

#### TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 1

Keysight Spectrum Analyzer - Swept SA           RF         50 Ω         AC		SENSE:INT	ALIGN AUTO		
arker 1 5.79104000000	PNO: Fast IFGain:Low		Avg Type: RMS Avg Hold:>100/100	TRACE 123456 TYPE M WWWW DET A N N N N N	Peak Search
dB/div Ref 20.00 dBm			Mkr	5.791 04 GHz 1.102 dBm	Next Pea
0		<u> </u>			Next Pk Rig
0	y a way of a set of the	and and a second	man		Next Pk Lo
0 MMMwapanaw				WWW when w	Marker De
o o					Mkr→(
0					Mkr→RefL
nter 5.79500 GHz es BW 510 kHz	#VBW	1.5 MHz*	Sweep 1.	Span 60.00 MHz 000 ms (1001 pts)	<b>М</b> а 1 о
			STATUS		

TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 2



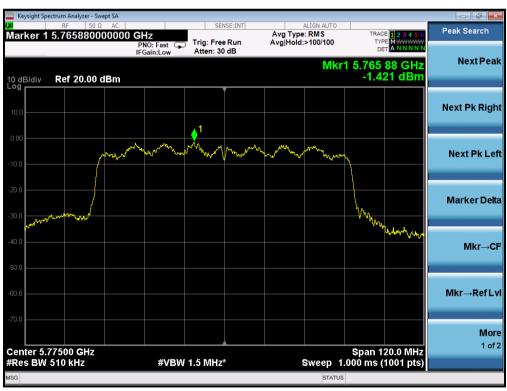
## 802.11ac80 TEST RESULT TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz AT CHAIN 1

TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz AT CHAIN 2





#### TEST PLOT OF SPECTRAL DENSITY FOR 5775MHz AT CHAIN 1



TEST PLOT OF SPECTRAL DENSITY FOR 5775MHz AT CHAIN 2

## 8. CONDUCTED SPURIOUS EMISSION

## 8.1. MEASUREMENT PROCEDURE

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2, Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 3. Set SPA Trace 1 Max hold, then View.

Note: The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

#### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

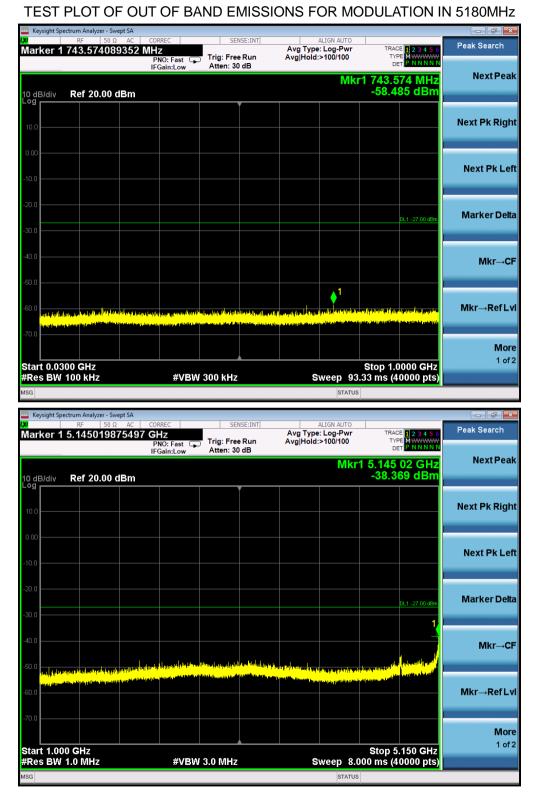
The same as described in section 8.2.

#### 8.3. MEASUREMENT EQUIPMENT USED

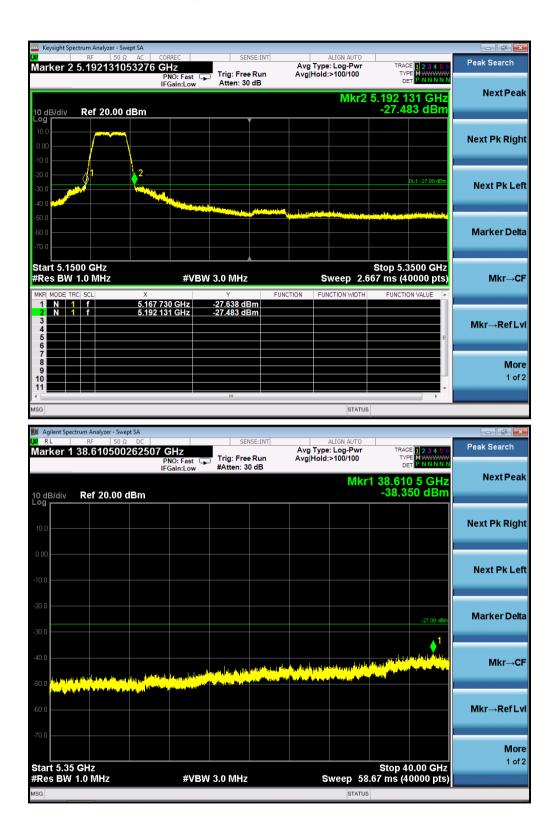
The same as described in section 6.

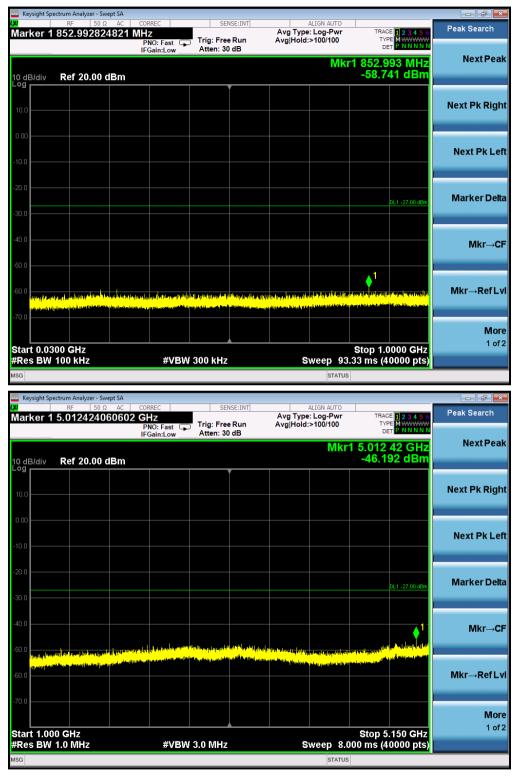
#### 8.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT							
Applieghte Limite	Measurement R						
Applicable Limits	Test channel	Criteria					
-27dBm/MHz	5150MHz-5250MHz	PASS					
All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edgeincreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge, and from 5 MHz above or below the band edge.	5725MHz-5850MHz	PASS					

