PASS	-
3.4	15.407(a)	Peak Power Spectral Density	PASS	-
3.5	15.407(b)	Unwanted Emissions	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and explanations:
None

Reviewed by: Sam Tsai

Report Producer: Jenny Yang

1 General Description

1.1 Information

There are three WiFi Modules in the CQ30 Series Vehicle PC in the EUT. The antenna signals Tx transmit by only one connector and other connectors are restricted to Rx only mode with switches controlled by software.

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5725-5850	a, n (HT20)	5825	165 [1]

Band	Mode	BWch (MHz)	Nant
5.725-5.85GHz	802.11a	20	1TX
5.725-5.85GHz	802.11n HT20	20	1TX

Note:
- 11a, HT20 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Function
1	Mobile Mark	RM-WHF-DN-BLK	Omni	N Type	TX/RX
2	Mobile Mark	MGRM-WHF-3C-BLK-120	Omni	Cable with SMA Male	TX/RX
3	Mobile Mark	LP-2400-6000	Directional	SMA Female	RX
4	Mobile Mark	LP-2400-6000	Directional	SMA Female	RX
5	Mobile Mark	LP-2400-6000	Directional	SMA Female	RX
6	Mobile Mark	LP-2400-6000	Directional	SMA Female	RX

Ant.	Port	Gain (dBi)	
		2.4G	5G
1	1	**5**	**5**
2	-	5	5
3	-	7.5	11
4	-	7.5	11
5	-	7.5	11
6	-	7.5	11

Note 1: The antenna 1 was used to test by transmit function.

For 2.4GHz function:
For IEEE 802.11 b/g/n mode
Ant. 1 or Ant. 2 could transmit/receive.
Ant. 3, Ant. 4, Ant. 5 and Ant. 6 could receive only.
For 5GHz function:
For IEEE 802.11 a/n mode
Ant. 1 or Ant. 2 could transmit/receive.
Ant. 3, Ant. 4, Ant. 5 and Ant. 6 could receive only.

1.1.3 EUT Information

Operational Condition				
EUT Power Type	From Switching Power Supply			
EUT Function	☒	Outdoor AP	☐	Indoor AP
	☐	Fixed P2P AP	☒	Outdoor Client
Beamforming Function	☐	With beamforming	☒	Without beamforming

Type of EUT		
☒	Stand-alone	
☐	Combined (EUT where the radio part is fully integrated within another device)	
	Combined Equipment - Brand Name / Model No.:	…
☐	Plug-in radio (EUT intended for a variety of host systems)	
	Host System - Brand Name / Model No.:	
☐	Other:	

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.985	0.07	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11n HT20	0.978	0.1	1.527m	1k

Note. If DC < 0.98, the DCF was added while measuring Output power and PSD.

1.1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR971005AN

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
5825MHz was added	AC Power-line Conducted Emissions Emission Bandwidth, Maximum Conducted Output Power, Peak Power Spectral Density, Unwanted Emissions
Added a relay system power	
Add one power cord for 1.8m	
GPS function can be working	N/A
Equipment, Brand Name and Model Name was updated	
Spilter/Combiner (MPN: ZACS622-100WS) was removed	

1.2 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- KDB 789033 D02 v02r01
- KDB 414788 D01 v01r01

1.3 Testing Location Information

Testing Location					
☒	HWA YA	ADD	:	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL	:	886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.					
☐	JHUBEI	ADD	:	No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL	:	886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.					
☐	Wen Shan	ADD	:	No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)	
		TEL	:	886-3-318-0787	FAX : 886-3-318-0287
Test site Designation No. TW1097 with FCC.					

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward Wang	20.1~21.9°C / 56~ 59%	07/Apr/2020
RF Conducted	TH01-HY	Barry Hsiao	24.3~25.4°C / 58~64%	08/Apr/2020
Radiated	03CH02-HY	Daniel Lin	20.9~23.6°C / 53~65%	07/Apr/2020

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

Condition Item	Abbreviation/Remark	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

2.2 Test Channel Mode

Test Software	Dos

Mode	Power Setting
802.11a_Nss1,(6Mbps)_1TX	-
5825MHz	33
802.11n HT20_Nss1,(MCS0)_1TX	-
5825MHz	30

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	Switching Power Supply

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth Maximum Conducted Output Power Peak Power Spectral Density
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Unwanted Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	CTX
1	Switching Power Supply
Operating Mode > 1GHz	CTX
Orthogonal Planes of EUT	**Z Plane**
Worst Planes of EUT	V

2.4 Accessories

AC power Cord	Brand Name	AC Power cord	Model Name	11-00022
	Manufacturer	Tensility		
	Power Rating	I/P: 110 -250 Vac, 2.5 A		
	Power Cord	1 meter, non-shielded cable, w/o ferrite core		
Universal Adaptor	Brand Name	Universal Adapter	Model Name	APK01AP-52
	Manufacturer	Targus		
Additional power cable with Fischer connector for DC	Brand Name	Open ended cable with 2 pin Ficher	Model Name	600090256
	Manufacturer	Celliber		
	Power Cord	2 meter, non-shielded cable, w/o ferrite core		
M12 Ethernet cable	Brand Name	M12 08 pos Male to RJ45 cable	Model Name	1407415
	Manufacturer	Phoenix Contact		
	Power Cord	2 meter, shielded cable, w/o ferrite core		
M12 Ethernet cable	Brand Name	Circular M12 08 pos Male to M12 08 pos Male	Model Name	1408748
	Manufacturer	Phoenix Contact		
	Power Cord	0.5 meter, shielded cable, w/o ferrite core		
VGA Cable	Brand Name	VGA Cable	Model Name	P502-006
	Manufacturer	P502-006		
	Power Cord	1.83 meter, shielded cable, w/o ferrite core		
RX Antenna Assembly	Brand Name	RX Antenna Assembly	Model Name	800090085-01
	Manufacturer	Celliber	PN	LP-2400-6000
TX Antenna	Brand Name	TX Antenna	Model Name	MGRM-WHF-3C-BLK-120
	Manufacturer	Mobile Mark Antennas Solutions		
	Power Cord	3 meter, shielded cable, w/o ferrite core		
TX Antenna	Brand Name	TX Antenna	Model Name	RM-WHF-DN-BLK
	Manufacturer	Mobile Mark Antennas Solutions		
GPS antenna	Brand Name	GPS Antenna	Model Name	33-4721-00-3000
	Manufacturer	Tallysman Wireless Inc.		
	Power Cord	3 meter, shielded cable, w/o ferrite core		
N Type to SMA adapter	Brand Name	Adapter	Model Name	53S132-K00L5
	Manufacturer	Rosenberger		
RX Cable	Brand Name	Rx Cable	Model Name	ULC-10FT-SMSM+
	Manufacturer	Mini-Circuits		
	Power Cord	3 meter, shielded cable, w/o ferrite core		
TX Cable	Brand Name	TX Cable	Model Name	SPU400FR/11SMA/11SMA/004600
	Manufacturer	HUBER+SUHNER		
	Power Cord	4.6 meter, shielded cable, w/o ferrite core		
AC power cord (Add)	Power Cord	1.8meter, non-shielded cable, w/o ferrite core		

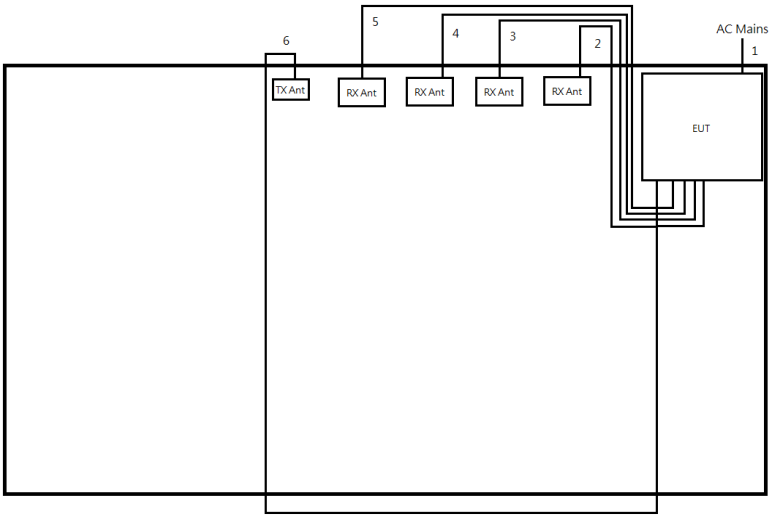
Reminder: Regarding to more detail and other information, please refer to user manual.

