Prüfbericht-Nr.: *Test report no.:*	IN23RA4Z 001	**Auftrags-Nr.:** *Order no.:*	146800530 0010	Seite 1 von 58 *Page 1 of 58*
Kunden-Referenz-Nr.: *Client reference no.:*	2142863	**Auftragsdatum:** *Order date:*	2023-06-01	
Auftraggeber: *Client:*	Landis + Gyr Technology, Inc. 30000 Mill Creek Ave., Suite 100 Alpharetta, GA 30022			
Prüfgegenstand: *Test item:*	Sub-GHz Wireless Mesh Module			
Bezeichnung *Identification*	Series-6 Gen-2 MCM0	**Serien -Nr.:** *Serial no.:*	D016E7A9 & D016E7BC	
Auftrags-Inhalt: *Order content*:	Testing and issue of Test Report and Grant Certificate			
Prüfgrundlage: *Test specification:*	FCC Part 15 Subpart C 15.247,15.205, 15.207 & 15.209 RSS 247 Issue 3, RSS Gen Issue 5			
Wareneingangsdatum: *Date of sample receipt:*	2023-06-19			
Prüfmuster-Nr.: *Test sample no:*	A003499438-001 & A003499438-003			
Prüfzeitraum: *Testing period:*	2023-06-19 - 2023-07-29			
Ort der Prüfung: *Place of testing:*	Wireless laboratory, Bangalore			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (India) Pvt. Ltd. 27/B,2nd cross road, Electronic city Phase1, Banglore-560100, India FCC Test Site Registration No: 496599 IC Test Site Registration No: 27711 HVIN: Series-6 Gen-2 MCM0			
Prüfergebnis*: *Test result*:*	Pass			

geprüft von: *tested by:*		**genehmigt von:** *authorized by:*	
Datum: *Date:* 2023-07-31	M.V. Naveen Kumar	**Ausstellatum:** *Issue date:* 2023-10-16	M.K.N
Stellung / *Position:*	**M.V.Naveen Kumar** Senior Engineer	**Stellung** / *Position:*	**Madhu K N** Assistant Manager
Sonstiges / *Other:*	FCC ID: R7PMGBM2B1 IC: 5294A-MGBM2B1		

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*
Prüfmuster vollständig und unbeschädigt ***Test item complete and undamaged***

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. *The decision rule for statements of conformity in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report.*

TEST SUMMARY

Test Item	FCC	RSS	Result
Maximum Conducted Average Output Power	15.247 (b)(3)	RSS-247 issue 3 5.4 (d)	PASS
DTS Bandwidth & 99% Bandwidth	15.247 (a) (2)	RSS-247 issue 3 5.2 (a) & RSS Gen Issue 5 6.7	PASS
Maximum Power Spectral Density	15.247 (e)	RSS-247 issue 3 5.2 (b)	PASS
Emissions in non-restricted frequency bands	15.247 (d)	RSS-247 issue 3 5.5	PASS
Spurious Radiated Emissions and Restricted Bands of Operation	FCC 15.247(d)/ FCC 15.209 / FCC 15.205	RSS-GEN issue 5 Clause 8.9, 8.10	PASS
AC Power-line Conducted emission	FCC 15.207	RSS-Gen Issue 5, Section 8.8	PASS
Antenna Requirement	FCC 15.203	RSS Gen Issue 5 Section 6.8	PASS

Product Category: Electronics Testing
Test Discipline: EMC Test Facility

REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
IN23RA4Z 001	01	Initial Issue of test report	2023-10-16

Table of Contents

1 GENERAL REMARKS

1.1 Attachments

All attachments are part of this test report and are issued in separate document

1. TEST SETUP PHOTOS
2. EUT EXTERNAL PHOTOS
3. EUT INTERNAL PHOTOS
4. FCC LABEL AND LABEL LOCATION
5. BLOCK DIAGRAM
6. SPECIFICATION OF EUT
7. SCHEMATIC DIAGRAMS
8. BILL OF MATERIAL
9. USER MANUAL
10. MAXIMUM PERMISSIBLE EXPOSURE INFORMATION
11. APPENDIX-1(POWER LEVELS)

2 TEST SITES

2.1 Testing Facilities

1. TÜV Rheinland (India) Pvt.Ltd.,
   27/B, 2nd Cross,
   ElectronicCityPhase1
   Bangalore – 560 100,
   India

2. TUV Rheinland (India) Pvt.Ltd.,
   108, Beside ISBR Business School,
   Electronic city Phase I
   Bangalore - 560 100,
   India

2.2 List of Test and Measurement Instruments

Table 1: List of test and measurement instruments

Equipment	Manufacturer	Model Name	Serial Number	Firmware Versions	Calibration Due Date	Periodicity	Test Facility
Active loop antenna	Frankonia	LAX-10	LAX-10-800	-	02.03.2024	Yearly	Radiated Spurious Emission
Balun & Biconical Antenna	Schwarzbeck Mess-Elektronik	BBA 9106+VHBB 9124	9124-1117	-	05.05.2024	Yearly	
Log-Periodic Antenna	Schwarzbeck mess-elektronik	VUSLP 9111B	9111B-111	-	17.02.2024	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-01944	-	18.10.2023	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	-	
Fully Anechoic Chamber	Albatross	-	-	-	-	-	
EMI Receiver	Rohde & Schwarz	ESW 44	101732	4.73.SP5	04.08.2023	Yearly	
EMI Receiver	Rohde & Schwarz	ESW44	101773	1.72.SP1	15.02.2024	Yearly	
Signal Analyser	Anritsu Corporation	MS2830A	6261983953	20.00.01	18.10.2023	Yearly	Conducted test parameters
30 dB RF Attenuator	Mini Circuits	BW-N30W5+	938	-	12.10.2023	Yearly	
Spectrum Analyzer	Agilent	E4407B	US41192772	A.14.07	27.12-2023	Yearly	
EMI Receiver	Rohde & Schwarz	ESR7	101133	3.48 SP3	22.07.2024	Yearly	Conducted AC Power line Test
Two Line LISN	Rohde & Schwarz	ENV 216	100022	-	11.10.2023	Yearly	
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100811	-	12.07.2023	Yearly	

Table 2: Instrument application Software versions

SL. No.	Test Type	Application software	Version
1	Radiated spurious emission measurement in 3mtr FAC	EMC 32	10.60.00
2	Radiated spurious emission measurement in 10mtr SAC	BAT EMC	3.20.0.17

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

The Series-6 Gen-2 MCM0(S6G2-MCM0) is a fully encapsulated/shielded Multi-Chip Module (MCM) device in a 23mm x 22mm x 2.5mm form factor. It can be incorporated into a host device (such as the L+G Revelo E370 meter) to provide communications for AMI applications. The Series-6 Gen-2 MCM0 radio feeds directly into an onboard printed Inverted-F Antenna located on the Revelo E370.

3.2 Ratings and System Details of Equipment under Test

Table 3: Ratings and System Details as declared by Client*

Protocol	SRD	
Operating Frequency Range	Please refer the Appendix-1	
No. of Channels		
Channel Spacing		
Tx Transmitting Power		
Maximum Measured Power(dBm)	24.79dBm @ Mode of Operation 3(MCS3, CH-914.80MHz)	
Modulation	Please refer the Appendix-1	
Data Rate		
Number of antennas	One	
Antenna Type & Antenna Gain	Printed Inverted-F Antenna & 1dBi	
Antenna Model	Printed Inverted F	
Supply Voltage to Product	3.6VDC through evaluation board	
Environmental conditions	Storage Condition	-40°C to 85°C
	Operating Condition	-40°C to 85°C
EUT Dimension (L x W x H):	23mm x 22mm x 2.5mm	

*__Disclaimer__: The information/data is supplied by the client and the same is considered to arrive at the final value. Any changes made apart from the specified specification, can directly impact on the tests results. Refer the products user manual for more details.

3.3 Measurement Uncertainty:

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$

Table 4: Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±3 ℃
Supply Voltages	±3 %
Time	±5 %

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

The EUT was programmed to generate a continuously modulated signal on each channel evaluated for RF conducted measurements and 25% of duty cycle was programmed for RF Radiated measurements.

4.2 Test Operation and Test Software

Hardware Version: Rev AA

Hardware Name: M2439

Hardware Version Identification Number HVIN: Series-6 Gen-2 MCM0

Software Name & Version: S6G2-MCM0 Mesh IP (SBS) Mode (S6SR40-28.01.S33) &
S6G2-MCM0 Wi-SUN (WSN) (S6WR40-28.01.W09)

4.3 Special Accessories and Auxiliary Equipment

Revelo E370 PCB as host board, USB to TTL Cable, AC Power Supply Cable, Lenovo laptop for configuring Wireless Module.

4.4 Classification, Test Modes, and Modulation

Series-6 Gen-2 MCM0 model provides 3 distinct proprietary modes of operation using DTS Classifications as outlined below.

Modes of Operation	Frequency Range (MHz)	Number of Channels	Channel Separation (kHz)	Stack/Mode	Data Rates Supported (kbps)	Classification
1	904 - 926.8	20	1200	Mesh IP (SBS) (802.15.4 SUN OFDM)	MCS0-MCS6	DTS
2	903.2 - 927.2	21	1200	Wi-SUN (WSN) (802.15.4 SUN OFDM)	MCS5-MCS6	DTS
3	902.8 - 926.8	31	800	Wi-SUN (WSN) (802.15.4 SUN OFDM)	MCS3-MCS5	DTS

Monitoring of Performance:

For radiated emissions, the EUT was evaluated in three orthogonal orientations. The worst-case Orientation was X-position. See test setup photos for more information.