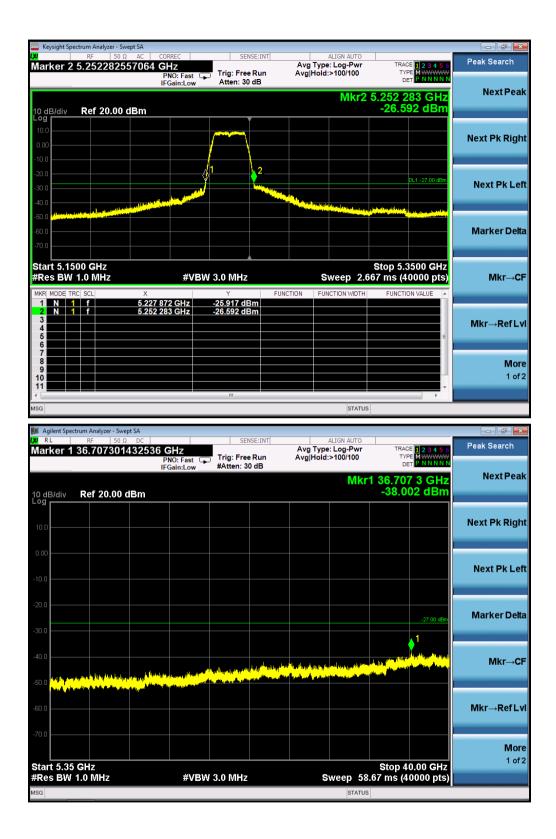


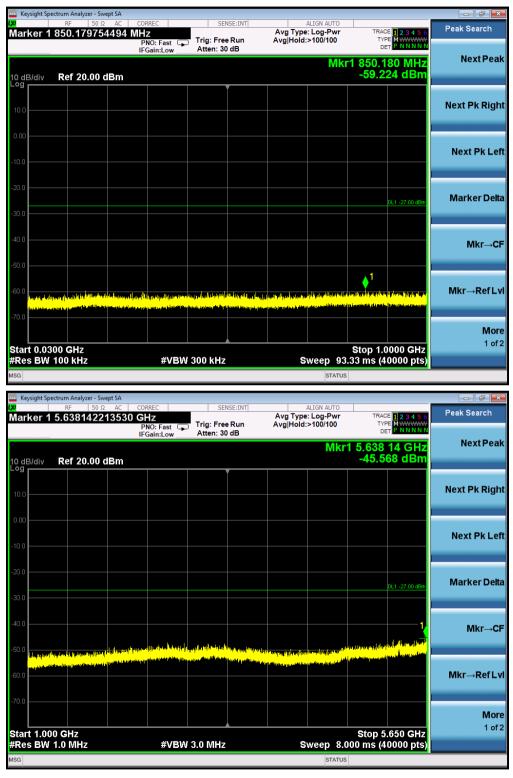
#### FOR 802.11A20 MODULATION



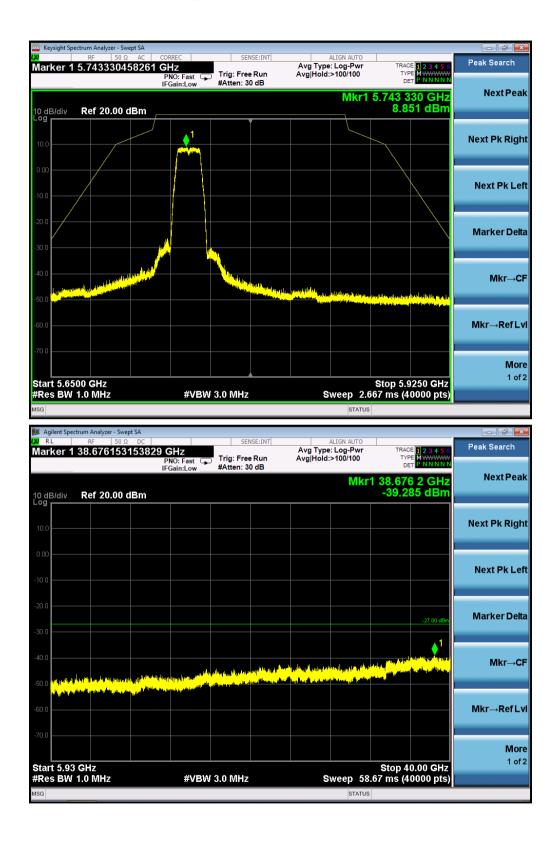


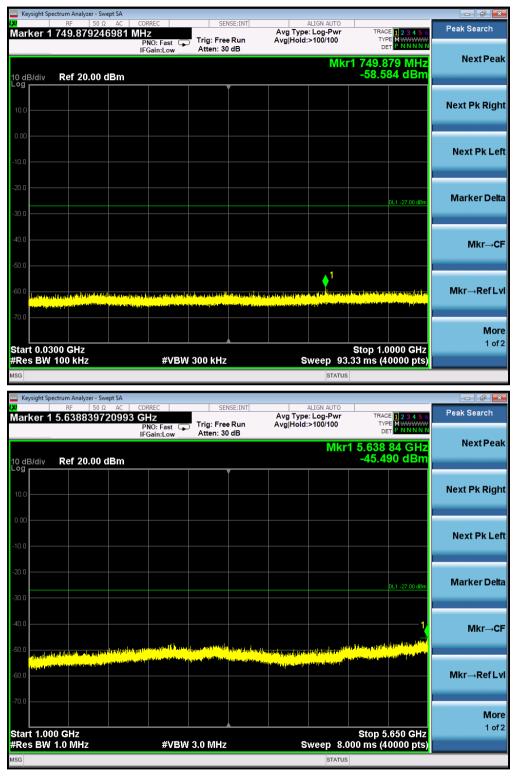
## TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5240MHz



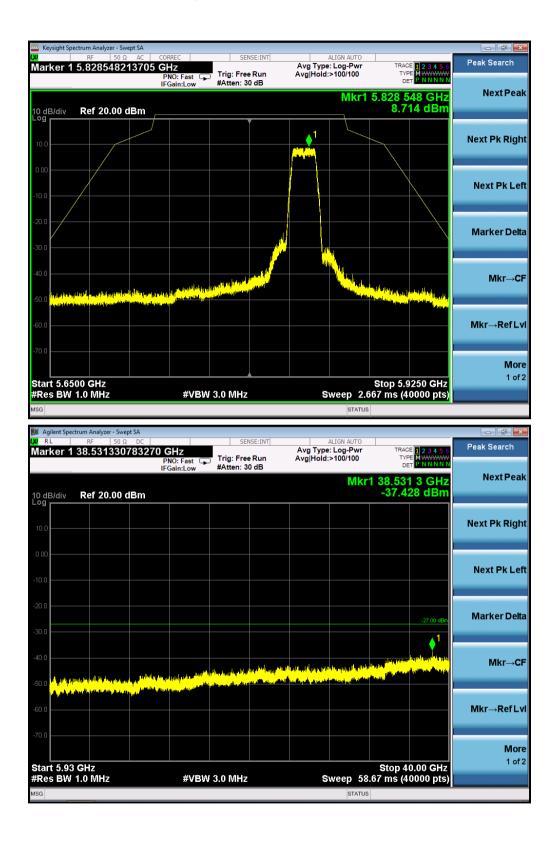


## TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5745MHz





## TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5825MHz

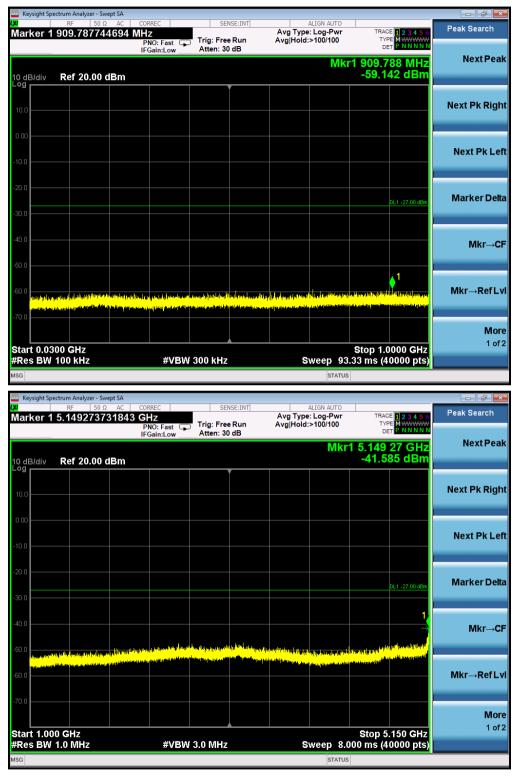


## FOR 802.11N40 MODULATION

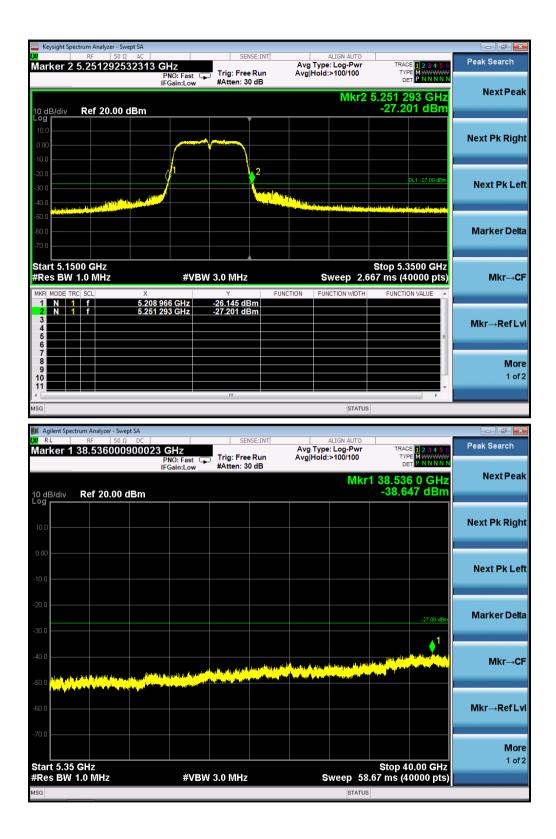
## TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5190MHz