2.5 Support Equipment

Support Equipment – Conducted					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	Notebook	DELL	E5410	DoC	-
2	Adapter for NB	DELL	HA65NM130	DoC	-

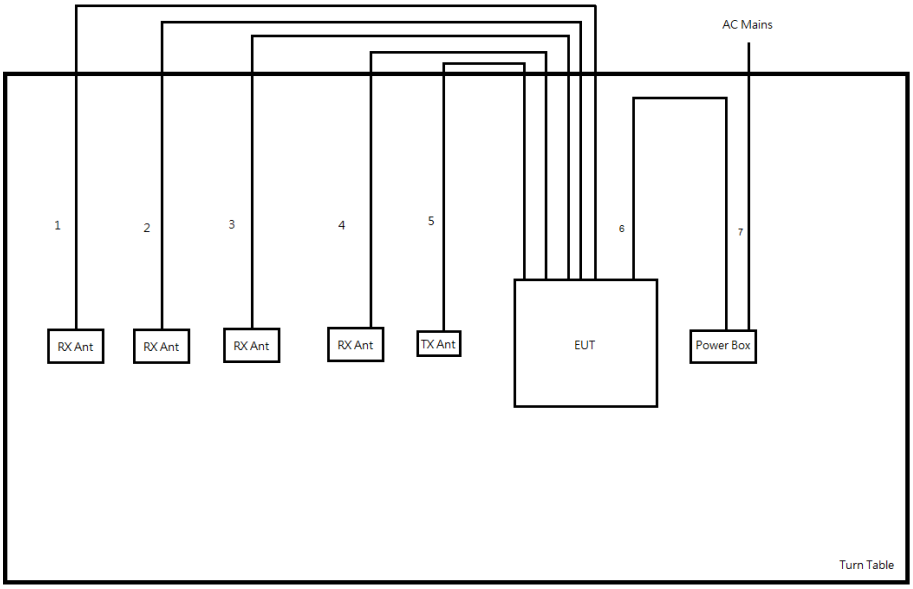
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded(Yes or No)	Length(m)	Remark
1	AC Power Cord	No	1.8	-
2	RX Cable	Yes	3.0	-
3	RX Cable	Yes	3.0	-
4	RX Cable	Yes	3.0	-
5	RX Cable	Yes	3.0	-
6	TX RF Cable	Yes	4.6	-

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	RX Cable	No	3.0	-
2	RX Cable	No	3.0	-
3	RX Cable	No	3.0	-
4	RX Cable	No	3.0	-
5	TX Cable	No	4.6	-
6	AC Power Cord	No	1.8	-
7	Power Cable	No	1.8	-

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

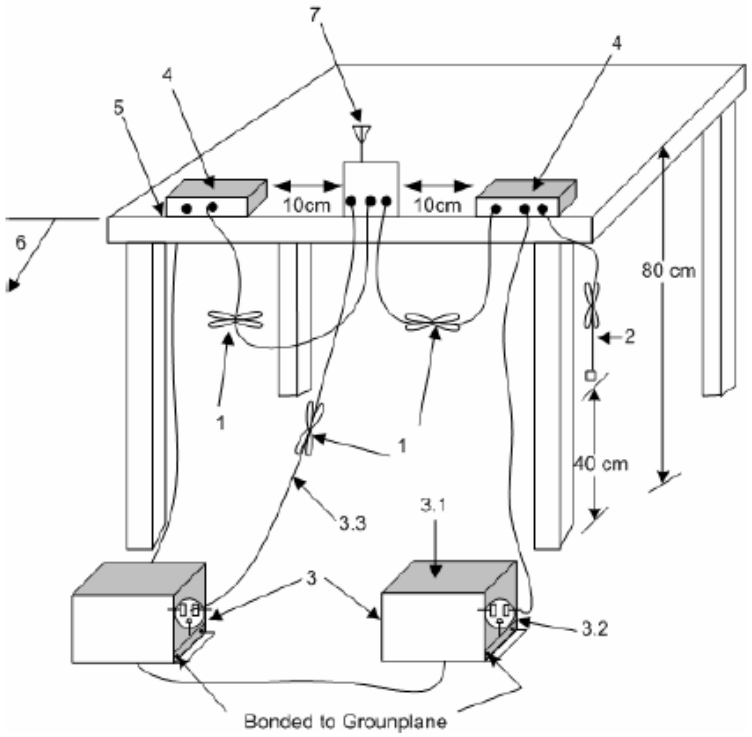
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

AC Power-line Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit
UNII Devices
☐ For the 5.15-5.25 GHz band, N/A
☐ For the 5.25-5.35 GHz band, N/A
☐ For the 5.47-5.725 GHz band, N/A
☒ For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 500kHz.

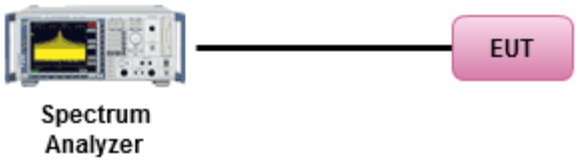
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as KDB 789033, clause C for EBW and clause D for OBW measurement.
	☐ Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.
	☐ Refer as IC RSS-Gen, clause 6.7 for bandwidth testing.

3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
UNII Devices	
☐	For the 5.15-5.25 GHz band:
	▪ Outdoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]
	▪ Indoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)
	▪ Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W If G_{TX} > 23 dBi, then P_{Out} = 30 – (G_{TX} – 23).
	▪ Mobile or Portable Client: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
☐	For the 5.25-5.35 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
☐	For the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
☒	For the 5.725-5.85 GHz band:
	▪ Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6).
	▪ Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.
P_{Out} = maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.	

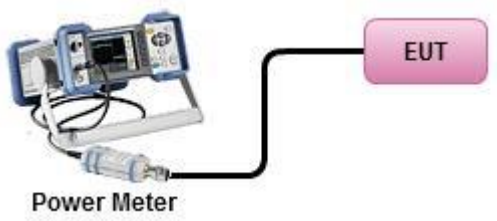
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method	
▪ Maximum Conducted Output Power	
	Duty cycle ≥ 98%
	☐ Refer as KDB 789033, clause E Method SA-2 (spectral trace averaging).
	Duty cycle < 98%
	☐ Refer as KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wideband RF power meter and average over on/off periods with duty factor
	☒ Refer as KDB 789033, clause E Method PM (using an RF average power meter).
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

RF Output Power (Power Meter)


3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit	
UNII Devices	
☐ For the 5.15-5.25 GHz band:	
	▪ Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 6 dBi, then P_{Out} = 17 – (G_{TX} – 6).
	▪ Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 6 dBi, then P_{Out} = 17 – (G_{TX} – 6).
	▪ Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G_{TX} > 23 dBi, then P_{Out} = 17 – (G_{TX} – 23).
	▪ Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G_{TX} > 6 dBi, then PPSD= 11 – (G_{TX} – 6)..
☐ For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G_{TX} > 6 dBi, then PPSD= 11 – (G_{TX} – 6).	
☐ For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G_{TX} > 6 dBi, then PPSD= 11 – (G_{TX} – 6).	
☒ For the 5.725-5.85 GHz band:	
	▪ Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If G_{TX} > 6 dBi, then PPSD= 30 – (G_{TX} – 6).
	▪ Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
PPSD = peak power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz **G_{TX}** = the maximum transmitting antenna directional gain in dBi.	