For Conducted measurements, the EUT was connected to the test equipment with a temporary antenna connector to SMA connector.

AC Power Line conducted emissions were performed with the module integrated on a representative host PCB.

Worst case mode for all parameters measured listed below.

Mode of Operation	Classification	6dB/99% Bandwidth (MHz)	Average Output Power (dBm)	Emissions in non-restricted frequency bands	Power Spectral Density (8dBm/kHz)	Spurious Radiated Emissions and Restricted Bands of Operation
		Data Rates				
1	DTS	MCS0 & MCS6	MCS0 & MCS6	MCS0 & MCS6	MCS0 & MCS6	MCS0 & MCS6
2	DTS	MCS5 & MCS6	MCS5 & MCS6	MCS5 & MCS6	MCS5 & MCS6	MCS5 & MCS6
3	DTS	MCS3 & MCS5	MCS3 & MCS5	MCS3 & MCS5	MCS3 & MCS5	MCS3 & MCS5

4.5 Countermeasures to achieve EMC Compliance

None

4.6 List of frequencies

- Refer the Appendix-1

Note:

1. TUV Sample Identification number : A003499438-001 → Conducted test Sample
   A003499438-003 → Radiated test Sample

4.7 Report Reference

SL.No	Radio Protocol	Report Number
1	Radio test report for SRD(DSSS)	IN23VZM3 001
2	**Radio test report for SRD(DTS)**	**IN23RA4Z 001**

5 Operational Description

The Series-6 Gen-2 MCM0(S6G2-MCM0) is a radio within Landis & Gyr inside series. It supports half-duplex operation in Sub-GHz band 902MHz to 928MHz ISM band. It can be integrated into metering, sensor, and controller products, allowing a wide range of devices to communicate on the Landis & Gyr RF Mesh networks. This version integrates a Wireless SoC, TCXO, serial Flash & a linear regulator.

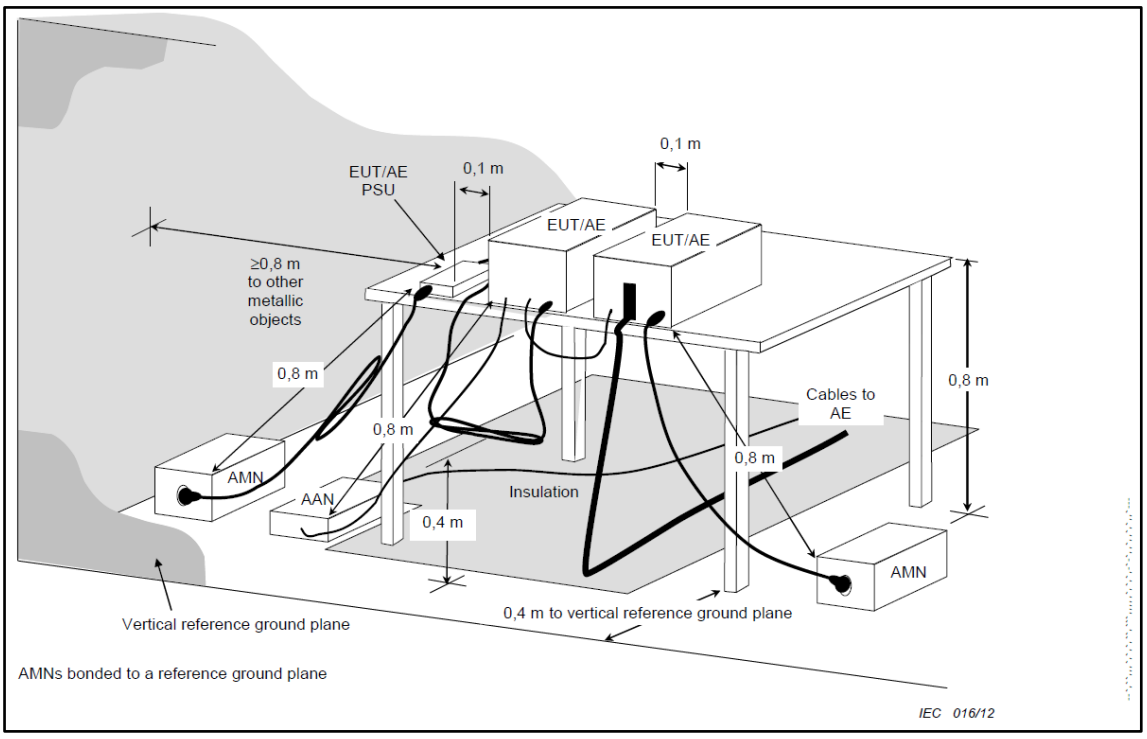
6 TEST METHODOLOGY

6.1 AC Power Lines Conducted emission

Measured levels of ac power-line conducted emission across the 50Ω LISN port (to which the EUT is connected). All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer.

The device is placed on the test table, raised 80cm above the reference ground plane. The vertical conducting plane is located 40cm to the rear of the device. AC Conducted emission measurement is made over frequency range from 150kHz to 30MHz, this measurement was performed with EUT with an AC adaptor with 110V AC 60Hz supply .

6.1.1 Test Setup Configuration



6.1.2 Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1 GHz & 1.5 m height for above 1 GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000 MHz was performed by horn antenna, The measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 200 MHz was performed by Baloon and Biconical Antenna, and measurement from 200 MHz to 1 GHz was performed by Log-Periodic Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded

6.1.3 Test Setup Configuration

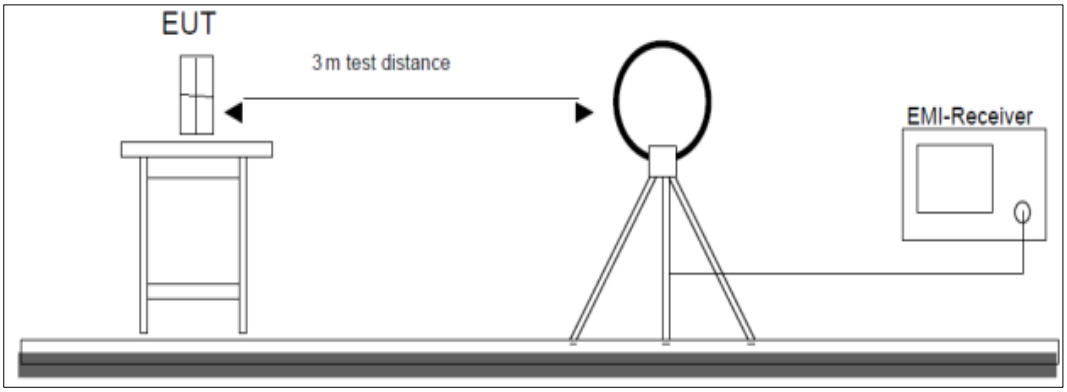


Figure 1: Frequency Range 9 kHz- 30 MHz

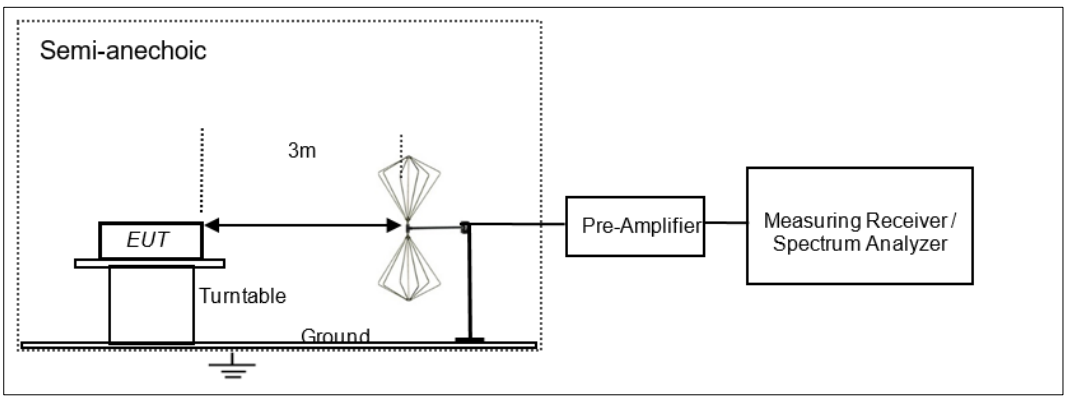


Figure 2: Frequency Range 30 MHz – 200 MHz

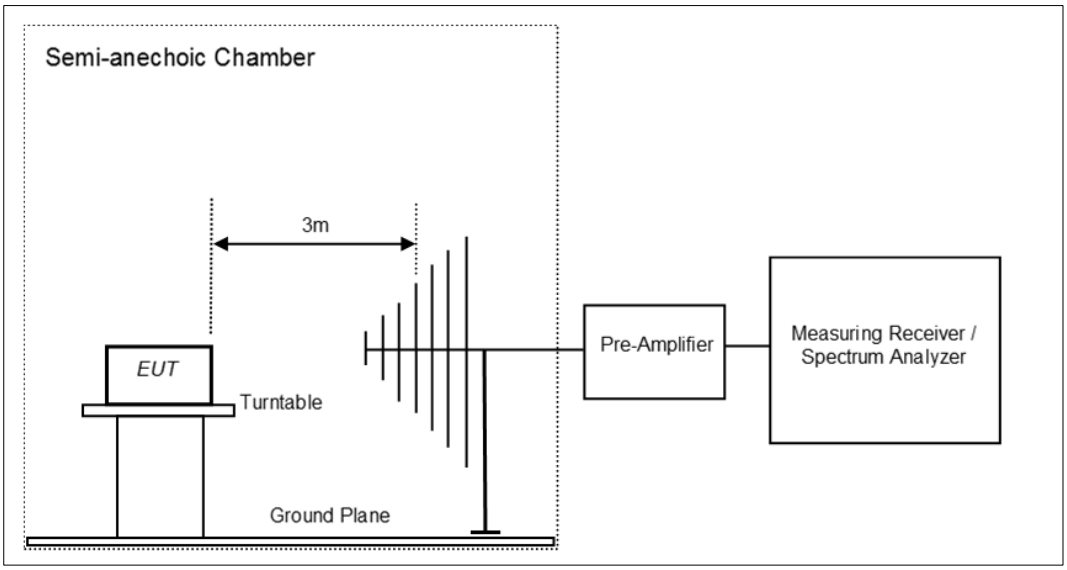


Figure 3: Frequency Range 200 MHz - 1GHz

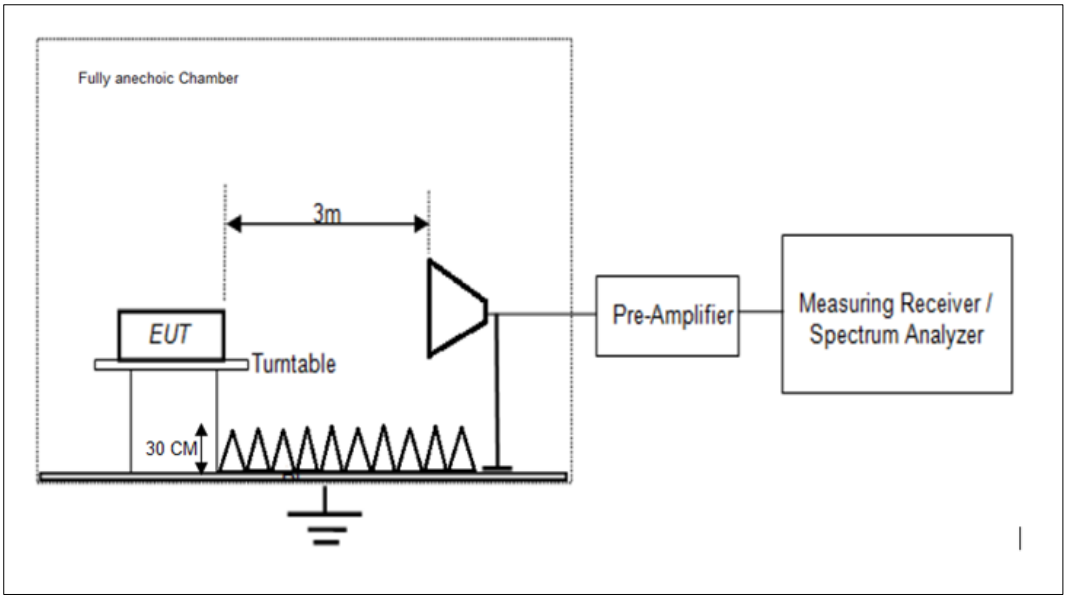


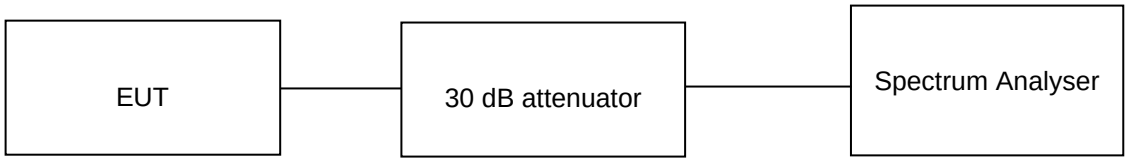
Figure 4: Frequency Range above 1 GHz

7 TEST RESULTS

7.1 Maximum Conducted Average Output Power

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (b)(3) RSS-247 issue 3 5.4 (d)
Test Method	Subclause 11.9.2.2.6 of ANSI C63.10
Measurement Bandwidth	30kHz
Detector	Average
Port of testing	Antenna port
Requirement	Power ≤ 1 W (30 dBm) & e.i.r.p ≤ 4W (36dBm)



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.1 °C Voltage = 3.6V DC through evaluation board Relative humidity: 65%

KDB Guidelines applied:

Measurements were made as per section 8.3.2.2 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

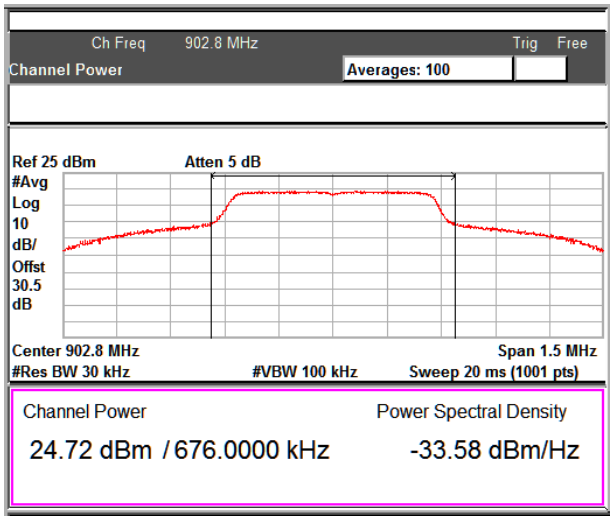
Test results:

Note:
1. All the losses are included during measurement and final values are mentioned in the test report
2. Total Peak Output power (dBm) = Measured Average power (dBm) + Attenuator factor (30dB) + Cable loss (0.55dB)
3. This product do not support additional beamforming gain / directional gain, it uses single antenna and hence Directional gain of the single antenna is 1 dBi

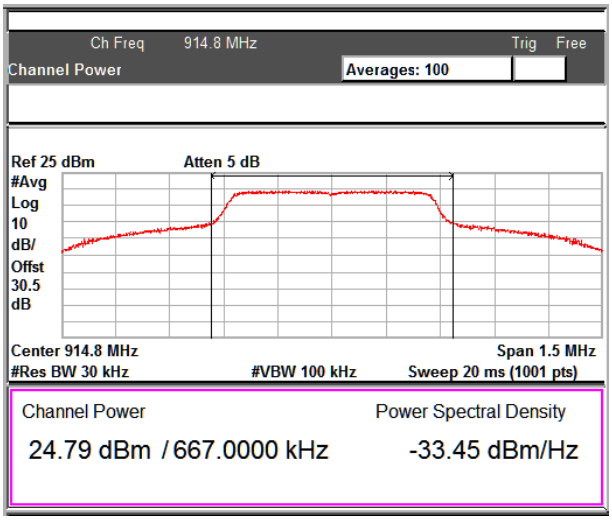
Mode of operation	Stack / Mode	Data rate	Channel frequency (MHz)	Measured average power (dBm)	e.i.r.p (dBm)	FCC Limit (dBm)	IC Limit (dBm)
1	Mesh IP (SBS) (802.15.4 OFDM)	MCS0	904.00	23.77	24.77	30	36
			914.80	23.80	24.80	30	36
			926.80	20.39	21.39	30	36
		MCS6	904.00	23.78	24.78	30	36
			914.80	23.82	24.82	30	36
			926.80	20.39	21.39	30	36
2	Wi-SUN (WSN) (802.15.4 OFDM)	MCS5	903.20	19.51	20.51	30	36
			915.20	23.46	24.46	30	36
			927.20	16.74	17.74	30	36
		MCS6	903.20	19.93	20.93	30	36
			915.20	23.85	24.85	30	36
			927.20	16.73	17.73	30	36
3	Wi-SUN (WSN) (802.15.4 OFDM)	**MCS3**	**902.80**	**24.72**	**25.72**	**30**	**36**
			914.80	**24.79**	**25.79**	**30**	**36**
			926.80	**24.57**	**25.57**	**30**	**36**
		MCS5	902.80	24.68	25.68	30	36
			914.80	24.73	25.73	30	36
			926.80	24.58	25.58	30	36

Test Plots:

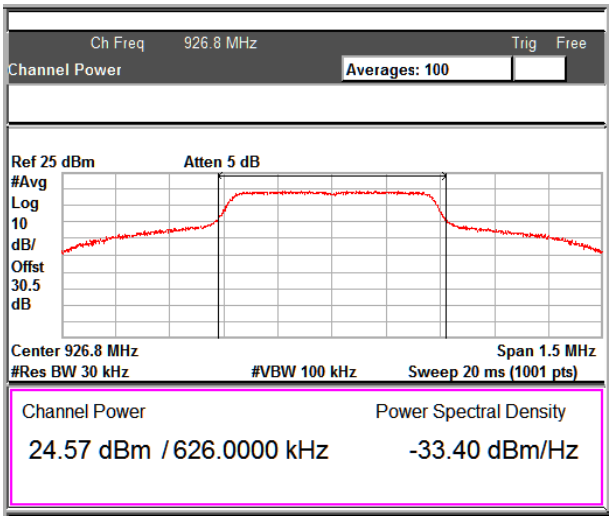
Mode of Opeartion: 3
Data Rate: MCS3



Channel frequency: 902.8MHz



Channel frequency: 914.8MHz



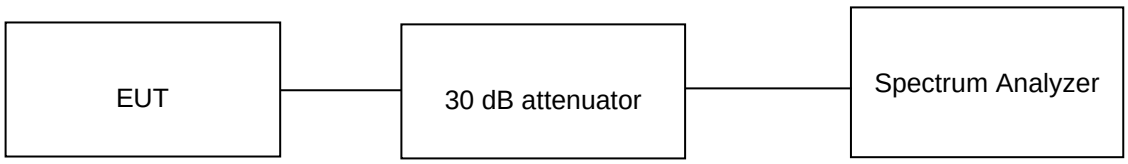
Channel frequency: 926.8MHz

7.2 Maximum Power Spectral density

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (e) RSS-247 issue 3 Clause 5.2 (b)
Test Method	Subclause 11.10.3 of ANSI C63.10
Measurement Bandwidth	3 kHz
Detector	RMS
Port of testing	Antenna port
Requirement	The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.1 °C Voltage = 3.6VDC through evaluation board Relative humidity: 65%