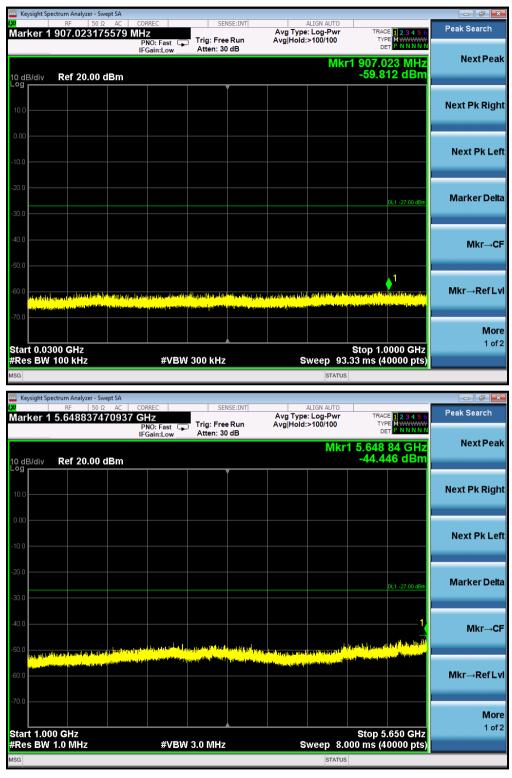
larker 1	RF 50 Ω 952.7840696	i02 MHz	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE MWWWW	Peak Search
	_	PNO: Fast 🕞	Atten: 30 dB	Avginoid:>100/100	DET	
) dB/div	Ref 20.00 dB	m		Mkr1	952.784 MHz -59.107 dBm	NextPea
			Ĭ			
0.0						Next Pk Rigl
0.0						
).00						
0.0						Next Pk Le
0.0						
0.0						Manland
0.0					DL1 -27.00 dBm	Marker Del
0.0						
0.0						Mkr→C
io.o						
					<b>1</b>	
0.0 <mark>Projekty -</mark>	THE REPORT OF THE PARTY OF THE	a da	a ta far ya ka walaya a ka	n ja la sera kana kana kana kana kana kana kana ka		Mkr→RefL
70.0	S. Distill, Street international property		Anting a la stand the shirt was a se	and the second sec	aris a manager philip and a second second	
0.0						Мо
tart 0.03	300 GHz		· •	 S	top 1.0000 GHz	1 of
tart 0.03 Res BW	300 GHz / 100 kHz	#VBW	/ 300 kHz		6top 1.0000 GHz 3 ms (40000 pts)	1 of
itart 0.03 Res BW	300 GHz 100 kHz	#VBW	/ 300 kHz			1 of
Res BW	<b>100 kHz</b> Dectrum Analyzer - Swept	SA		Sweep 93.3		- P
Res BW	100 kHz	sa ac correc 0 029 GHz	SENSE:INT	Sweep 93.33 STATUS ALIGN AUTO Avg Type: Log-Pwr	3 ms (40000 pts)	
Res BW	2 100 kHz pectrum Analyzer - Swept RF 50 Ω	SA AC CORREC	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 2 34 5 6 TYPE DET PNNNN	Peak Search
Res BW G Keysight Sp larker 1	2 100 kHz pectrum Analyzer - Swept RF 50 Ω	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts)	Peak Search
Res BW	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE MANNIN DET PNNNNN 5.146 16 GHz	
Res BW G Keysight Sp larker 1 0 dB/div	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE MANNIN DET PNNNNN 5.146 16 GHz	Peak Search Next Pea
Res BW sg keysight Sp larker 1 o dB/div o g 0 0	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE MANNIN DET PNNNNN 5.146 16 GHz	Peak Search Next Pea
Res BW sg keysight Sp larker 1 o dB/div o g 0 0	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE MANNIN DET PNNNNN 5.146 16 GHz	Peak Search Next Pea Next Pk Rig
Res BW G Keysight Sp larker 1 0 dB/div 0 0 0 0 0 0 0 0 0 0 0 0 0	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE MANNIN DET PNNNNN 5.146 16 GHz	Peak Search
Res BW G Arker 1 O dB/div O dB/div O dB/div O dB/div	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE MANNIN DET PNNNNN 5.146 16 GHz	Peak Search Next Pea Next Pk Rig
Res BW G Arker 1 O dB/div O dB/div O dB/div O dB/div	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE DET PINNINN 5.146 16 GHz -28.472 dBm	Peak Search Next Pea Next Pk Rigi
Res BW Keysight Sp larker 1	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE MANNIN DET PNNNNN 5.146 16 GHz	Peak Search Next Pea Next Pk Rig
Res BW Garage Control	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC 029 GHz PNO: Fast IFGain:Low	SENSE:INT	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	3 ms (40000 pts) TRACE 23456 TYPE DET PINNINN 5.146 16 GHz -28.472 dBm	Peak Search Next Pea Next Pk Rig
Res BW G Arker 1 O dB/div O dB/div O dB/div O dB/div	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC   CORREC   PNO: Fast ⊂ IFGain:Low ∽	SENSE:INT Trig: Free Run Atten: 30 dB	Sweep 93.3: STATUS ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	3 ms (40000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW G G G G G G G G G G G G G G G G G G G	2 100 kHz Dectrum Analyzer - Swept RF 50 Ω 1 5.1461611154	SA AC CORREC U29 GHZ PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run Atten: 30 dB	Sweep 93.3:	3 ms (40000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le
Res BW G Keysight Sp arker 1 arker 1 odb/div g d d d d d d d d d d d d d d d d d d	2 100 kHz sectrum Analyzer - Swept RF 50 Ω 1 5.1461611154 Ref 20.00 dB	SA AC CORREC U29 GHZ PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run Atten: 30 dB	Sweep 93.3:	3 ms (40000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De
Res BW G G G G G G G G G G G G G G G G G G G	2 100 kHz sectrum Analyzer - Swept RF 50 Ω 1 5.1461611154 Ref 20.00 dB	SA AC CORREC U29 GHZ PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run Atten: 30 dB	Sweep 93.3:	3 ms (40000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le Marker De
Res BW G G G G G G G G G G G G G G G G G G G	2 100 kHz sectrum Analyzer - Swept RF 50 Ω 1 5.1461611154 Ref 20.00 dB	SA AC CORREC U29 GHZ PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run Atten: 30 dB	Sweep 93.3:	3 ms (40000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le Marker Del Mkr-C
Res BW           G           Keysight Sp           arker 1           arker 1           0	2 100 kHz sectrum Analyzer - Swept RF 50 Ω 1 5.1461611154 Ref 20.00 dB	SA AC CORREC U29 GHZ PN0: Fast IFGain:Low	SENSE:INT Trig: Free Run Atten: 30 dB	Sweep 93.3:	3 ms (40000 pts)	Peak Search Next Peak Next Pk Rig Next Pk Lo Marker De Mkr-A
Res BW G G G G G G G G G G G G G G G G G G G	2 100 KH2 RF 50 Ω 1 5.146161154 Ref 20.00 dB 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SA AC   CORREC   PNO: Fast IFGain:Low IFGAIN:Low	SENSE:INT Trig: Free Run Atten: 30 dB	Sweep 93.3: Status ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	3 ms (40000 pts)	Peak Search Next Pea Next Pk Rig Next Pk Le