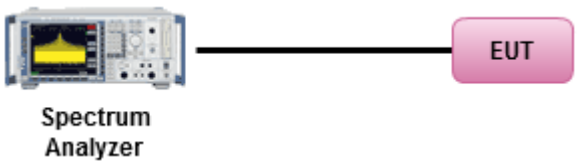
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method		
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:		
	☐ Refer as KDB 789033, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth	
	Duty cycle ≥ 98%	
	☒ Refer as KDB 789033, clause E Method SA-2 (spectral trace averaging).	
	Duty cycle < 98%	
	☒ Refer as KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
▪ For conducted measurement.		
	▪ If the EUT supports multiple transmit chains using options given below:	
		▪ Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
	▪	If multiple transmit chains, EIRP PPSD calculation could be following as methods: $PPSD_{total} = PPSD_1 + PPSD_2 + \ldots + PPSD_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = PPSD_{total} + DG$

3.4.4 Test Setup

Power Spectral Density


3.4.5 Test Result of Peak Power Spectral Density

Refer as Appendix D

3.5 Unwanted Emissions

3.5.1 Transmitter Radiated Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

Un-restricted band emissions above 1GHz Limit	
Operating Band	**Limit**
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.725 - 5.85 GHz	5.650-5700 GHz: e.i.r.p. -27 ~ 10 dBm [68.2 ~ 105.2 dBuV/m@3m] 5.700-5720 GHz: e.i.r.p. 10 ~ 15.6 dBm [105.2 ~ 110.8 dBuV/m@3m] 5.720-5725 GHz: e.i.r.p. 15.6 ~ 27 dBm [110.8 ~ 122.2 dBuV/m@3m] 5.850-5.855 GHz: e.i.r.p. 27 ~ 15.6 dBm [122.2 ~ 110.8 dBuV/m@3m] 5.855-5.875 GHz: e.i.r.p. 15.6 ~ 10 dBm [110.8 ~ 105.2 dBuV/m@3m] 5.875-5.925 GHz: e.i.r.p. 10 ~ -27 dBm [105.2 ~ 68.2dBuV/m@3m] Other un-restricted band: e.i.r.p. -27 dBm [68.2 dBuV/m@3m]

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

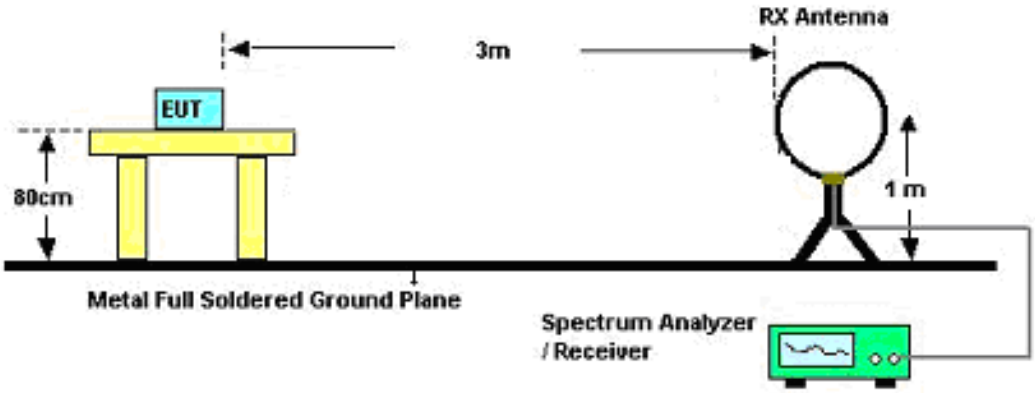
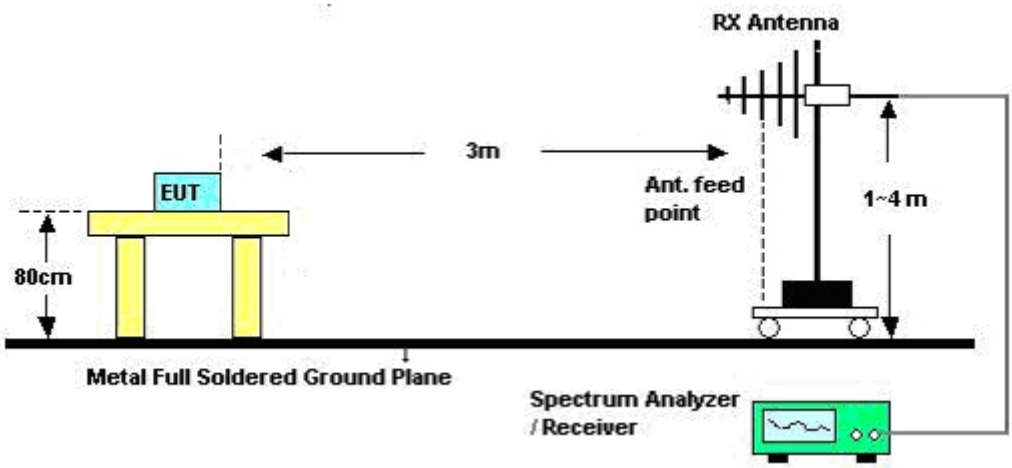
3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

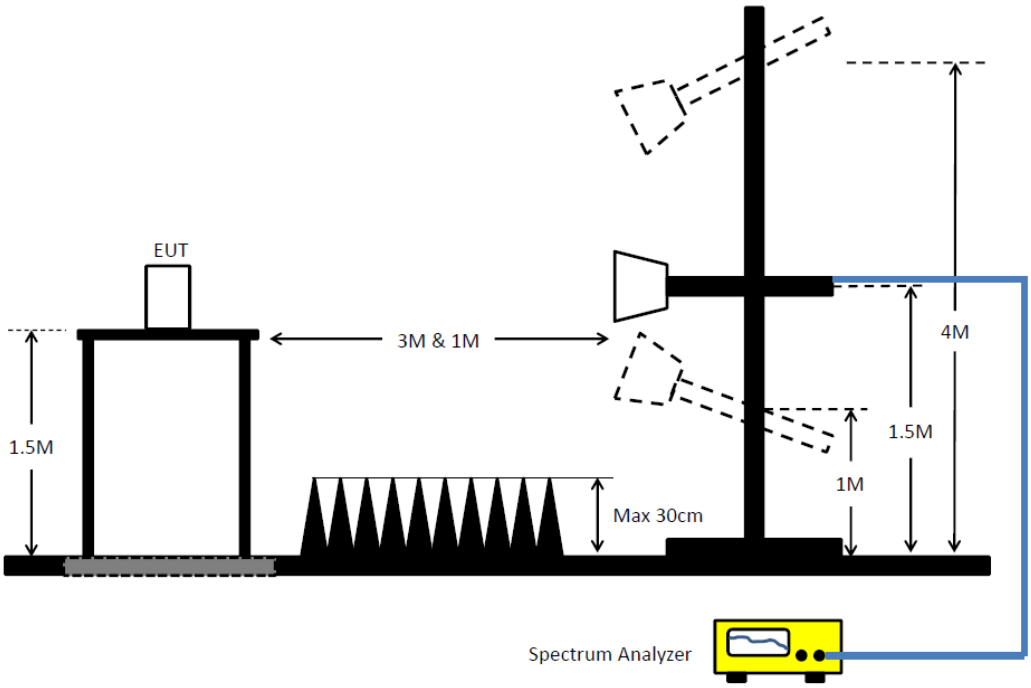
3.5.3 Test Procedures

Test Method			
▪ Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).			
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].			
▪ For the transmitter unwanted emissions shall be measured using following options below:			
	▪ Refer as KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.		
	▪ Refer as KDB 789033, clause G)1) for unwanted emissions into restricted bands.		
		☒ Refer as KDB 789033, G)6) Method VB (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW.	
		☒ Refer as KDB 789033, clause G)5) (ANSI C63.10, clause 4.1.4.2.2), measurement procedure peak limit.	
▪ For radiated measurement.			
	▪ Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.		
	▪ Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.		
	▪ Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.		
▪ The any unwanted emissions level shall not exceed the fundamental emission level.			
▪ All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.			