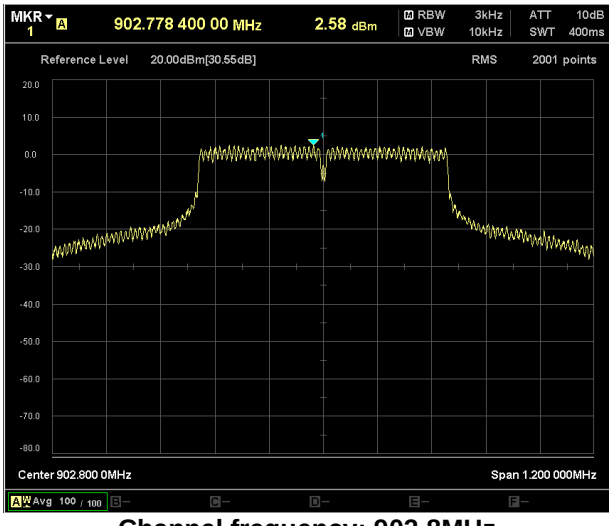
Test Results:

Mode of operation	Stack / Mode	Data rate	Channel frequency (MHz)	Measured PSD (dBm)	PSD Limit (dBm/kHz)
1	Mesh IP (SBS) (802.15.4 OFDM)	MCS0	904.00	-1.88	8
			914.80	-1.56	8
			926.80	-4.71	8
		MCS6	904.00	-1.72	8
			914.80	-1.60	8
			926.80	-4.70	8
2	Wi-SUN (WSN) (802.15.4 OFDM)	MCS5	903.20	-5.33	8
			915.20	-1.22	8
			927.20	-7.93	8
		MCS6	903.20	-5.30	8
			915.20	-1.23	8
			927.20	-8.31	8
3	**Wi-SUN (WSN) (802.15.4 OFDM)**	**MCS3**	**902.80**	**2.58**	**8**
			914.80	**2.45**	**8**
			926.80	**2.53**	**8**
		MCS5	**902.80**	**2.40**	**8**
			914.80	**2.83**	**8**
			926.80	**2.21**	**8**

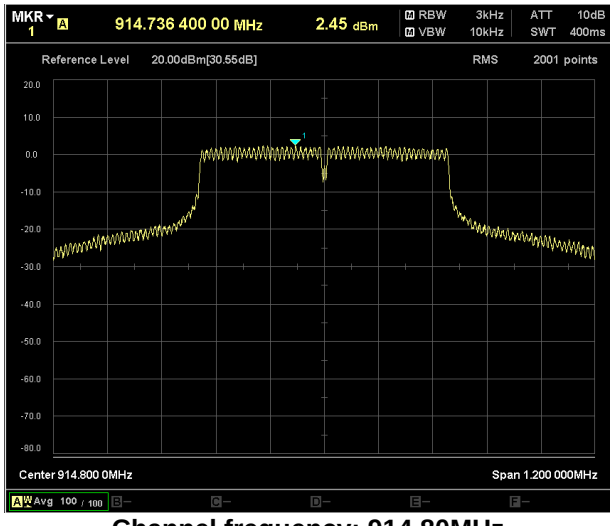
Test Plots:

Mode of Operation: 3

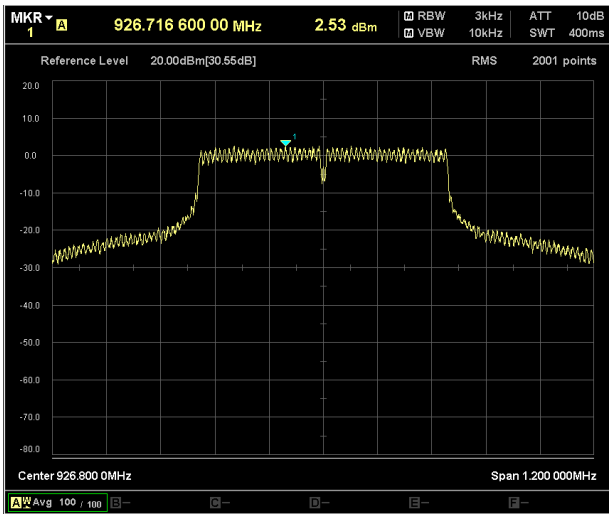
Data Rate: MCS3



Channel frequency: 902.8MHz

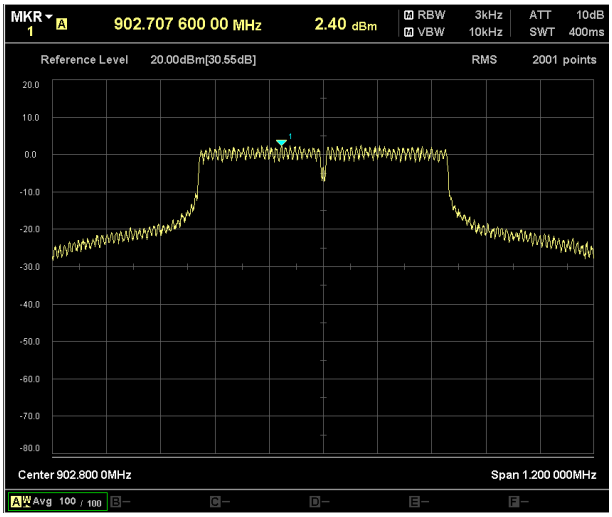


Channel frequency: 914.80MHz

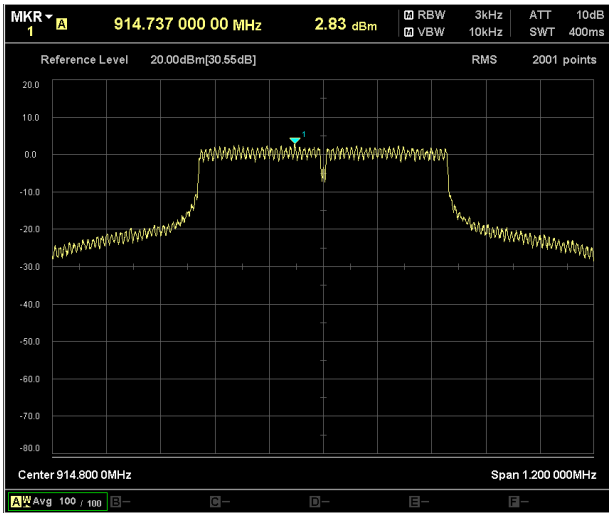


Channel frequency: 926.80MHz

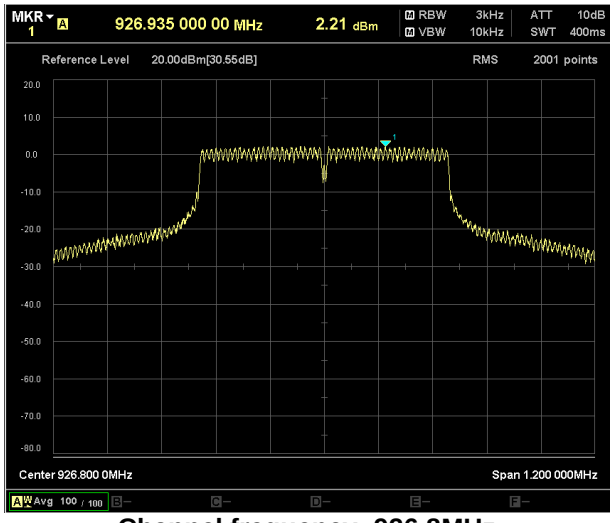
Data Rate: MCS5



Channel frequency: 902.8MHz



Channel frequency: 914.8MHz



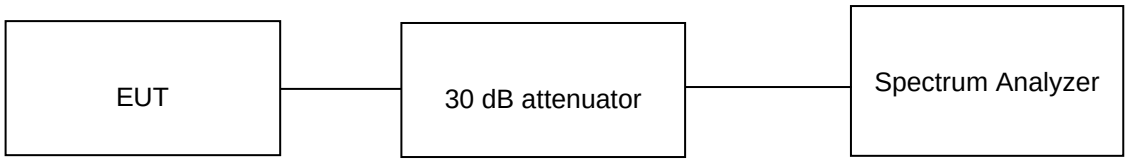
Channel frequency: 926.8MHz

7.3 DTS Bandwidth

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (a) (2) RSS-247 issue 3 5.2 (a) & RSS Gen issue 5 6.7
Test Method	Subclause 11.8.1 of ANSI C63.10 for DTS Subclause 6.9.3 of ANSI C63.10 for Occupied channel Bandwidth
Measurement Bandwidth	100 kHz for DTS Bandwidth 30 kHz for Occupied channel Bandwidth
Detector	Peak
Port of testing	Antenna port
Requirement	Systems using digital modulation techniques may operate in the 902–928 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.1 °C Voltage = 3.6VDC through evaluation board Relative humidity: 65%

KDB Guidelines applied:

Measurements were made as per section 8.2 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

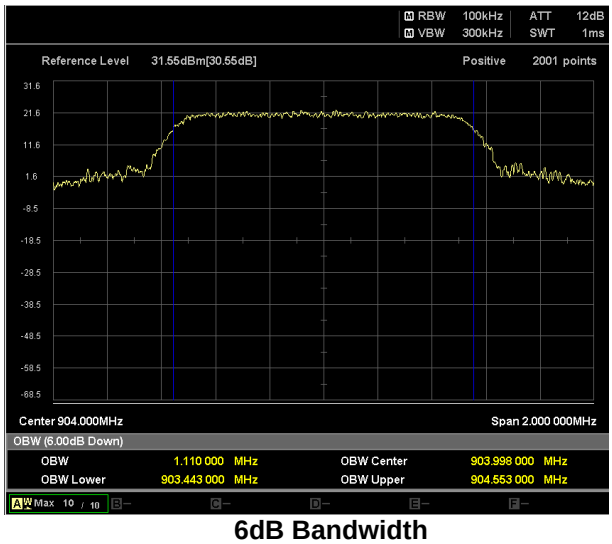
Test results:

Note:
1. All the losses are included during measurement and final values are mentioned in the test report.
2. This product do not support additional beamforming gain / directional gain, it uses single antenna and hence Directional gain of the single antenna is 1dBi.