🤤 Keysight Spectrum Analyzer - Swept					
₩ RF 50 Ω Marker 2 5.211371534		SENSE:INT	ALIGN AUTO	TRACE 1 2 3 4 5 6	Peak Search
	PNO: Fast G	Trig: Free Run #Atten: 30 dB	Avg Hold:>100/100		
			Mkr2	5.211 372 GHz	Next Peak
10 dB/div Ref 20.00 dE	3m	Ť		-26.427 dBm	
10.0					Next Pk Right
-10.0					Ū
-20.0	2				
-30.0				DL1 -27.00 dBm	Next Pk Left
-40.0				het Differentief fallen besteren die Marine die	
-50.0					Marker Delta
-70.0					Marker Della
Start 5.1500 GHz #Res BW 1.0 MHz	#VBV	V 3.0 MHz	Sweep 2.6	Stop 5.3500 GHz 67 ms (40000 pts)	Mkr→CF
MKR MODE TRC SCL	X		NCTION FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 f 2 N 1 f	5.168 950 GHz 5.211 372 GHz	-27.767 dBm -26.427 dBm			
3 4 4					Mkr→RefLvl
5 6				E	
7 8 9					More
10				_	1 of 2
	1	III		- F	
MSG					
M3G			STATUS		
Agilent Spectrum Analyzer - Swept S		SENSE-INT			
Milent Spectrum Analyzer - Swept S	DC 32026 GHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	TRACE 123456	Peak Search
🃁 Agilent Spectrum Analyzer - Swept S 🞾 RL RF 50 Ω	DC		ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100		Peak Search
Mailent Spectrum Analyzer - Swept 5 M RL RF 50 Ω Marker 1 39,09128103	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNNN	Peak Search
🃁 Agilent Spectrum Analyzer - Swept S 🞾 RL RF 50 Ω	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100		Peak Search
Agilent Spectrum Analyzer - Swept 3           RL         RF         50 Ω           Marker 1 39.09128103           10 dB/div         Ref 20.00 dE	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNNN	Peak Search Next Peak
Marker 1 39.09128103 10 dB/div Ref 20.00 dE	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNNN	Peak Search Next Peak
Marker 1 39.09128103 10 dB/div Ref 20.00 dE	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNNN	Peak Search Next Peak Next Pk Right
Marker 1 39.09128103 10 dB/div Ref 20.00 dE 10 0	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNNN	Peak Search Next Peak Next Pk Right
Agilent Spectrum Analyzer - Swept S           Marker 1         RF         50 Ω           Marker 1         39.09128103           10 dB/div         Ref 20.00 dE           0 g         0.00           10 0         0.00	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNNN	Peak Search Next Peak Next Pk Right
Image: Agilent Spectrum Analyzer - Swept S           Image: Agilent S	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
Agilent Spectrum Analyzer - Swept S           Marker 1         RF         50 Ω           Marker 1         39.09128103           10 dB/div         Ref 20.00 dE           0 g         0.00           10 0         0.00	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	DET P NNNNN	Peak Search Next Peak Next Pk Right Next Pk Left
Agilent Spectrum Analyzer - Swept 5           R RL         RF         50 Ω           Marker 1         39.09128103           10 dB/div         Ref 20.00 dE           00         00         00           10 0         00         00         00           10 0         000         000         000         000           -10 0         -20 0 <th>DC <b>32026 GHz</b> PNO: Fast IFGain:Low</th> <th>Trig: Free Run</th> <th>ALIGN AUTO Avg Type: Log-Pwr Avg Hold:&gt;100/100</th> <th>39.091 3 GHz -38.283 dBm</th> <th>Peak Search Next Peak Next Pk Right Next Pk Left</th>	DC <b>32026 GHz</b> PNO: Fast IFGain:Low	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
Image: Agilent Spectrum Analyzer - Swept S           Image: Agilent S	DC 32026 GHz PN0: Fast IFGain:Low 3m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr/	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left
Agilent Spectrum Analyzer - Swept 5           R RL         RF         50 Ω           Marker 1         39.09128103           10 dB/div         Ref 20.00 dE           00         00         00           10 0         00         00         00           10 0         000         000         000         000           -10 0         -20 0 <th>DC 32026 GHz PN0: Fast IFGain:Low 3m</th> <th>Trig: Free Run #Atten: 30 dB</th> <th>ALIGN AUTO Avg Type: Log-Pwr Avg Hold:&gt;100/100</th> <th>39.091 3 GHz -38.283 dBm</th> <th>Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta</th>	DC 32026 GHz PN0: Fast IFGain:Low 3m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta
Agilent Spectrum Analyzer - Swept S           Agilent Spectrum Analyzer - Swept S           Marker 1 39.09128103           Io dB/div         Ref 20.00 dE           0 0         Ref 20.00 dE           -10 0         Ref 20.00 dE           -20 0         Ref 20.00 dE           -30 0         Ref 20.00 dE           -40 0         Ref 20.00 dE	DC 32026 GHz PN0: Fast IFGain:Low 3m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr/	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Agilent Spectrum Analyzer - Swept S           Marker 1         RF         50 Ω           Marker 1         39.09128103           Odd B/div         Ref 20.00 dE           10 0         000           -000         -000           -10 0         -000           -30 0         -000	DC 32026 GHz PN0: Fast IFGain:Low 3m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr/	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Agilent Spectrum Analyzer - Swept S           Agilent Spectrum Analyzer - Swept S           Marker 1 39.09128103           Io dB/div         Ref 20.00 dE           0 0         Ref 20.00 dE           -10 0         Ref 20.00 dE           -20 0         Ref 20.00 dE           -30 0         Ref 20.00 dE           -40 0         Ref 20.00 dE	DC 32026 GHz PN0: Fast IFGain:Low 3m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr/	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF
Agilent Spectrum Analyzer - Swept S           Marker 1         RF         S0 Ω           Marker 1         39.09128103           10 dB/div         Ref 20.00 dE           0 dB/div         Ref 20.00 dE           10 dB/div         Ref 20.00 dE           10 dB/div         Ref 20.00 dE           -0 dB/div         Ref 20.00 dE           -0 dB/div         Ref 20.00 dE           -0 dB/div         Ref 20.00 dE           -10 dB/div         Ref 20.00 dE           -20 dB/div         Ref 20.00 dE           -30 dB/div         Ref 20.00 dE           -40 dB/div         Ref 20.00 dE           -50 dB/div         Ref 20.00 dE           -60 dB/div         Ref 20.00 dE	DC 32026 GHz PN0: Fast IFGain:Low 3m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100 Mkr/	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More
Agilent Spectrum Analyzer - Swept S         Marker 1 39.09128103         10 dB/div       Ref 20.00 dE         -0 dB/div	DC 32026 GHz PRO: Fast IFGain:Low 33m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	39.091 3 GHz -38.283 dBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF Mkr→Ref Lvl More
Agilent Spectrum Analyzer - Swept S           Marker 1 39.09128103           Marker 1 39.09128103           Odd B/div         Ref 20.00 dE           10.0	DC 32026 GHz PRO: Fast IFGain:Low 33m	Trig: Free Run #Atten: 30 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	-27.00 aBm	Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta Mkr→CF

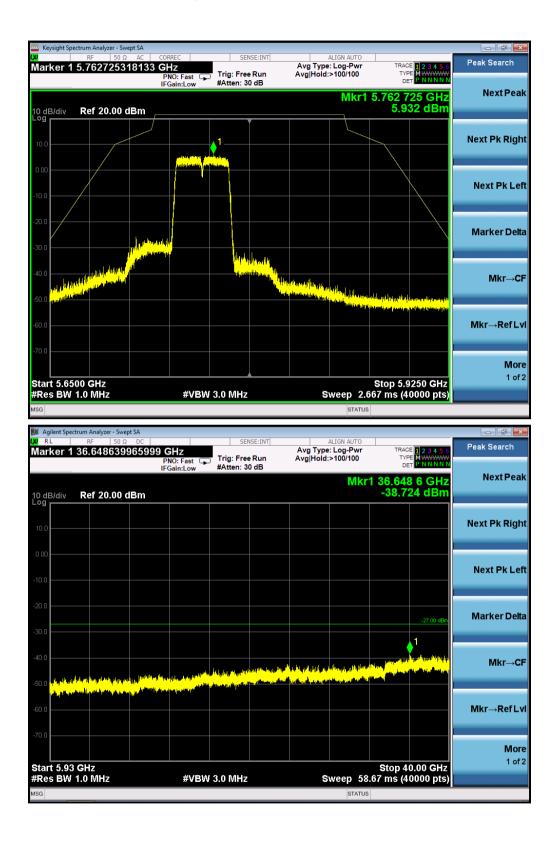


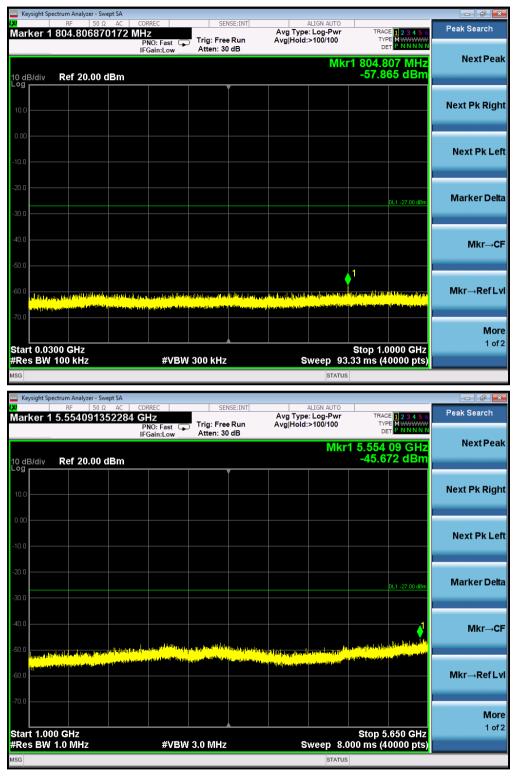
## TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5230MHz