3.5.4 Test Setup

Transmitter Radiated Unwanted Emissions
9kHz ~30MHz

30MHz~1GHz


Above 1GHz



3.5.5 Transmitter Unwanted Emissions (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.5.6 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	04/Nov/2019	05/Nov/2020
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	12/Sep/2019	11/Sep/2020
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	24/Sep/2019	23/Sep/2020

NCR : Non-Calibration Require

Instrument for Conducted Test

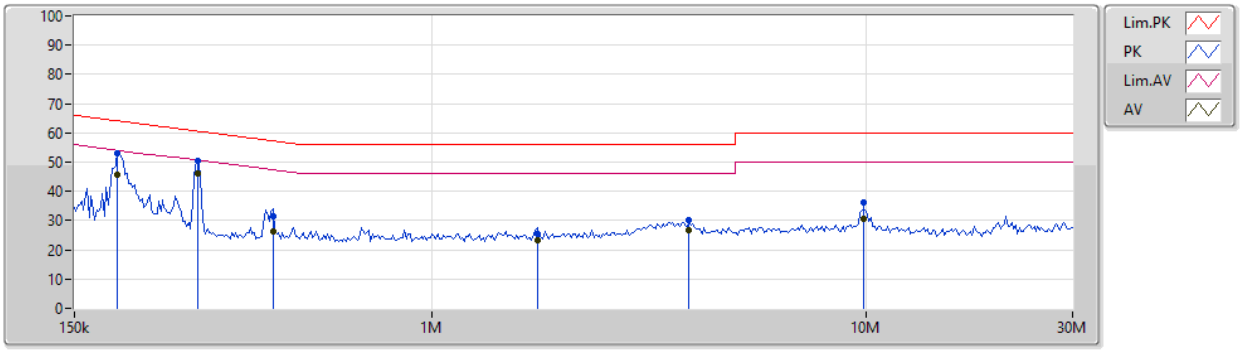
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	19/Mar/2020	18/Mar/2021
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	17/Feb/2020	16/Feb/2021
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	17/Feb/2020	16/Feb/2021

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	29/Aug/2019	28/Aug/2020
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz 3m	29/Aug/2019	28/Aug/2020
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	02/Jul/2019	01/Jul/2020
Microwave Preamplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	16/Oct/2019	15/Oct/2020
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9kHz - 40GHz	27/Feb/2020	26/Feb/2021
EMI Test Receiver	R&S	ESR3	102051	9kHz ~ 3.6GHz	28/May/2019	27/May/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	21/Mar/2020	20/Mar/2021
RF Cable-high 6m	SUHNER	SUCOFLEX104	10567868 / SN805193/4	1GHz~40GHz	03/Apr/2020	02/Apr/2021
RF Cable-high 7m	SUHNER	SUCOFLEX104	10567868 / SN805192/4	1GHz~40GHz	03/Apr/2020	02/Apr/2021
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 1GHz	28/Feb/2020	27/Feb/2021
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170339	18GHz ~ 40GHz	19/Apr/2019	18/Apr/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz ~ 18GHz	03/Jun/2019	02/Jun/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	16/Mar/2020	15/Mar/2021
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	05/Aug/2019	04/Aug/2020

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	Switching Power Supply mode		

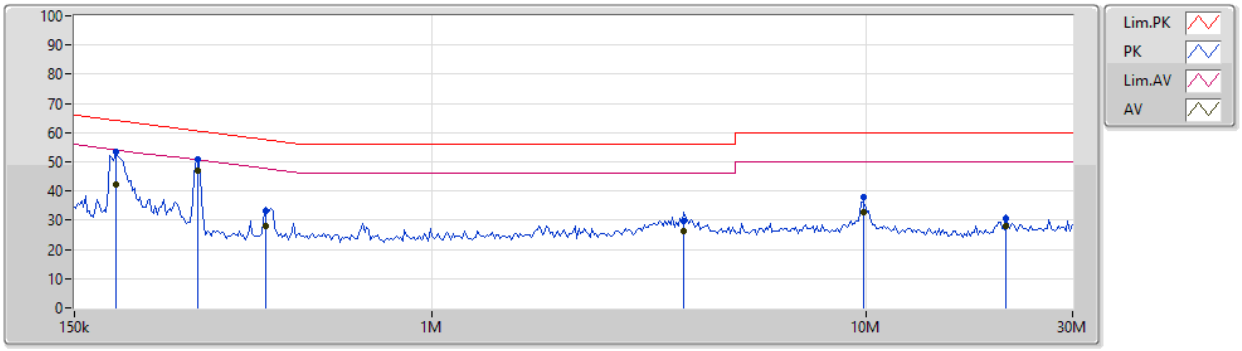
07/04/2020



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	188.574k	53.09	64.11	-11.02	19.62	Neutral	-	33.47	9.64	0.11	9.87
AV	188.574k	45.55	54.11	-8.56	19.62	Neutral	-	25.93	9.64	0.11	9.87
QP	289.269k	50.28	60.55	-10.27	19.62	Neutral	-	30.66	9.63	0.12	9.87
AV	289.269k	46.14	50.55	-4.41	19.62	Neutral	"Worst"	26.52	9.63	0.12	9.87
QP	430.682k	31.56	57.24	-25.68	19.63	Neutral	-	11.93	9.63	0.13	9.87
AV	430.682k	26.50	47.24	-20.74	19.63	Neutral	-	6.87	9.63	0.13	9.87
QP	1.752M	25.47	56.00	-30.53	19.66	Neutral	-	5.81	9.65	0.14	9.87
AV	1.752M	23.37	46.00	-22.63	19.66	Neutral	-	3.71	9.65	0.14	9.87
QP	3.922M	30.36	56.00	-25.64	19.73	Neutral	-	10.63	9.66	0.19	9.88
AV	3.922M	26.52	46.00	-19.48	19.73	Neutral	-	6.79	9.66	0.19	9.88
QP	9.894M	36.27	60.00	-23.73	19.85	Neutral	-	16.42	9.70	0.27	9.88
AV	9.894M	30.42	50.00	-19.58	19.85	Neutral	-	10.57	9.70	0.27	9.88

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	Switching Power Supply mode		

07/04/2020



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	186.707k	53.59	64.18	-10.59	19.63	Line	-	33.96	9.65	0.11	9.87
AV	186.707k	42.37	54.18	-11.81	19.63	Line	-	22.74	9.65	0.11	9.87
QP	289.269k	50.88	60.55	-9.67	19.63	Line	-	31.25	9.64	0.12	9.87
AV	289.269k	46.86	50.55	-3.69	19.63	Line	"Worst"	27.23	9.64	0.12	9.87
QP	413.877k	33.03	57.57	-24.54	19.64	Line	-	13.39	9.64	0.13	9.87
AV	413.877k	28.19	47.57	-19.38	19.64	Line	-	8.55	9.64	0.13	9.87
QP	3.807M	29.68	56.00	-26.32	19.72	Line	-	9.96	9.66	0.18	9.88
AV	3.807M	26.40	46.00	-19.60	19.72	Line	-	6.68	9.66	0.18	9.88
QP	9.894M	37.76	60.00	-22.24	19.84	Line	-	17.92	9.69	0.27	9.88
AV	9.894M	32.70	50.00	-17.30	19.84	Line	-	12.86	9.69	0.27	9.88
QP	21.077M	30.67	60.00	-29.33	19.88	Line	-	10.79	9.62	0.37	9.89
AV	21.077M	27.81	50.00	-22.19	19.88	Line	-	7.93	9.62	0.37	9.89

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	15.06M	19.406M	19M4D1D	15.06M	19.406M
802.11n HT20_Nss1,(MCS0)_1TX	16.32M	19.214M	19M2D1D	16.32M	19.214M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;
Max-OBW = Maximum99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;
Min-OBW = Minimum 99% occupied bandwidth;

Result

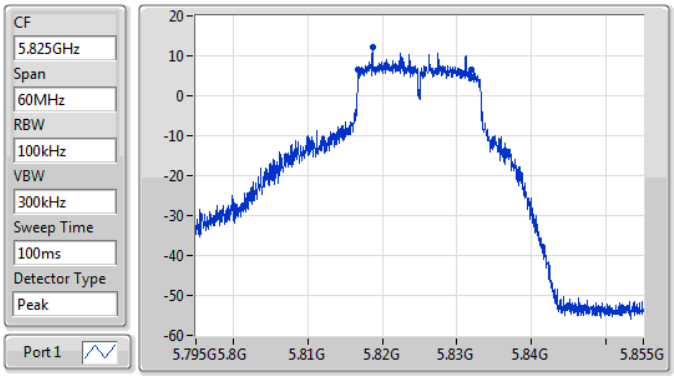
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-
5825MHz	Pass	500k	15.06M	19.406M
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-
5825MHz	Pass	500k	16.32M	19.214M