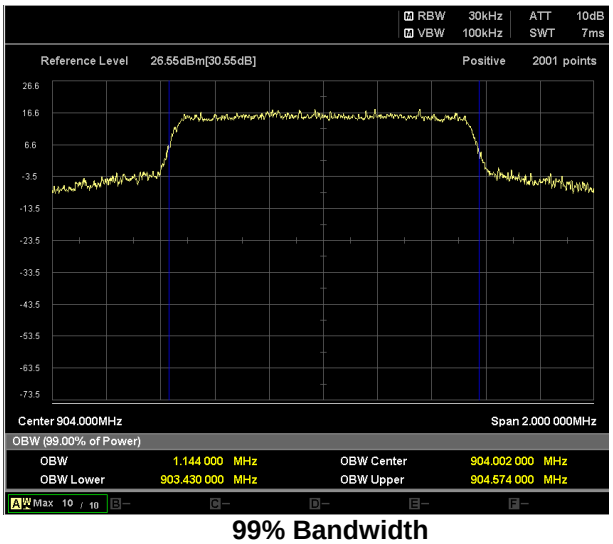
Mode of operation	Stack / Mode	Data rate	Channel frequency (MHz)	6dB Bandwidth (MHz)	99% OCW (MHz)
1	Mesh IP (SBS) (802.15.4 OFDM)	MCS0	904.00	1.110	1.144
			914.80	1.125	1.133
			926.80	1.107	1.104
		MCS6	904.00	1.115	1.142
			914.80	1.102	1.141
			926.80	1.105	1.106
2	Wi-SUN (WSN) (802.15.4 OFDM)	MCS5	903.20	1.109	1.112
			915.20	1.133	1.143
			927.20	1.100	1.108
		MCS6	903.20	1.106	1.110
			915.20	1.106	1.151
			927.20	1.106	1.108
3	Wi-SUN (WSN) (802.15.4 OFDM)	MCS3	902.80	0.593	0.676
			914.80	0.599	0.667
			926.80	0.596	0.626
		MCS5	902.80	0.584	0.672
			914.80	0.595	0.660
			926.80	0.586	0.620