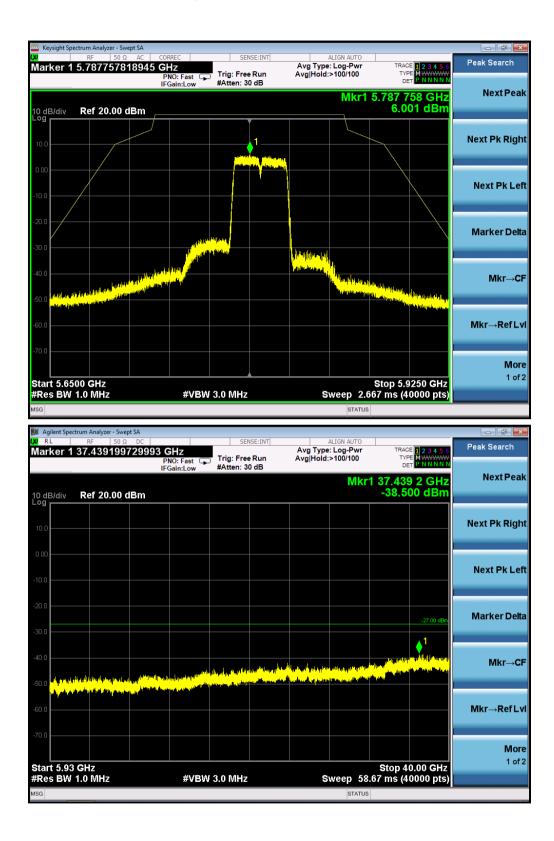


## TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5755MHz



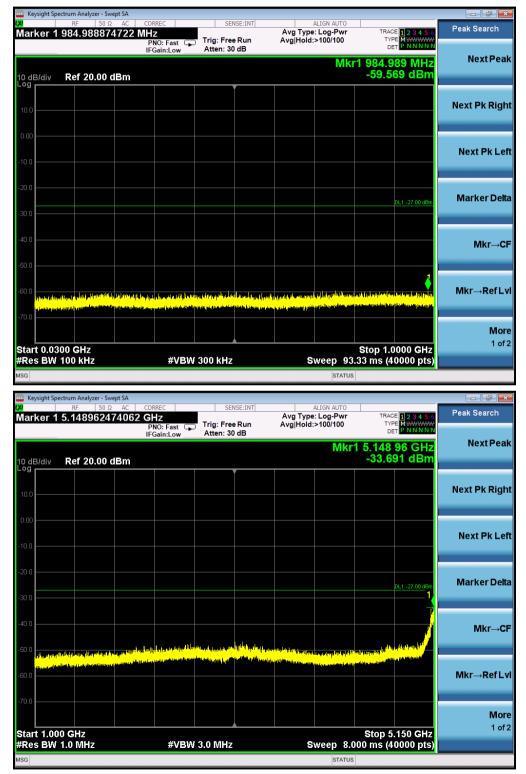


## TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5795MHz

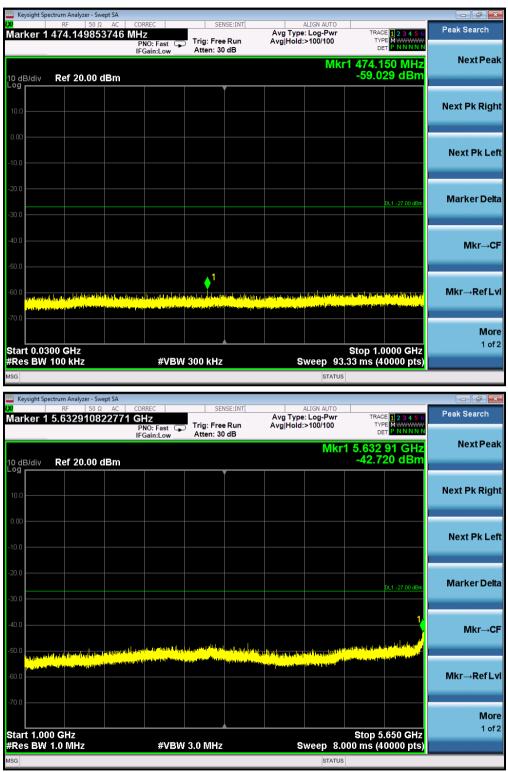


## FOR 802.11AC80 MODULATION

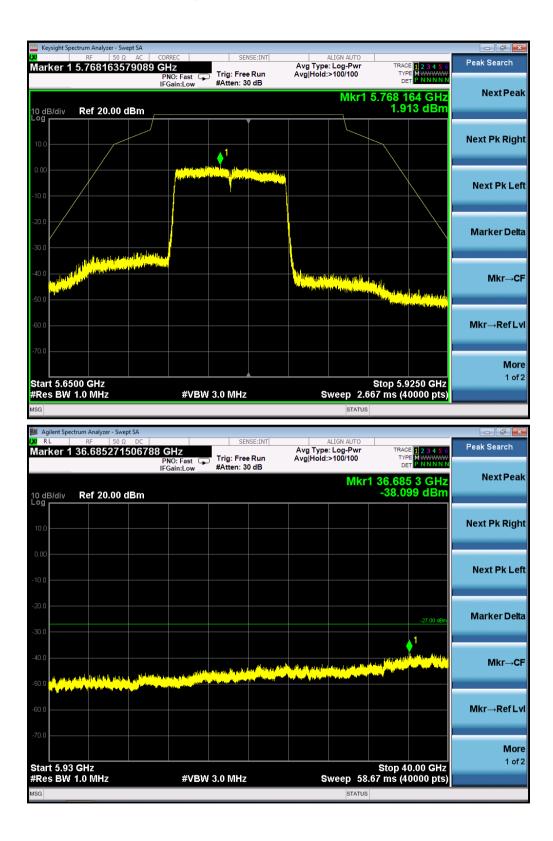
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5210MHz



70.0 Start 5.35 GHz Res BW 1.0 MHz	#VB	W 3.0 MHz	Sweep 58.67	Stop 40.00 GHz ms (40000 pts)	1 of
70.0					
					Mor
60.0					Mkr→RefL
50.0		and the second			
SO O AND AND ADD ADD ADD	hall and the statement of the statement				IVIRI→C
40.0				And a Marine to Million of Marine	Mkr→C
30.0				1	
				-27.00 dBm	Marker Del
20.0					
10.0					
					Next Pk Le
0.00					
10.0					
(0.0					Next Pk Rig
0 dB/div Ref 20.0	U dBm			-38.394 dBm	
				8.680 7 GHz -38.594 dBm	NextPea
	PNO: Fast ( IFGain:Low	#Atten: 30 dB			NextDe
larker 1 38.68066	68266707 GHz		Avg Type: Log-Pwr Avg Hold:>100/100	TRACE 123456 TYPE MWWWW DET PNNNN	Peak Search
Agilent Spectrum Analyzer - S	Swept SA	SENSE:INT	ALIGN AUTO		
SG			STATUS		
		III		Þ	
10 11				-	1 of
8					Mo
6 7					
4				=	Mkr→RefL
2 N 1 f	5.251 723 GHz	-28.090 dBm			
MKR MODE TRC SCL	× 5.168 695 GHz	Y FU -26.663 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	
Res BW 1.0 MHz	#VB	W 3.0 MHz	Sweep 2.667	ms (40000 pts)	Mkr→C
Start 5.1500 GHz			S	top 5.3500 GHz	
70.0					
60.0					Marker Del
50.0				Marking train store to estab	
30.0		Multi-setter			Next Pk Le
20.0		2		DL1 -27.00 dBm	
10.0		\			
0.00					Next Pk Rig
		Ĭ Î			
0 dB/div Ref 20.0	I0 dBm		MKr2 5.	251 723 GHz -28.090 dBm	
	IFGain:Low	Atten: 30 dB			Next Pea
	PNO: Fast	Trig: Free Run	Avg Hold:>100/100	TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N	
larker 2 5.251722			Avg Type: Log-Pwr	TRACE D D A E 6	Peak Search



#### TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5775MHz



Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report. All the 80MHz bandwidth modulation had been tested, the 802.11ac80 was the worst case and record in his test report.

Two transmit chains had been tested, the CHAIN 2 was the worst case and record in the test report.

The spurious emission at CHAIN 2 is more than 3dB below the limits, so the MIMO results for the spurious emissions are comply with the requirement.

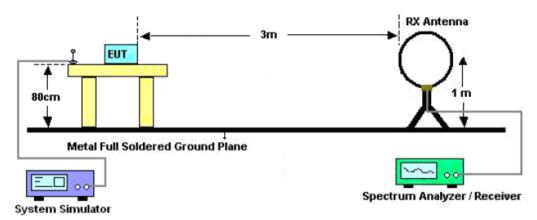
## 9. RADIATED EMISSION

#### 9.1. MEASUREMENT PROCEDURE

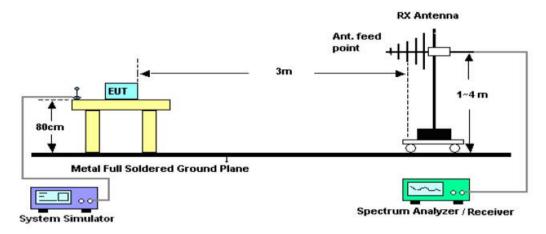
- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3M VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

#### 9.2. TEST SETUP

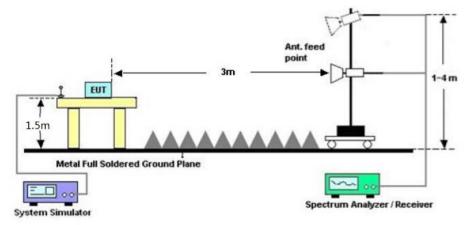
Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz



## 9.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/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: All modes were tested For restricted band radiated emission,

the test records reported below are the worst result compared to other modes.

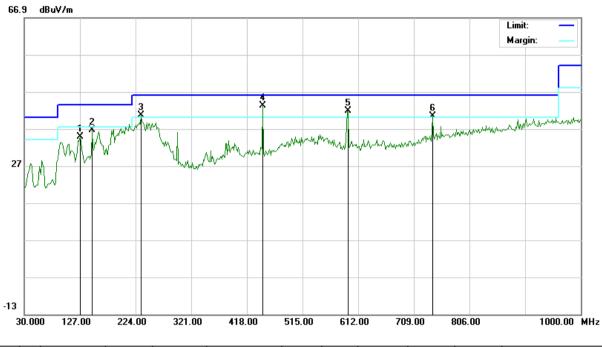
## 9.4. TEST RESULT

## **RADIATED EMISSION BELOW 30MHZ**

No emission found between lowest internal used/generated frequencies to 30MHz.