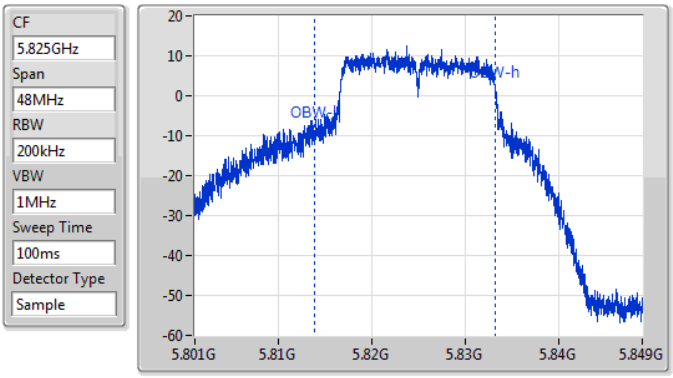
Port X-N dB = Port **X** 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band
Port X-OBW = Port **X** 99% occupied bandwidth;

802.11a_Nss1,(6Mbps)_1TX EBW

5825MHz

08/04/2020



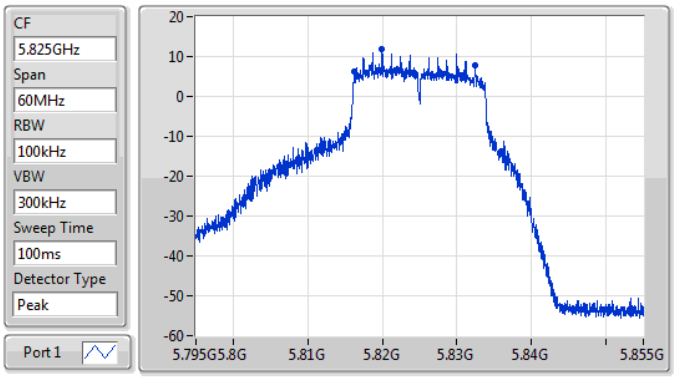


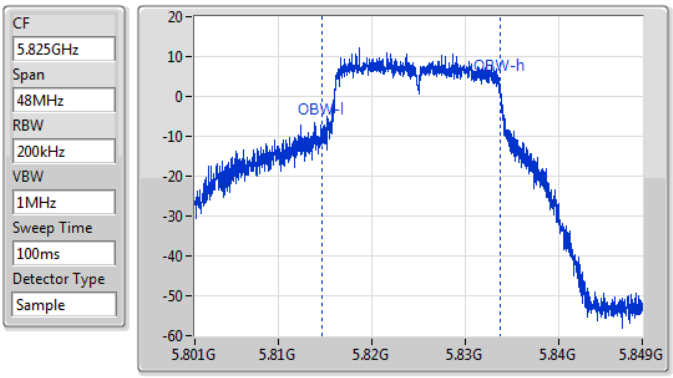
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.06M	5.81681G	5.83187G	19.406M	5.81387G	5.833276G	500k	1

802.11n HT20_Nss1,(MCS0)_1TX EBW

5825MHz

08/04/2020





6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.32M	5.81618G	5.8325G	19.214M	5.814589G	5.833804G	500k	1

Summary

Mode	Total Power (dBm)	Total Power (W)	EIRP (dBm)	EIRP (W)
5.725-5.85GHz	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	23.12	0.20512	28.12	0.64863
802.11n HT20_Nss1,(MCS0)_1TX	22.59	0.18155	27.59	0.57412

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
5825MHz	Pass	5.00	23.12	23.12	30.00	28.12	36.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
5825MHz	Pass	5.00	22.59	22.59	30.00	27.59	36.00

DG = Directional Gain; **Port X** = Port X output power

Summary

Mode	PD (dBm/RBW)	EIRP PD (dBm/RBW)
5.725-5.85GHz	-	-
802.11a_Nss1,(6Mbps)_1TX	8.43	13.43
802.11n HT20_Nss1,(MCS0)_1TX	7.65	12.65

RBW = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;

Result

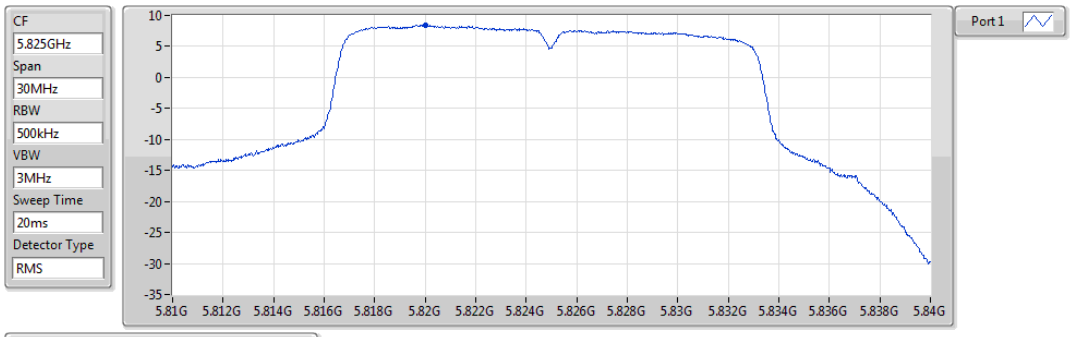
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)	EIRP PD (dBm/RBW)	EIRP PD Limit (dBm/RBW)
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
5825MHz	Pass	5.00	8.43	8.43	30.00	13.43	36.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
5825MHz	Pass	5.00	7.65	7.65	30.00	12.65	36.00

DG = Directional Gain; **RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

802.11a_Nss1,(6Mbps)_1TX PSD

5825MHz

08/04/2020

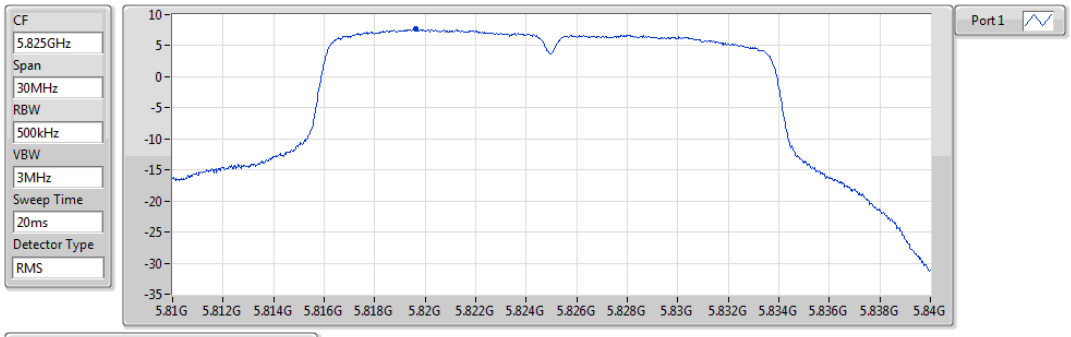


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
8.43	8.43	8.43

802.11n HT20_Nss1,(MCS0)_1TX PSD

5825MHz

08/04/2020



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
7.65	7.65	7.65

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-
802.11n HT40_Nss1,(MCS0)_1TX	Pass	PK	811.82M	32.24	46.00	-13.76	3	Vertical	0	1.00	-