Test Plots:
Mode of Operation: 1
Data Rate: MCS0

Channel frequency: 904.0MHz

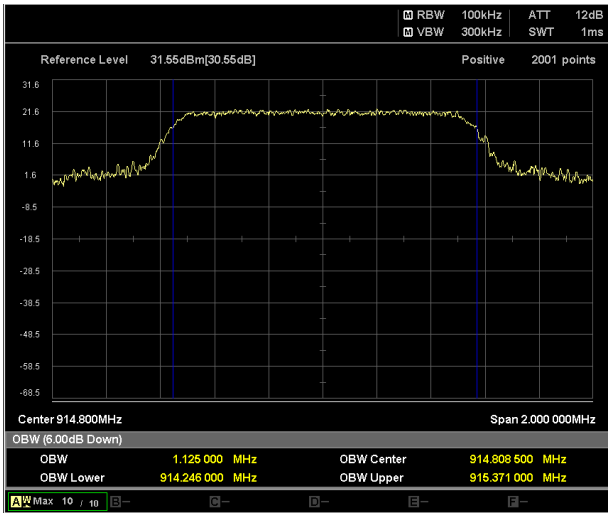


6dB Bandwidth

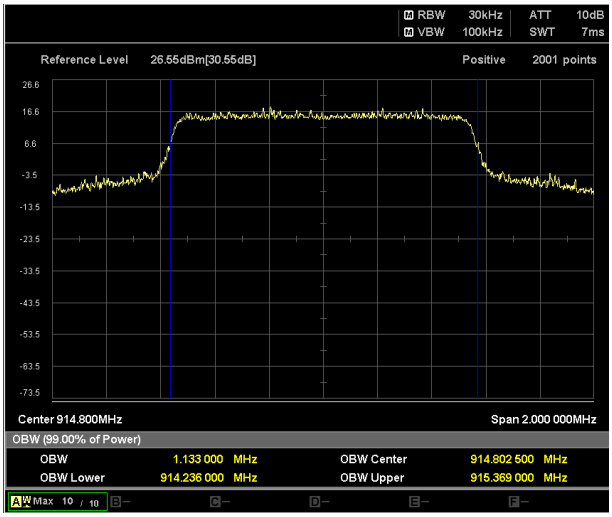


99% Bandwidth

Channel Frequency: 914.8MHz

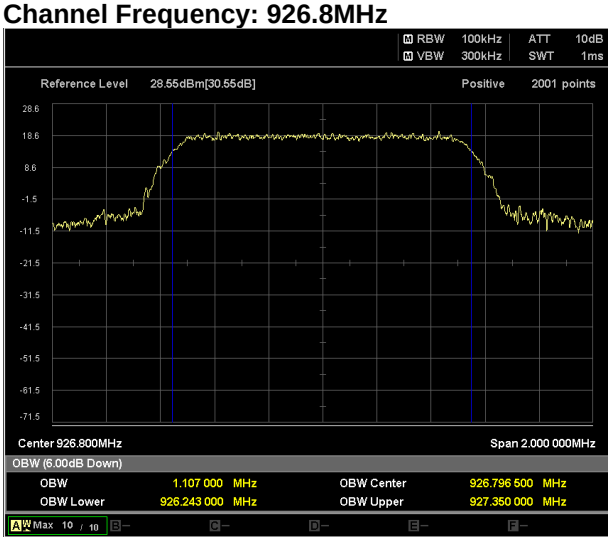


6dB Bandwidth

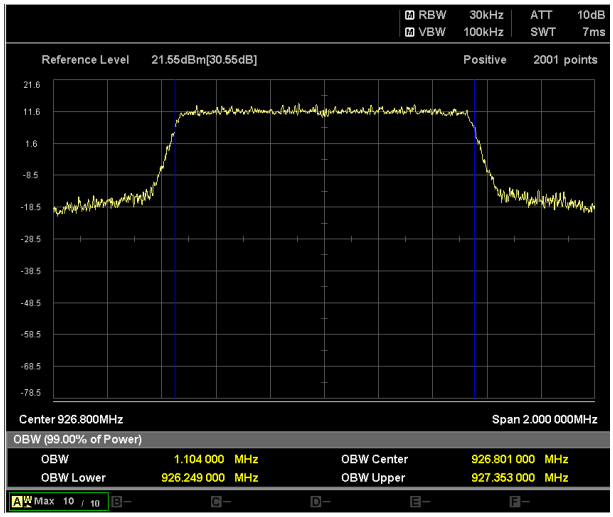


99% Bandwidth

Channel Frequency: 926.8MHz



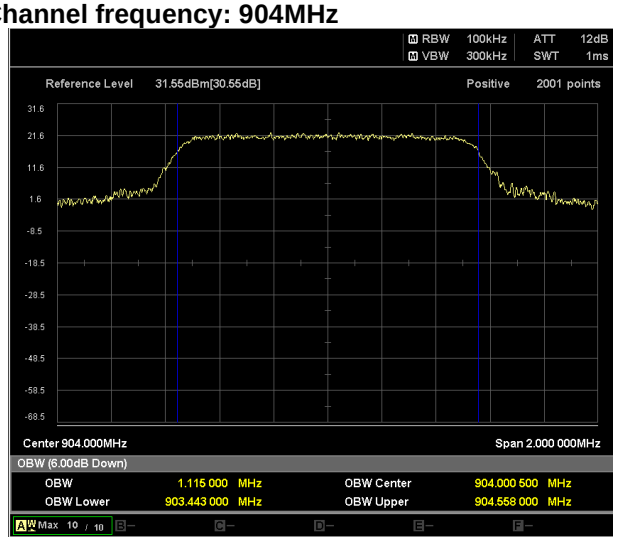
6dB Bandwidth



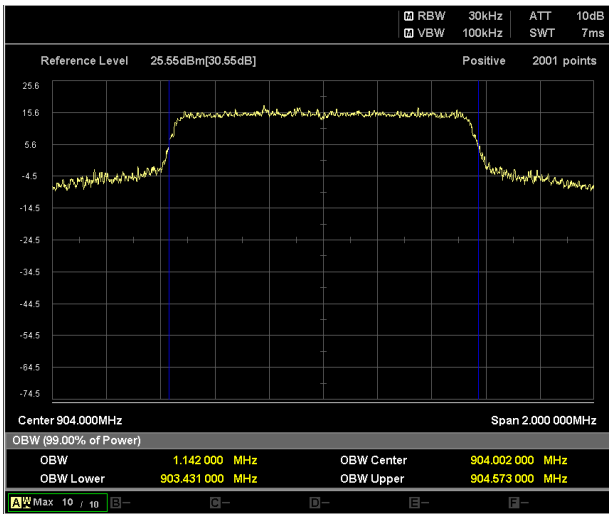
99% Bandwidth

Data Rate: MCS6

Channel frequency: 904MHz

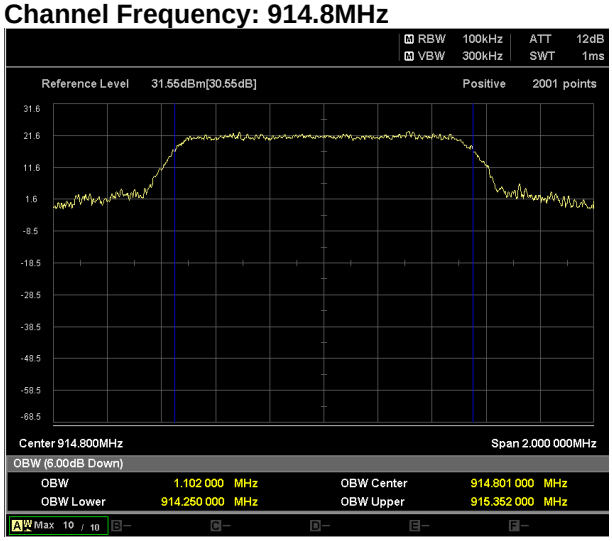


6dB Bandwidth

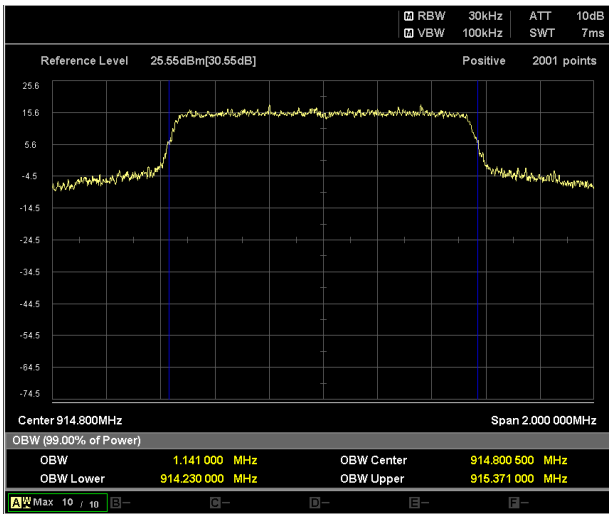


99% Bandwidth

Channel Frequency: 914.8MHz

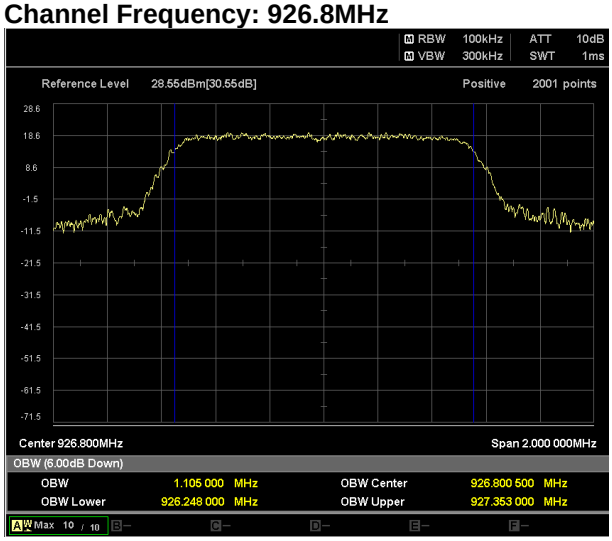


6dB Bandwidth

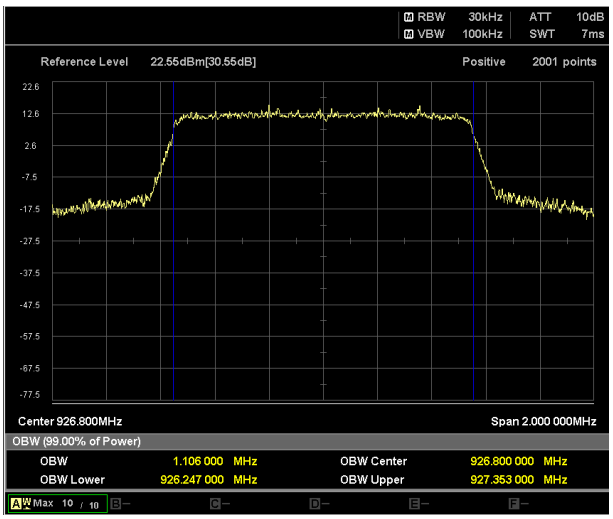


99% Bandwidth

Channel Frequency: 926.8MHz



6dB Bandwidth



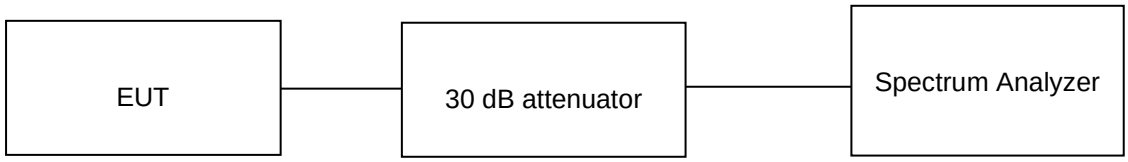
99% Bandwidth

7.4 Emissions in non-restricted frequency bands and Conducted Spurious Emission

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (d) RSS-247 issue 3 Clause 5.5
Test Method	Subclause 11.11 of ANSI C63.10
Measurement Bandwidth	100 kHz
Detector	Peak
Port of testing	Antenna port
Requirement	In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.1 °C Voltage = 3.6VDC through evaluation board Relative humidity: 65%

KDB Guidelines applied:

Measurements were made as per section 8.5 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Test results:

Note:

1. All the losses are included during measurement and final values are mentioned in the test report
2. Final Value (dBm) = Measured Value (dBm) + Attenuator factor (30dB) + Cable loss (0.55dB)
3. This product do not support additional beamforming gain / directional gain, it uses single antenna and hence Directional gain of the single antenna is 1 dBi

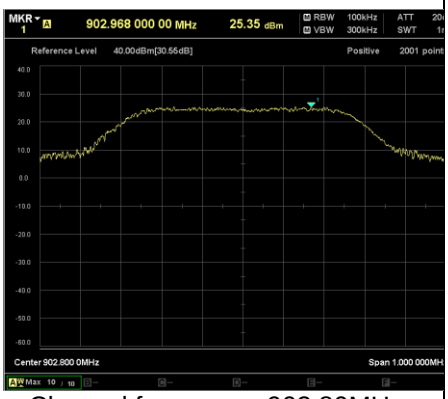
7.4.1 Band edge

Mode of operation	Stack / Mode	Data rate	Channel frequency (MHz)	Value at band edge (A) (dBm)	Band edge frequency (MHz)	Reference value (B) (dBm)	A-B (dBc)	Minimum Limit (dBc)
1	Mesh IP (SBS) (802.15.4 OFDM)	MCS0	904.00	-19.57	902.00	22.15	-41.72	-30
			926.80	-12.18	928.00	19.49	-31.67	-30
		MCS6	904.00	-18.89	902.00	22.3	-41.19	-30
			926.80	-12.25	928.00	19.56	-31.81	-30
2	Wi-SUN (WSN) (802.15.4 OFDM)	MCS5	903.20	-13.61	902.00	19.06	-32.67	-30
			927.20	-17.59	928.00	16.69	-34.28	-30
		MCS6	903.20	-14.75	902.00	19.24	-33.99	-30
			927.20	-15.63	928.00	15.95	-31.58	-30
3	**Wi-SUN (WSN) (802.15.4 OFDM)**	**MCS3**	**902.80**	**-4.83**	**902.00**	**25.35**	**-30.18**	**-30**
			926.80	**-18.15**	**928.00**	**25.44**	**-43.59**	**-30**
		MCS5	**902.80**	**-5.12**	**902.00**	**25.25**	**-30.37**	**-30**
			926.80	**-17.06**	**928.00**	**25.40**	**-42.46**	**-30**

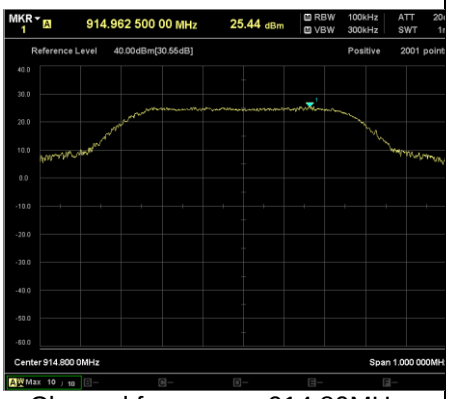
Mode of Operation: 3

Reference Plots:

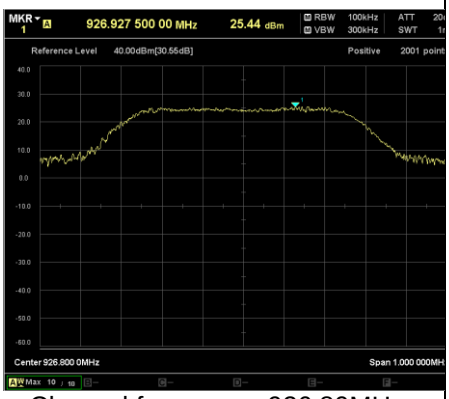
Data Rate: MCS3



Channel frequency: 902.80MHz

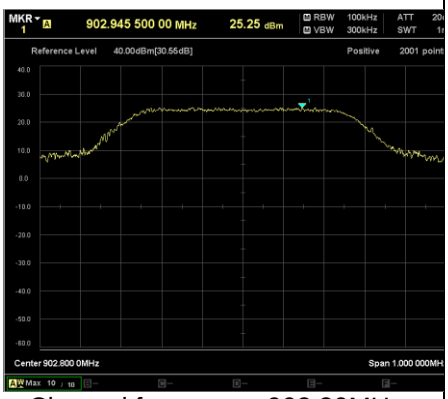


Channel frequency: 914.80MHz

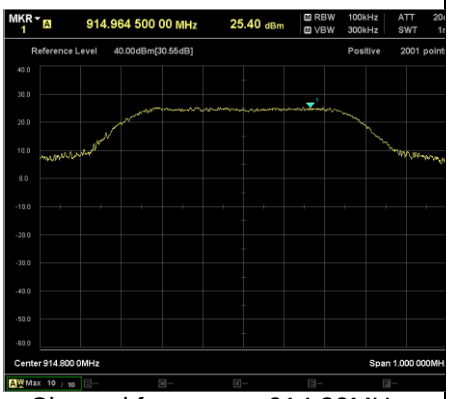


Channel frequency: 926.80MHz

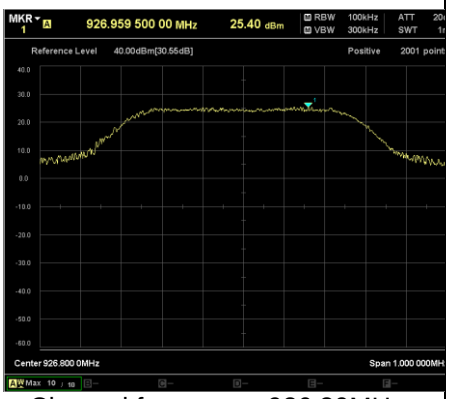
Data Rate: MCS5



Channel frequency: 902.80MHz



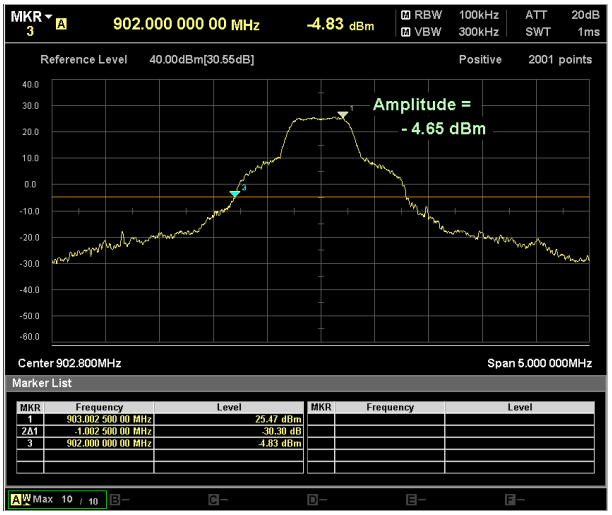
Channel frequency: 914.80MHz



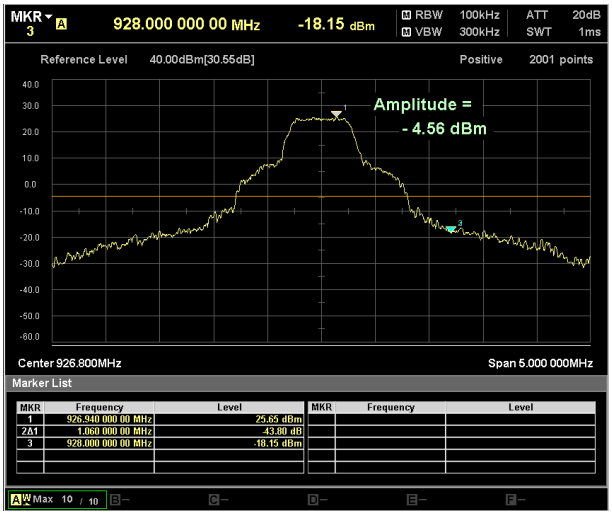
Channel frequency: 926.80MHz

Band edge Test Plots:

Data rate: MCS3

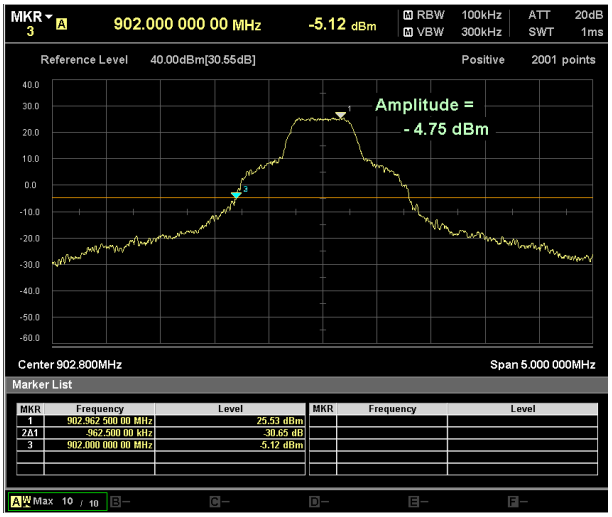


Channel frequency: 902.8MHz

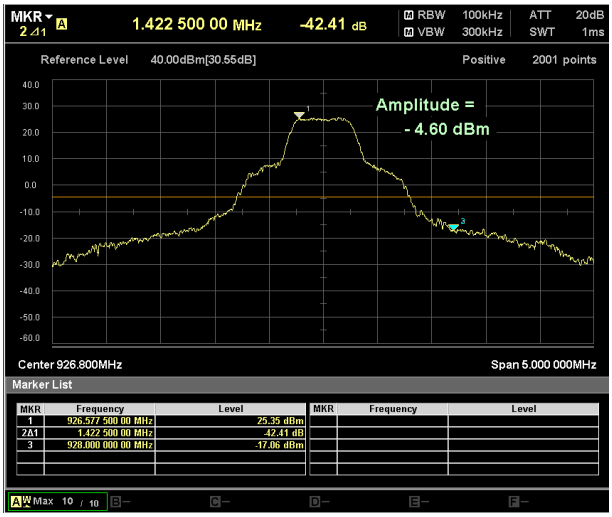


Channel frequency: 926.8MHz

Data rate: MCS5



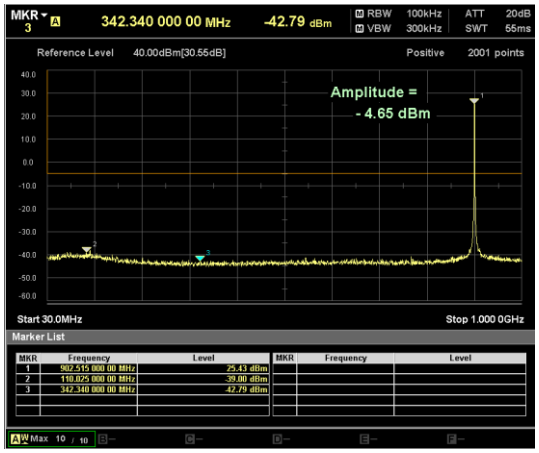
Channel frequency: 902.8MHz



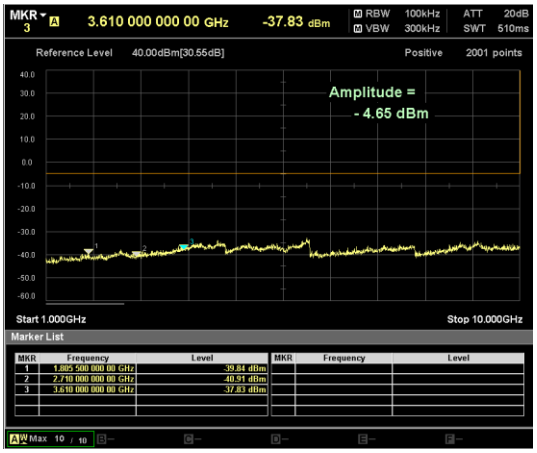
Channel frequency: 926.8MHz

7.4.2 Out-Of-Band Emissions

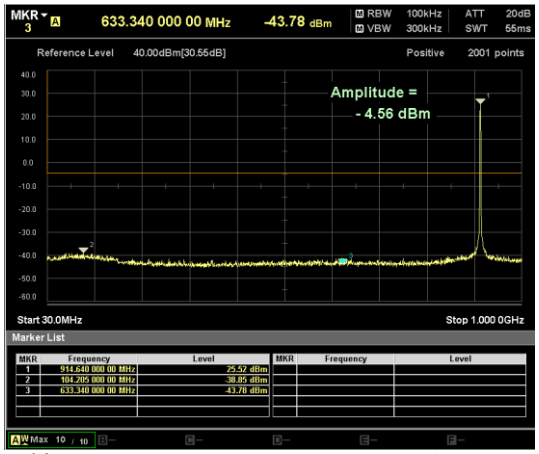
Mode of Operation: 3
Data Rate: MCS3



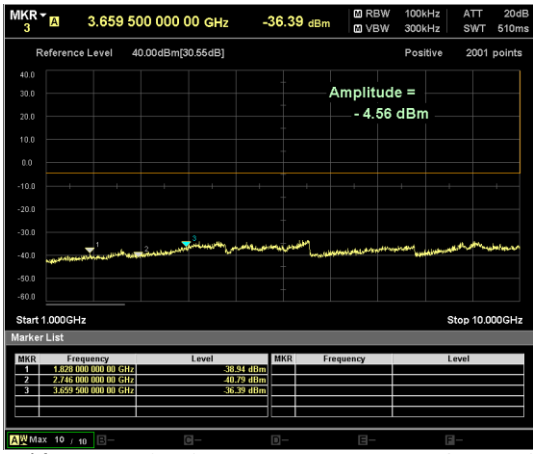
Channel frequency: 902.8MHz Frequency range: 30MHz to 1GHz