## **RADIATED EMISSION BELOW 1GHZ**

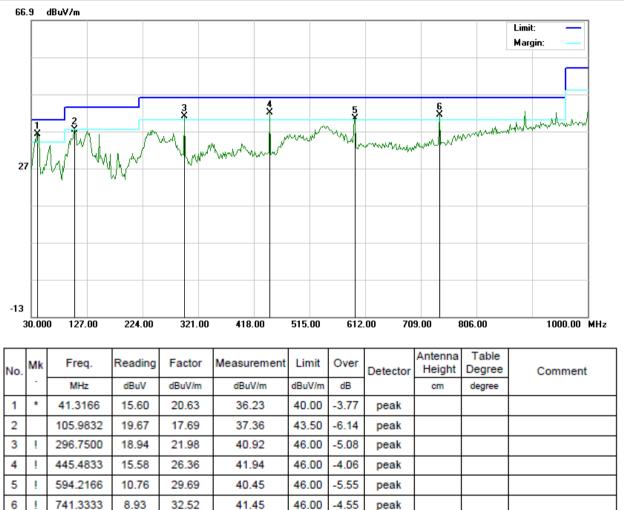
EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
	•	MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		127.0000	15.28	19.57	34.85	43.50	-8.65	peak			
2		148.0167	16.15	20.37	36.52	43.50	-6.98	peak			
3	Ţ	233.7000	20.83	19.83	40.66	46.00	-5.34	peak			
4	*	445.4833	16.75	26.36	43.11	46.00	-2.89	peak			
5	Ţ.	594.2167	12.15	29.69	41.84	46.00	-4.16	peak			
6	Ţ.	741.3333	7.87	32.52	40.39	46.00	-5.61	peak			

#### **RESULT: PASS**

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	C Relative Humidity	
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical



#### **RESULT: PASS**

**Note:** All test channels had been tested. The 802.11a20 at 5180MHz is the worst case and recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

## **RADIATED EMISSION ABOVE 1GHZ**

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type					
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type					
10360.120	43.15	9.14	52.29	74	-21.71	peak					
10360.120	35.34	9.14	44.48	54	-9.52	AVG					
15540.180	40.46	10.22	50.68	74	-23.32	peak					
15540.180	15540.180 36.87 10.22 47.09 54 -6.91 AVG										
Remark:											
Factor = Ante	enna Factor + C	able Loss – P	re-amplifier.								

# RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type				
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type				
10360.120	41.64	9.14	50.78	74	-23.22	peak				
10360.120	38.53	9.14	47.67	54	-6.33	AVG				
15540.180	39.59	10.22	49.81	74	-24.19	peak				
15540.180	33.35	10.22	43.57	54	-10.43	AVG				
Remark:	Remark:									
Factor = Ante	enna Factor + C	able Loss – F	Pre-amplifier.							

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5240MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10480.120	41.23	9.27	50.5	74	-23.5	peak
10480.120	36.35	9.27	45.62	54	-8.38	AVG
15720.180	35.18	10.38	45.56	74	-28.44	peak
15720.180	34.84	10.38	45.22	54	-8.78	AVG
Remark:						
Factor = Ante	enna Factor + Ca	able Loss – P	re-amplifier.			

## RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
10480.120	41.36	9.27	50.63	74	-23.37	peak
10480.120	35.35	9.27	44.62	54	-9.38	AVG
15720.180	39.61	10.38	49.99	74	-24.01	peak
15720.180	33.97	10.38	44.35	54	-9.65	AVG
Remark:						
Factor = Ante	nna Factor + C	able Loss – Pr	e-amplifier.			

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5745MHz	Antenna	Horizontal/Vertical

#### RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11490.120	36.21	9.42	45.63	74	-28.37	peak
11490.120	31.58	9.42	41	54	-13	AVG
17235.180	36.26	10.51	46.77	74	-27.23	peak
17235.180	32.01	10.51	42.52	54	-11.48	AVG
Remark:						
Factor = Ante	enna Factor + C	able Loss – P	re-amplifier.			

## RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11490.120	40.07	9.42	49.49	74	-24.51	peak
11490.120	35.19	9.42	44.61	54	-9.39	AVG
17235.180	36.53	10.51	47.04	74	-26.96	peak
17235.180	32.02	10.51	42.53	54	-11.47	AVG
Remark:						
Factor = Ante	nna Factor + C	able Loss – P	re-amplifier.			

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5825MHz	Antenna	Horizontal/Vertical

## RADIATED EMISSION ABOVE 1GHZ-Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11650.120	40.85	9.62	50.47	74	-23.53	peak
11650.120	35.76	9.62	45.38	54	-8.62	AVG
17475.180	38.54	10.75	49.29	74	-24.71	peak
17475.180	33.43	10.75	44.18	54	-9.82	AVG
Remark:						
Factor = Ante	enna Factor + Ca	able Loss – Pi	re-amplifier.			

#### RADIATED EMISSION ABOVE 1GHZ-Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
11650.120	40.27	9.62	49.89	74	-24.11	peak
11650.120	34.96	9.62	44.58	54	-9.42	AVG
17475.180	38.42	10.75	49.17	74	-24.83	peak
17475.180	32.14	10.75	42.89	54	-11.11	AVG
Remark:						
Factor = Ante	enna Factor + Ca	able Loss – P	re-amplifier.			

**Note:** All the case had been tested. The 802.11a modulation is the worst case and recorded in the test report. Other frequencies radiation emission from 1GHz to 40GHz at least have 20dB margin and not recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

## **10. BAND EDGE EMISSION**

## **10.1. MEASUREMENT PROCEDURE**

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

3. Other procedures refer to clause 11.2.

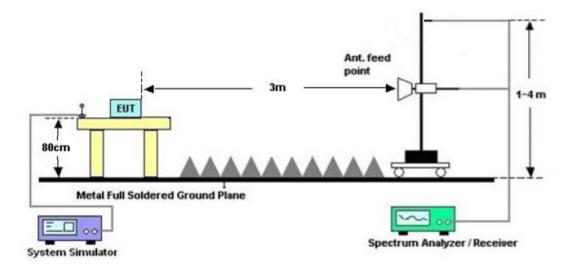
#### Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level

2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.

3. Only the data of band edge emission at the restricted band 4.5GHz-5.15GHz record in the report. Other restricted band 5.35GHz-5.46GHz and 7.25GHz-7.77GHz were considered as ambient noise. No recording in the test report.

## 10.2. TEST SET-UP



## 10.3. TEST RESULT

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Horizontal





AV	Val	lue
,	vu	

arker 1 5.1	F 50 Ω AC 82200000000	CORREC D GHZ PNO: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg	ALIGN AUTO Type: RMS Hold: 65/100	TRACE 1 2 3 4 TYPE A WWW DET A NNN	
dB/div Re	f 106.00 dBµ\	/			Mk	r1 5.182 2 GI 94.513 dBj	
6.0 6.0 6.0							Next Pk Rig
6.0 6.0 6.0						and the second s	Next Pk Le
6.0 6.0 6.0			and provide the provide the provide the provide the provide the providence of the provide				Marker De
tart 5.0000 ( Res BW 1.0	MHz	#VB\	V 3.0 MHz*	FUNCTION	Sweep 1	Stop 5.2000 Gi 000 ms (1001 p	
1 N 1 f 2 N 1 f 3 4 5	5	.182 2 GHz .150 0 GHz	94.513 dBµV 42.677 dBµV				Mkr→Ref L ⊧
6 7 8							Ma 1 o
9							

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11a20 5180MHz	Antenna	Vertical



#### AV Value

🛓 Keysight Spi	ectrum Analyzer -							_	- 0 -
larker 1	RF 5 5.182600	0 Ω AC 0000000	CORREC GHZ PNO: Fast IFGain:Low	Trig: Free R #Atten: 20 d	Av un Av	ALIGN AUTO /g Type: RMS g Hold:>100/100	TRACE 1 2 TYPE A DET A	AND	Peak Search
0 dB/div	Ref 106.	00 dBµV				Mk	r1 5.182 6 91.781 d		NextPea
<b>og</b> 36.0 36.0									Next Pk Righ
66.0 56.0 46.0						2			Next Pk Le
36.0 26.0 16.0									Marker Delt
	1.0 MHz		#VE	BW 3.0 MHz*			Stop 5.2000 .000 ms (1001	i pts)	Mkr→C
IKR         MODE         TF           1         N         1           2         N         1           3         -         1           4         -         5           6         -         -		× 5.1 5.1	182 6 GHz 150 0 GHz	Υ 91.856 dBμV 41.377 dBμV	FUNCTION	FUNCTION WIDTH	FUNCTION VAL		Mkr→RefL
7 8 9 10 11									Mor 1 of