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

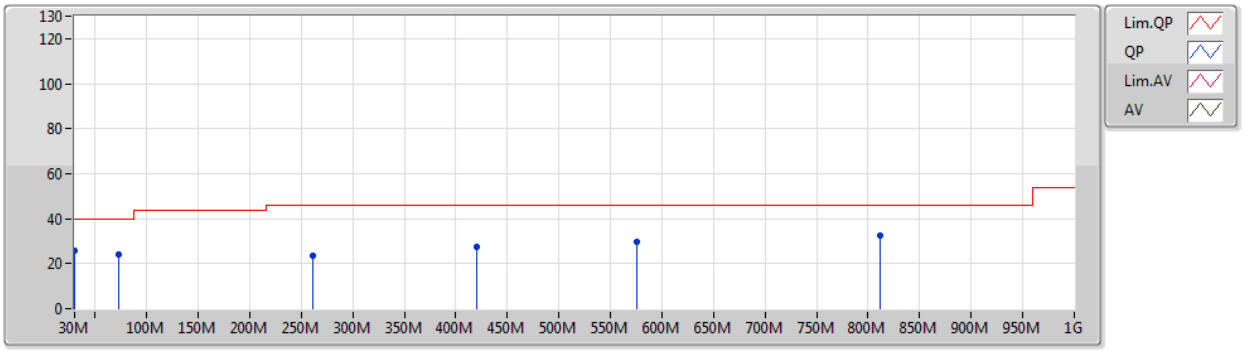
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-
5795MHz	Pass	PK	30M	25.60	40.00	-14.40	3	Vertical	0	1.00	-
5795MHz	Pass	PK	72.68M	24.23	40.00	-15.77	3	Vertical	0	1.00	-
5795MHz	Pass	PK	260.86M	23.56	46.00	-22.44	3	Vertical	0	1.00	-
5795MHz	Pass	PK	419.94M	27.22	46.00	-18.78	3	Vertical	0	1.00	-
5795MHz	Pass	PK	575.14M	29.57	46.00	-16.43	3	Vertical	0	1.00	-
5795MHz	Pass	PK	811.82M	32.24	46.00	-13.76	3	Vertical	0	1.00	-
5795MHz	Pass	PK	35.82M	25.23	40.00	-14.77	3	Horizontal	360	1.00	-
5795MHz	Pass	PK	88.2M	20.38	43.50	-23.12	3	Horizontal	360	1.00	-
5795MHz	Pass	PK	260.86M	24.13	46.00	-21.87	3	Horizontal	360	1.00	-
5795MHz	Pass	PK	450.98M	27.39	46.00	-18.61	3	Horizontal	360	1.00	-
5795MHz	Pass	PK	623.64M	30.75	46.00	-15.25	3	Horizontal	360	1.00	-
5795MHz	Pass	PK	759.44M	31.18	46.00	-14.82	3	Horizontal	360	1.00	-

802.11n HT40_Nss1,(MCS0)_1TX

5795MHz_Switching Power Supply

07/04/2020

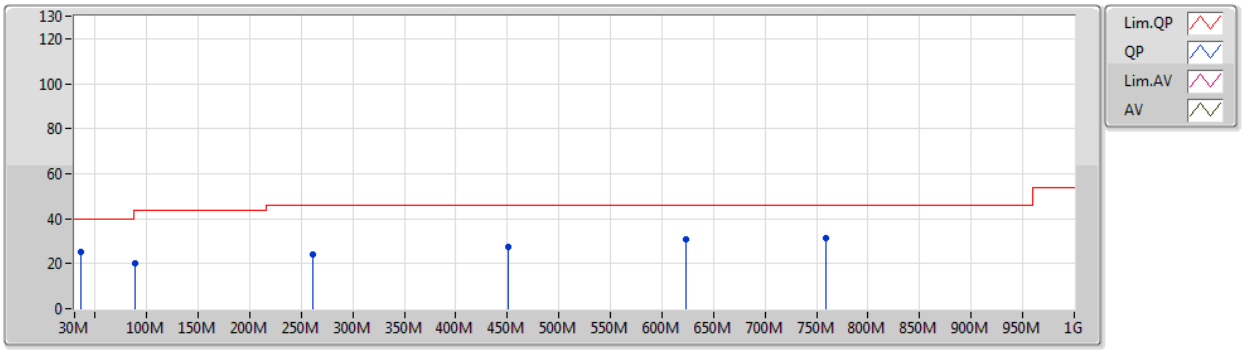


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	30M	25.60	40.00	-14.40	-3.93	3	Vertical	0	1.00	-	29.53	23.48	0.29	27.70
PK	72.68M	24.23	40.00	-15.77	-15.10	3	Vertical	0	1.00	-	39.33	11.52	1.11	27.73
PK	260.86M	23.56	46.00	-22.44	-5.78	3	Vertical	0	1.00	-	29.34	18.64	2.76	27.18
PK	419.94M	27.22	46.00	-18.78	-3.01	3	Vertical	0	1.00	-	30.23	21.83	3.21	28.05
PK	575.14M	29.57	46.00	-16.43	-0.84	3	Vertical	0	1.00	-	30.41	24.10	3.63	28.57
PK	811.82M	32.24	46.00	-13.76	1.06	3	Vertical	0	1.00	-	31.18	25.00	4.19	28.13

802.11n HT40_Nss1,(MCS0)_1TX

5795MHz_Switching Power Supply

07/04/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	35.82M	25.23	40.00	-14.77	-7.08	3	Horizontal	360	1.00	-	32.31	20.10	0.50	27.68
PK	88.2M	20.38	43.50	-23.12	-12.89	3	Horizontal	360	1.00	-	33.27	13.50	1.36	27.75
PK	260.86M	24.13	46.00	-21.87	-5.78	3	Horizontal	360	1.00	-	29.91	18.64	2.76	27.18
PK	450.98M	27.39	46.00	-18.61	-3.19	3	Horizontal	360	1.00	-	30.58	21.89	3.23	28.31
PK	623.64M	30.75	46.00	-15.25	-0.61	3	Horizontal	360	1.00	-	31.36	24.18	3.73	28.52
PK	759.44M	31.18	46.00	-14.82	0.71	3	Horizontal	360	1.00	-	30.47	24.88	4.13	28.30

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	Pass	PK	6.0122G	57.84	68.20	-10.36	3	Vertical	222	1.84	-
802.11n HT20_Nss1,(MCS0)_1TX	Pass	PK	6.017G	57.60	68.20	-10.60	3	Horizontal	249	1.37	-

Result

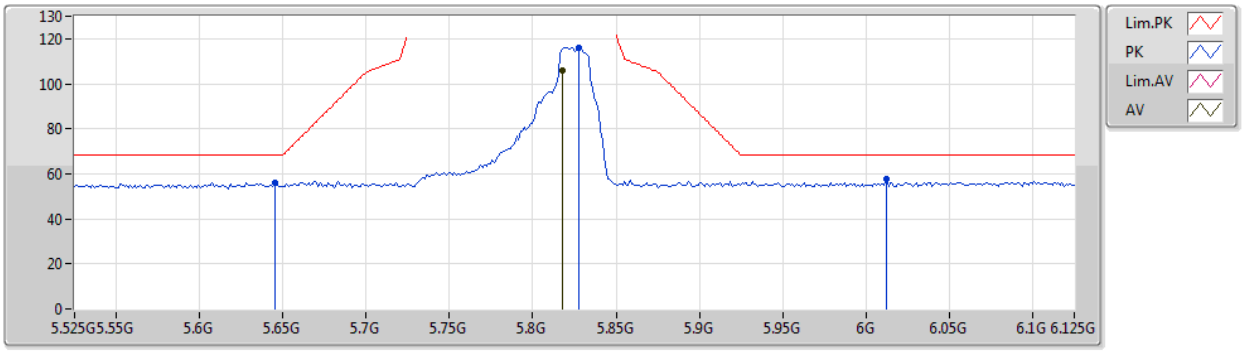
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-
5825MHz	Pass	AV	5.8178G	105.96	Inf	-Inf	3	Vertical	222	1.84	-
5825MHz	Pass	PK	5.645G	56.08	68.20	-12.12	3	Vertical	222	1.84	-
5825MHz	Pass	PK	5.8274G	116.11	Inf	-Inf	3	Vertical	222	1.84	-
5825MHz	Pass	PK	6.0122G	57.84	68.20	-10.36	3	Vertical	222	1.84	-
5825MHz	Pass	AV	5.8178G	94.57	Inf	-Inf	3	Horizontal	249	1.49	-
5825MHz	Pass	PK	5.6006G	56.31	68.20	-11.89	3	Horizontal	249	1.49	-
5825MHz	Pass	PK	5.8262G	104.52	Inf	-Inf	3	Horizontal	249	1.49	-
5825MHz	Pass	PK	6.071G	57.56	68.20	-10.64	3	Horizontal	249	1.49	-
5825MHz	Pass	AV	11.64646G	39.81	54.00	-14.19	3	Vertical	293	2.49	-
5825MHz	Pass	PK	11.64238G	53.72	74.00	-20.28	3	Vertical	293	2.49	-
5825MHz	Pass	AV	11.65576G	39.79	54.00	-14.21	3	Horizontal	201	1.04	-
5825MHz	Pass	PK	11.66272G	54.41	74.00	-19.59	3	Horizontal	201	1.04	-
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-
5825MHz	Pass	AV	5.819G	105.11	Inf	-Inf	3	Vertical	222	2.08	-
5825MHz	Pass	PK	5.5826G	56.02	68.20	-12.18	3	Vertical	222	2.08	-
5825MHz	Pass	PK	5.8214G	114.68	Inf	-Inf	3	Vertical	222	2.08	-
5825MHz	Pass	PK	6.0566G	57.04	68.20	-11.16	3	Vertical	222	2.08	-
5825MHz	Pass	AV	5.819G	93.85	Inf	-Inf	3	Horizontal	249	1.37	-
5825MHz	Pass	PK	5.5478G	56.25	68.20	-11.95	3	Horizontal	249	1.37	-
5825MHz	Pass	PK	5.8202G	103.16	Inf	-Inf	3	Horizontal	249	1.37	-
5825MHz	Pass	PK	6.017G	57.60	68.20	-10.60	3	Horizontal	249	1.37	-
5825MHz	Pass	AV	11.65966G	40.16	54.00	-13.84	3	Vertical	122	1.04	-
5825MHz	Pass	PK	11.64292G	53.74	74.00	-20.26	3	Vertical	122	1.04	-
5825MHz	Pass	AV	11.66278G	40.19	54.00	-13.81	3	Horizontal	358	2.31	-
5825MHz	Pass	PK	11.66254G	53.69	74.00	-20.31	3	Horizontal	358	2.31	-

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

802.11a_Nss1,(6Mbps)_1TX

5825MHz_TX

07/04/2020

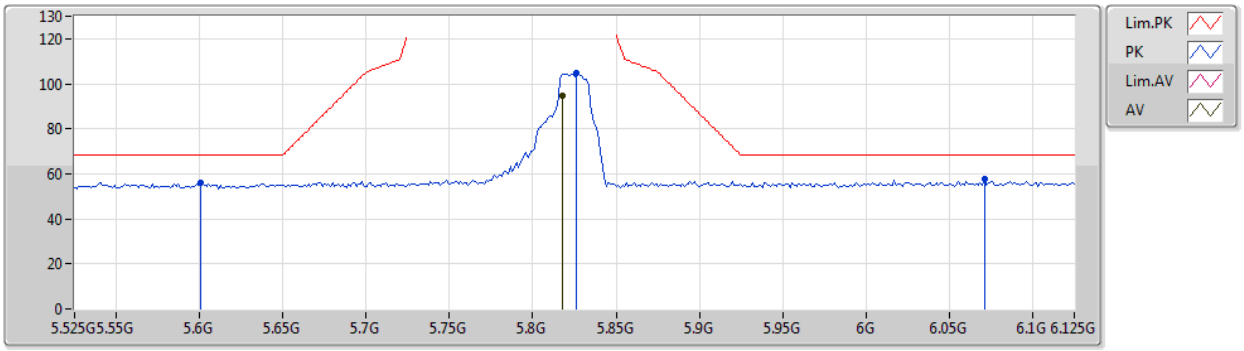


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	5.8178G	105.96	Inf	-Inf	6.05	3	Vertical	222	1.84	-	99.91	32.34	7.68	33.97
PK	5.645G	56.08	68.20	-12.12	5.73	3	Vertical	222	1.84	-	50.35	32.10	7.57	33.94
PK	5.8274G	116.11	Inf	-Inf	6.08	3	Vertical	222	1.84	-	110.03	32.36	7.69	33.97
PK	6.0122G	57.84	68.20	-10.36	6.45	3	Vertical	222	1.84	-	51.39	32.64	7.81	34.00

802.11a_Nss1,(6Mbps)_1TX

5825MHz_TX

07/04/2020

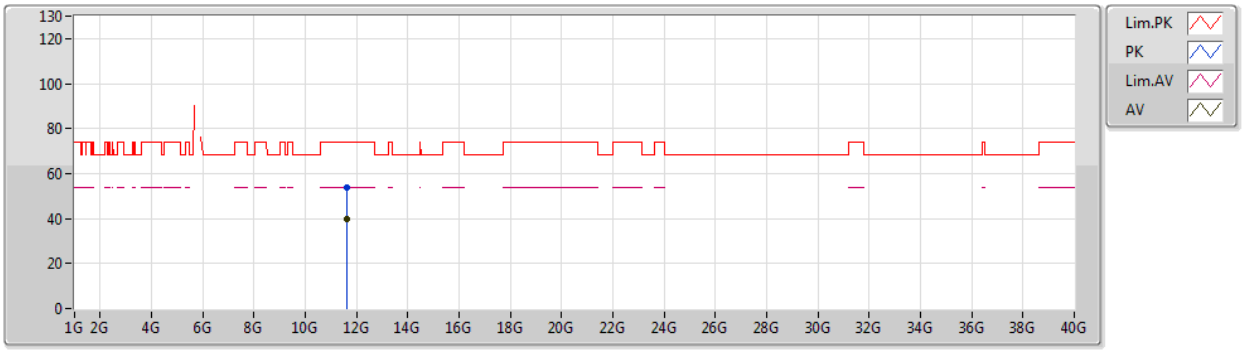


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	5.8178G	94.57	Inf	-Inf	6.05	3	Horizontal	249	1.49	-	88.52	32.34	7.68	33.97
PK	5.6006G	56.31	68.20	-11.89	5.64	3	Horizontal	249	1.49	-	50.67	32.04	7.54	33.94
PK	5.8262G	104.52	Inf	-Inf	6.08	3	Horizontal	249	1.49	-	98.44	32.36	7.69	33.97
PK	6.071G	57.56	68.20	-10.64	6.66	3	Horizontal	249	1.49	-	50.90	32.81	7.85	34.00

802.11a_Nss1,(6Mbps)_1TX

5825MHz_TX

07/04/2020

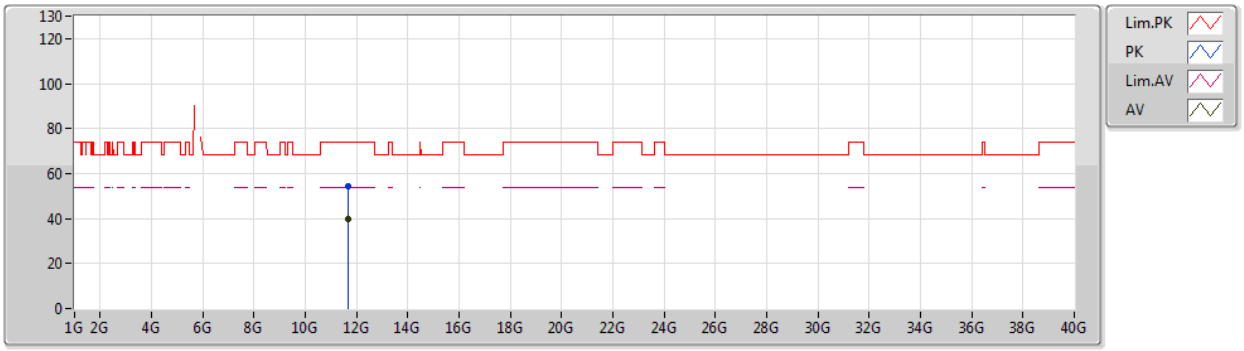


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	11.64646G	39.81	54.00	-14.19	16.23	3	Vertical	293	2.49	-	23.58	39.42	10.76	33.95
PK	11.64238G	53.72	74.00	-20.28	16.24	3	Vertical	293	2.49	-	37.48	39.43	10.76	33.95