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	
Pressure	sure 960hPa		Normal Voltage
Test Mode	802.11n40 5190MHz	Antenna	Horizontal



AV Value



EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	
Pressure	e 960hPa		Normal Voltage
Test Mode	802.11n40 5190MHz	Antenna	Vertical



AV Value



EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Horizontal



Keysight Spectrum Analyzer - RF 51 RKer 1 5.206440	Ω AC CORREC 0000000 GHz PNO: Fast	SENSE:INT	ALIGN AUTO Avg Type: RMS Avg Hold:>100/100	TRACE 123456 TYPE A WWWW	Peak Search
0 dB/div Ref 106.	IFGain:Lov 00 dBµV	, #Atten: 20 dB	Mkr	1 5.206 44 GHz 84.842 dBµV	NextPea
<b>6 0 1 1 1 1 1 1 1 1 1 1</b>				1	Next Pk Righ
76.0 56.0 46.0 46.0			2		Next Pk Le
36.0 26.0 16.0					Marker Del
tart 5.0000 GHz Res BW 1.0 MHz	#V ×	BW 3.0 MHz*	Sweep 1	Stop 5.2600 GHz .000 ms (1001 pts)	Mkr→C
1 N 1 f 2 N 1 f 3 4 5 6	5.206 44 GHz 5.150 0 GHz	84.842 dBµV 48.345 dBµV		E	Mkr→RefL
7 8 9 0 1					Mo 1 of
G			STATUS		

EUT	4K UST Laser Projector	Model Name	VA-LT002
Temperature	25°C	Relative Humidity	
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11ac80 5210MHz	Antenna	Vertical







## **RESULT: PASS**

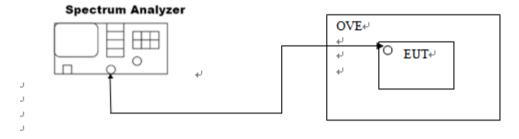
Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report.

# **11. FREQUENCY STABILITY**

## **11.1. MEASUREMENT PROCEDURE**

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- 2. Set the EUT Work on the operation frequency.
- 3. Set SPA Centre Frequency = Operation Frequency. SPAN=enough to measure the emission is maintained within the band
- 4. Set SPA Trace 1 Max hold, then View.
- 5. Extreme temperature rule is -10°C~60°C.

## 11.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



# **11.3. MEASUREMENT RESULTS**

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
	<b>- 10</b> °C	5180	within the band	PASS
	<b>0</b> °C	5180	within the band	PASS
	<b>10</b> ℃	5180	within the band	PASS
	<b>20</b> °C	5180	within the band	PASS
	<b>30</b> °C	5180	within the band	PASS
	<b>40</b> °C	5180	within the band	PASS
	<b>50</b> ℃	5180	within the band	PASS
	<b>60</b> °C	5180	within the band	PASS
	<b>- 10</b> ℃	5240	within the band	PASS
	<b>0</b> °C	5240	within the band	PASS
	<b>10</b> ℃	5240	within the band	PASS
	<b>20</b> °C	5240	within the band	PASS
	<b>30</b> °C	5240	within the band	PASS
	<b>40</b> °C	5240	within the band	PASS
	<b>50</b> ℃	5240	within the band	PASS
802.11a	<b>60</b> °C	5240	within the band	PASS
002.11a	<b>- 10</b> ℃	5745	within the band	PASS
	<b>0</b> °C	5745	within the band	PASS
	<b>10</b> ℃	5745	within the band	PASS
	<b>20</b> °C	5745	within the band	PASS
	<b>30</b> °C	5745	within the band	PASS
	<b>40</b> °C	5745	within the band	PASS
	<b>50</b> ℃	5745	within the band	PASS
	<b>60</b> °C	5240	within the band	PASS
	<b>- 10</b> °C	5825	within the band	PASS
	<b>0</b> °C	5825	within the band	PASS
	<b>10</b> ℃	5825	within the band	PASS
	<b>20</b> °C	5825	within the band	PASS
	<b>30</b> °C	5825	within the band	PASS
	<b>40</b> °C	5825	within the band	PASS
	<b>50</b> ℃	5825	within the band	PASS
	<b>60</b> °C	5825	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
	- 10℃	5180	within the band	PASS
	<b>0</b> °C	5180	within the band	PASS
	<b>10</b> ℃	5180	within the band	PASS
	<b>20</b> ℃	5180	within the band	PASS
	<b>30</b> ℃	5180	within the band	PASS
	<b>40</b> ℃	5180	within the band	PASS
	<b>50</b> ℃	5180	within the band	PASS
	<b>60</b> ℃	5180	within the band	PASS
	<b>- 10</b> ℃	5240	within the band	PASS
	<b>0</b> °C	5240	within the band	PASS
	<b>10</b> ℃	5240	within the band	PASS
	<b>20</b> ℃	5240	within the band	PASS
	<b>30</b> ℃	5240	within the band	PASS
	<b>40</b> °C	5240	within the band	PASS
	<b>50</b> ℃	5240	within the band	PASS
802.11n20	<b>60</b> ℃	5240	within the band	PASS
002.11120	<b>- 10</b> ℃	5745	within the band	PASS
	<b>0</b> °C	5745	within the band	PASS
	<b>10</b> ℃	5745	within the band	PASS
	<b>20</b> ℃	5745	within the band	PASS
	<b>30</b> ℃	5745	within the band	PASS
	<b>40</b> ℃	5745	within the band	PASS
	<b>50</b> ℃	5745	within the band	PASS
	<b>60</b> ℃	5240	within the band	PASS
	<b>- 10</b> ℃	5825	within the band	PASS
	<b>0</b> °C	5825	within the band	PASS
	<b>10</b> ℃	5825	within the band	PASS
	<b>20</b> ℃	5825	within the band	PASS
	<b>30</b> ℃	5825	within the band	PASS
	<b>40</b> ℃	5825	within the band	PASS
	<b>50</b> ℃	5825	within the band	PASS
	<b>60</b> ℃	5825	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
	- 10℃	5180	within the band	PASS
-	<b>0</b> °C	5180	within the band	PASS
-	<b>10</b> ℃	5180	within the band	PASS
	<b>20</b> ℃	5180	within the band	PASS
	<b>30</b> ℃	5180	within the band	PASS
	<b>40</b> ℃	5180	within the band	PASS
	<b>50</b> ℃	5180	within the band	PASS
	<b>60</b> ℃	5180	within the band	PASS
	- 10℃	5240	within the band	PASS
	<b>0</b> °C	5240	within the band	PASS
	<b>10</b> ℃	5240	within the band	PASS
	<b>20</b> °C	5240	within the band	PASS
	<b>30</b> ℃	5240	within the band	PASS
	<b>40</b> ℃	5240	within the band	PASS
	<b>50</b> ℃	5240	within the band	PASS
802.11ac20	<b>60</b> ℃	5240	within the band	PASS
002.118620	- 10℃	5745	within the band	PASS
	<b>0</b> °C	5745	within the band	PASS
	<b>10</b> ℃	5745	within the band	PASS
	<b>20</b> °C	5745	within the band	PASS
	<b>30</b> ℃	5745	within the band	PASS
	<b>40</b> ℃	5745	within the band	PASS
	<b>50</b> ℃	5745	within the band	PASS
	<b>60</b> ℃	5240	within the band	PASS
Ī	- 10℃	5825	within the band	PASS
	<b>0</b> °C	5825	within the band	PASS
Ī	<b>10</b> ℃	5825	within the band	PASS
	<b>20</b> ℃	5825	within the band	PASS
	<b>30</b> ℃	5825	within the band	PASS
	<b>40</b> ℃	5825	within the band	PASS
	<b>50</b> ℃	5825	within the band	PASS
	<b>60</b> ℃	5825	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
	- 10℃	5190	within the band	PASS
	<b>0</b> °C	5190	within the band	PASS
	<b>10</b> ℃	5190	within the band	PASS
	<b>20</b> ℃	5190	within the band	PASS
	<b>30</b> ℃	5190	within the band	PASS
	<b>40</b> ℃	5190	within the band	PASS
	<b>50</b> ℃	5190	within the band	PASS
	<b>60</b> ℃	5190	within the band	PASS
	<b>- 10</b> ℃	5230	within the band	PASS
	<b>0</b> °C	5230	within the band	PASS
	<b>10</b> ℃	5230	within the band	PASS
	<b>20</b> ℃	5230	within the band	PASS
	<b>30</b> ℃	5230	within the band	PASS
	<b>40</b> ℃	5230	within the band	PASS
	<b>50</b> ℃	5230	within the band	PASS
802.11n40	<b>60</b> ℃	5230	within the band	PASS
002.11140	- 10℃	5755	within the band	PASS
	<b>0</b> °C	5755	within the band	PASS
	<b>10</b> ℃	5755	within the band	PASS
	<b>20</b> ℃	5755	within the band	PASS
	<b>30</b> ℃	5755	within the band	PASS
	<b>40</b> ℃	5755	within the band	PASS
	<b>50</b> ℃	5755	within the band	PASS
	<b>60</b> ℃	5755	within the band	PASS
	<b>- 10</b> ℃	5795	within the band	PASS
	<b>0</b> °C	5795	within the band	PASS
	<b>10</b> ℃	5795	within the band	PASS
	<b>20</b> ℃	5795	within the band	PASS
	<b>30</b> ℃	5795	within the band	PASS
	<b>40</b> ℃	5795	within the band	PASS
	<b>50</b> ℃	5795	within the band	PASS
	<b>60</b> ℃	5795	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
	- 10℃	5190	within the band	PASS
	<b>0</b> °C	5190	within the band	PASS
	<b>10</b> ℃	5190	within the band	PASS
	<b>20</b> ℃	5190	within the band	PASS
	<b>30</b> ℃	5190	within the band	PASS
	<b>40</b> ℃	5190	within the band	PASS
	<b>50</b> ℃	5190	within the band	PASS
	<b>60</b> ℃	5190	within the band	PASS
	- 10℃	5230	within the band	PASS
	<b>0</b> °C	5230	within the band	PASS
	<b>10</b> ℃	5230	within the band	PASS
	<b>20</b> °C	5230	within the band	PASS
	<b>30</b> ℃	5230	within the band	PASS
	<b>40</b> ℃	5230	within the band	PASS
	<b>50</b> ℃	5230	within the band	PASS
802.11ac40	<b>60</b> ℃	5230	within the band	PASS
002.11ac40	- 10℃	5755	within the band	PASS
	<b>0</b> °C	5755	within the band	PASS
	<b>10</b> ℃	5755	within the band	PASS
	<b>20</b> °C	5755	within the band	PASS
	<b>30</b> ℃	5755	within the band	PASS
	<b>40</b> ℃	5755	within the band	PASS
	<b>50</b> ℃	5755	within the band	PASS
	<b>60</b> ℃	5755	within the band	PASS
	- 10℃	5795	within the band	PASS
	0°C	5795	within the band	PASS
Ī Ī	<b>10</b> ℃	5795	within the band	PASS
ļ Ē	<b>20</b> ℃	5795	within the band	PASS
ļ Ī	<b>30</b> ℃	5795	within the band	PASS
l	<b>40</b> ℃	5795	within the band	PASS
Ī Ī	<b>50</b> ℃	5795	within the band	PASS
	<b>60</b> ℃	5795	within the band	PASS