802.11a_Nss1,(6Mbps)_1TX

5825MHz_TX

07/04/2020

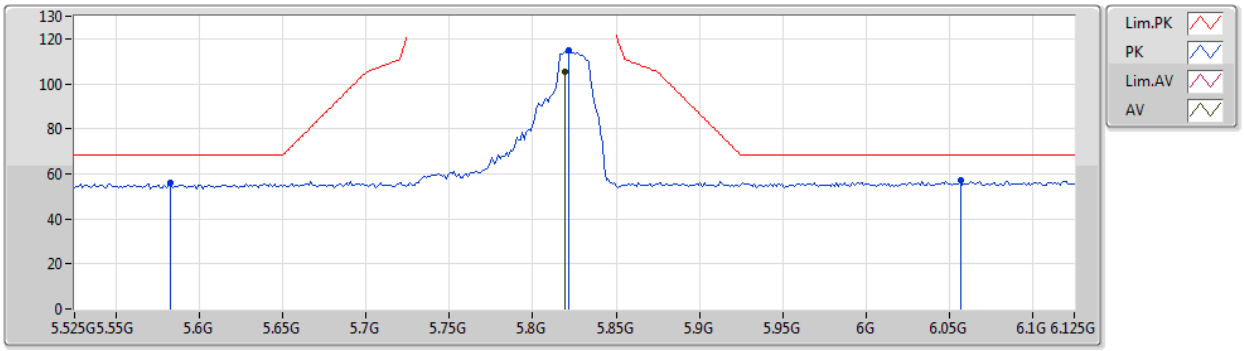


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	11.65576G	39.79	54.00	-14.21	16.22	3	Horizontal	201	1.04	-	23.57	39.41	10.76	33.95
PK	11.66272G	54.41	74.00	-19.59	16.21	3	Horizontal	201	1.04	-	38.20	39.40	10.77	33.96

802.11n HT20_Nss1,(MCS0)_1TX

5825MHz_TX

07/04/2020

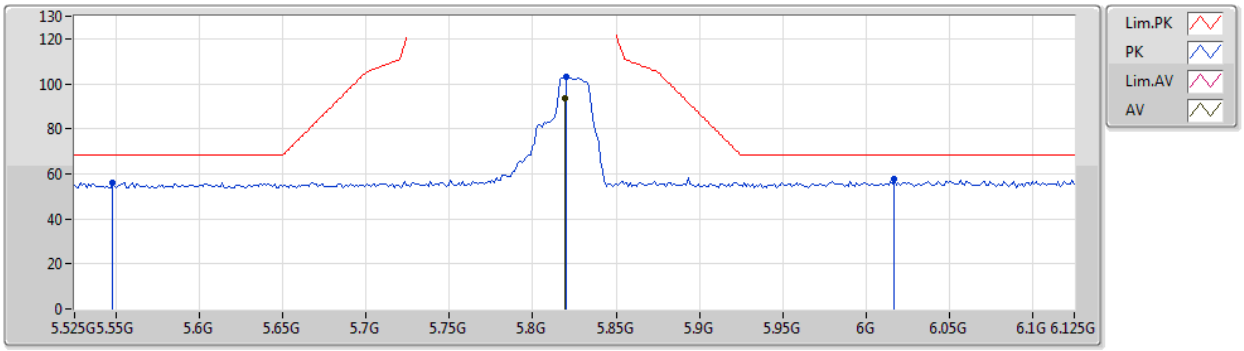


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	5.819G	105.11	Inf	-Inf	6.06	3	Vertical	222	2.08	-	99.05	32.35	7.68	33.97
PK	5.5826G	56.02	68.20	-12.18	5.61	3	Vertical	222	2.08	-	50.41	32.02	7.53	33.94
PK	5.8214G	114.68	Inf	-Inf	6.06	3	Vertical	222	2.08	-	108.62	32.35	7.68	33.97
PK	6.0566G	57.04	68.20	-11.16	6.61	3	Vertical	222	2.08	-	50.43	32.77	7.84	34.00

802.11n HT20_Nss1,(MCS0)_1TX

5825MHz_TX

07/04/2020

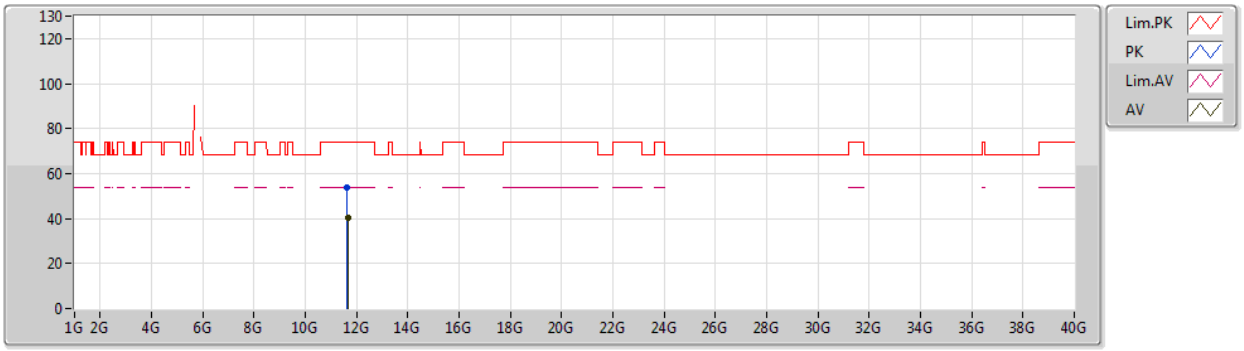


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	5.819G	93.85	Inf	-Inf	6.06	3	Horizontal	249	1.37	-	87.79	32.35	7.68	33.97
PK	5.5478G	56.25	68.20	-11.95	5.55	3	Horizontal	249	1.37	-	50.70	31.97	7.51	33.93
PK	5.8202G	103.16	Inf	-Inf	6.06	3	Horizontal	249	1.37	-	97.10	32.35	7.68	33.97
PK	6.017G	57.60	68.20	-10.60	6.46	3	Horizontal	249	1.37	-	51.14	32.65	7.81	34.00

802.11n HT20_Nss1,(MCS0)_1TX

5825MHz_TX

07/04/2020

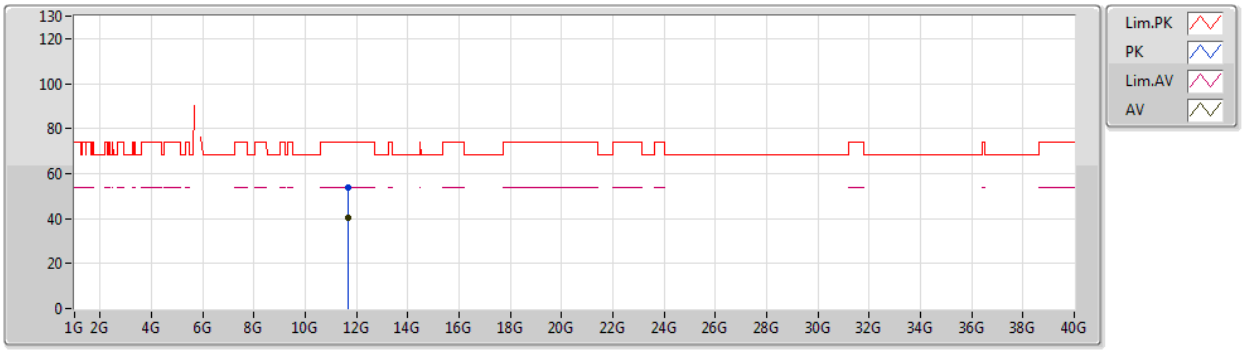


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	11.65966G	40.16	54.00	-13.84	16.21	3	Vertical	122	1.04	-	23.95	39.41	10.76	33.96
PK	11.64292G	53.74	74.00	-20.26	16.24	3	Vertical	122	1.04	-	37.50	39.43	10.76	33.95

802.11n HT20_Nss1,(MCS0)_1TX

5825MHz_TX

07/04/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	11.66278G	40.19	54.00	-13.81	16.21	3	Horizontal	358	2.31	-	23.98	39.40	10.77	33.96
PK	11.66254G	53.69	74.00	-20.31	16.21	3	Horizontal	358	2.31	-	37.48	39.40	10.77	33.96

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)