Test Mode	Temperature	Measurement Frequency (MHz)	Result	Conclusion
	- 10℃	5210	within the band	PASS
	<b>0</b> °C	5210	within the band	PASS
	<b>10</b> ℃	5210	within the band	PASS
	<b>20</b> °C	5210	within the band	PASS
	<b>30</b> °C	5210	within the band	PASS
	<b>40</b> °C	5210	within the band	PASS
	<b>50</b> ℃	5210	within the band	PASS
802.11ac80	<b>60</b> °C	5210	within the band	PASS
002.11800	<b>- 10</b> ℃	5775	within the band	PASS
	<b>0</b> °C	5775	within the band	PASS
	<b>10</b> ℃	5775	within the band	PASS
	<b>20</b> °C	5775	within the band	PASS
	<b>30</b> °C	5775	within the band	PASS
	<b>40</b> °C	5775	within the band	PASS
	<b>50</b> ℃	5775	within the band	PASS
	<b>60</b> °C	5775	within the band	PASS

# **12. FCC LINE CONDUCTED EMISSION TEST**

## 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

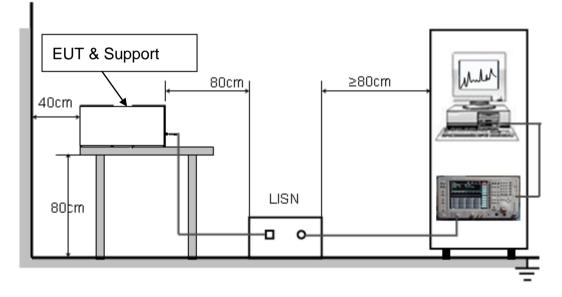
Frequency	Maximum RF Line Voltage				
Frequency	Q.P.( dBuV)	Average( dBuV)			
150kHz~500kHz	66-56	56-46			
500kHz~5MHz	56	46			
5MHz~30MHz	60	50			

Note:

1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

# 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



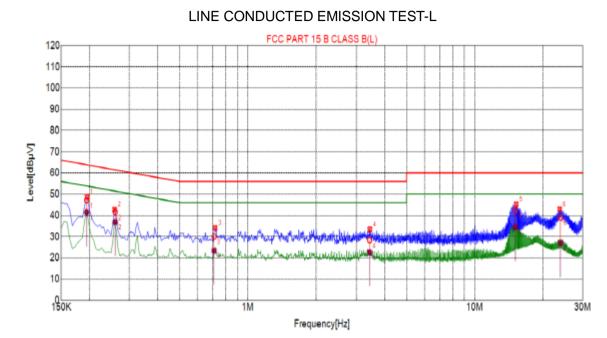
# 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

## 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

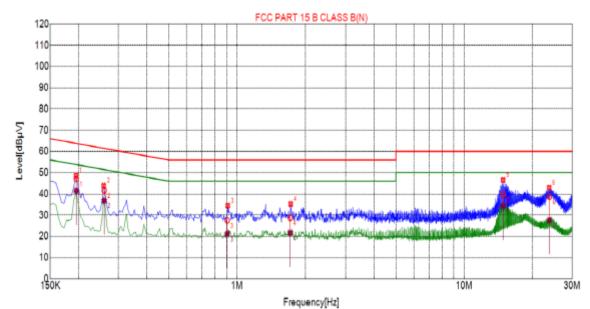
- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.



# 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Suspected List Freq. Level Factor Limit Margin NO. Detector [MHz] [dBµV] [dB] [dBµV] [dB] 1 0.1950 48.69 10.03 63.82 15.13 PK 2 0.2580 42.76 10.04 61.50 18.74 PK 0.7170 34.12 10.05 56.00 21.88 PK 3 4 3.4440 33.45 10.25 56.00 22.55 PK 5 15.2430 45.30 9.96 60.00 14.70 PK 6 23.7390 42.94 10.21 60.00 17.06 PK

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin (dB)
1	0.1942	10.03	47.11	63.85	16.74	41.46	53.85	12.39
2	0.2596	10.03	41.60	61.45	19.85	36.93	51.45	14.52
3	0.7098	10.05	30.14	56.00	25.86	23.43	46.00	22.57
4	3.4332	10.24	28.38	56.00	27.62	22.56	46.00	23.44
5	15.1159	9.96	42.40	60.00	17.60	34.49	50.00	15.51
6	23.9218	10.22	39.08	60.00	20.92	26.99	50.00	23.01



# LINE CONDUCTED EMISSION TEST-N

Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Detector		
1	0.1950	48.63	10.03	63.82	15.19	PK		
2	0.2580	43.81	10.04	61.50	17.69	PK		
3	0.9105	34.51	10.06	56.00	21.49	PK		
4	1.7250	35.23	10.13	56.00	20.77	PK		
5	14.8560	45.48	9.95	60.00	13.52	PK		
6	23.7345	42.91	10.21	60.00	17.09	PK		

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Velue [dBµV]	QP Limit [dBµV]	QP Margin (dB)	AV Value [dBµV]	AV Limit [dBµV]	AV Margin (dB)
1	0.1953	10.03	47.07	63.81	16.74	41.42	53.81	12.39
2	0.2593	10.03	41.66	61.45	19.79	36.90	51.45	14.55
3	0.9054	10.06	27.54	56.00	28.46	21.13	46.00	24.87
4	1.7175	10.13	28.74	56.00	27.26	21.60	46.00	24.40
5	14.8603	9.95	39.71	60.00	20.29	34.41	50.00	15.59
6	23.7805	10.21	38.74	60.00	21.26	27.60	50.00	22.40

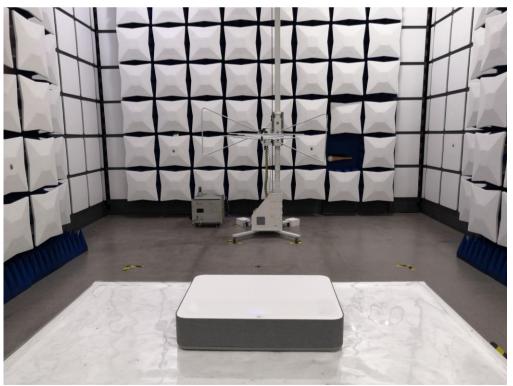
## **RESULT: PASS**



# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC LINE CONDUCTED EMISSION TEST SETUP

FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ





FCC RADIATED EMISSION TEST SETUP ABOVE 1GHZ

----END OF REPORT----