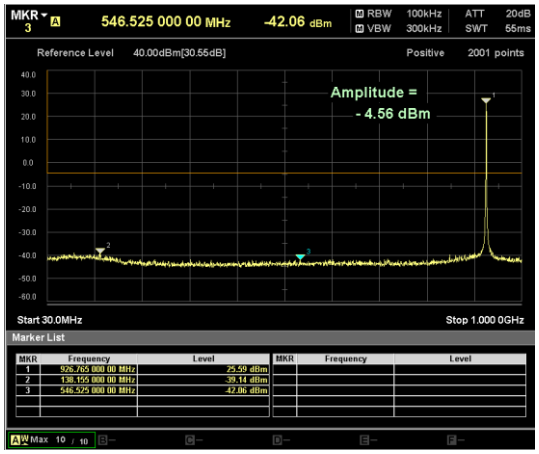
Channel frequency: 902.8MHz Frequency range: 1GHz to 10GHz



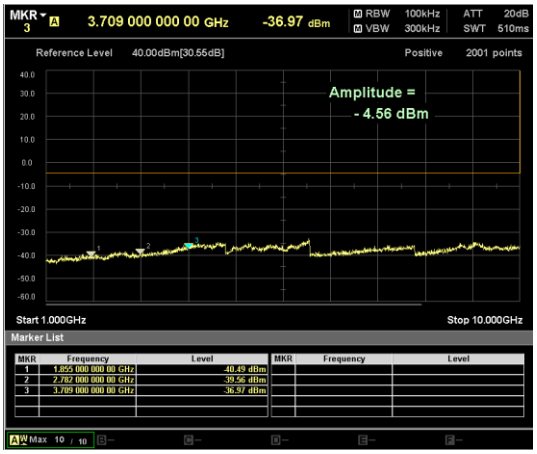
Channel frequency: 914.8MHz Frequency range: 30MHz to 1GHz



Channel frequency: 914.8MHz Frequency range: 1GHz to 10GHz

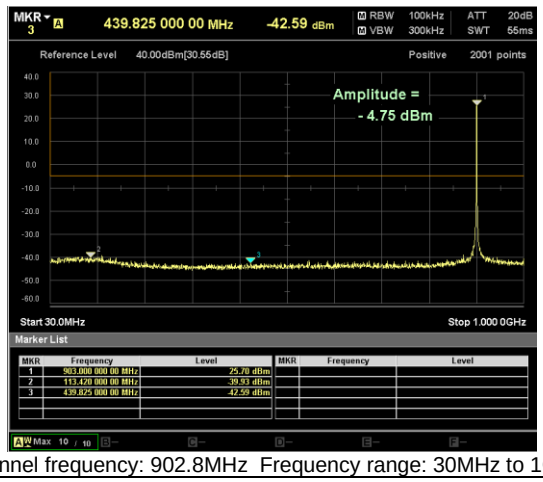


Channel frequency: 926.8MHz Frequency range: 30MHz to 1GHz

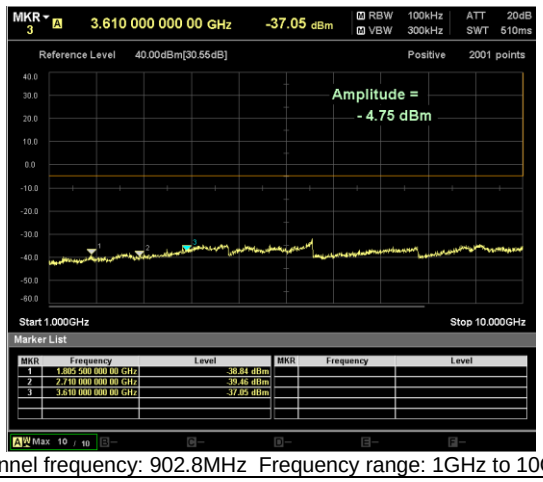


Channel frequency: 926.8MHz Frequency range: 1GHz to 10GHz

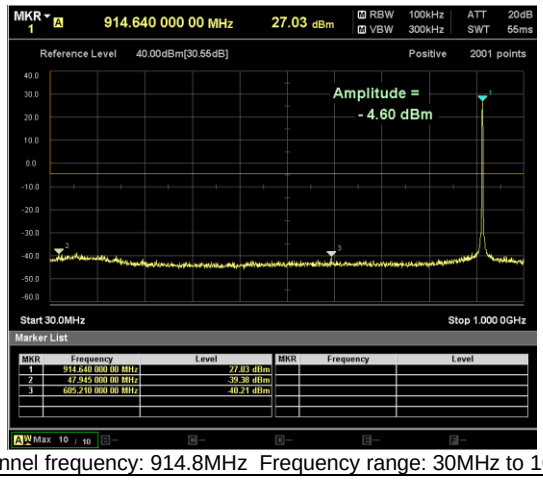
Data Rate: MCS5



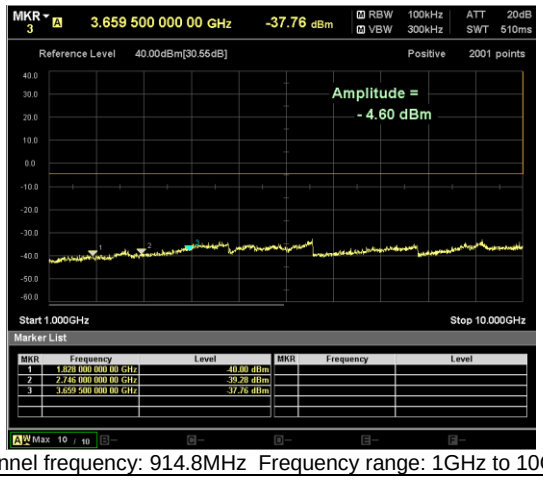
Channel frequency: 902.8MHz Frequency range: 30MHz to 1GHz



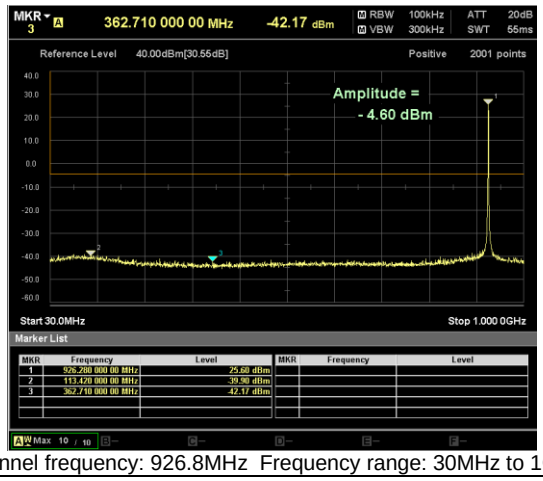
Channel frequency: 902.8MHz Frequency range: 1GHz to 10GHz



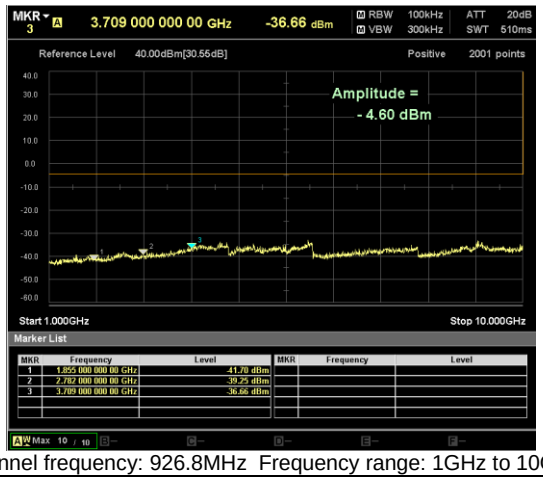
Channel frequency: 914.8MHz Frequency range: 30MHz to 1GHz



Channel frequency: 914.8MHz Frequency range: 1GHz to 10GHz



Channel frequency: 926.8MHz Frequency range: 30MHz to 1GHz



Channel frequency: 926.8MHz Frequency range: 1GHz to 10GHz

7.5 Spurious Radiated Emissions & Restricted Bands of Operation

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (d) / (15.209 & 15.205) RSS-GEN issue 5 clause 8.9, 8.10
Test Method	ANSI C63.10
Measurement Location	Semi Anechoic Chamber 9kHz - 1 GHz Fully Anechoic Chamber 1 GHz - 10GHz
Measurement Bandwidth	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Detector	Refer remarks below
Measuring Distance	3 m
Requirement	As per the limits mentioned in the below table
Test setup	Refer TEST METHODOLOGY

Table 5: Transmitter limits for Radiated emission

Frequency (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54 dBµV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Conditions:

Temperature (Norm) = + 19.5 °C Voltage = 3.6VDC through evaluation board Relative humidity: 63%

Test results:

Note: All the losses are included during measurement and final values are mentioned in the test report. Refer TEST METHODOLOGY for more details

Test results for frequency range 9kHz – 30MHz

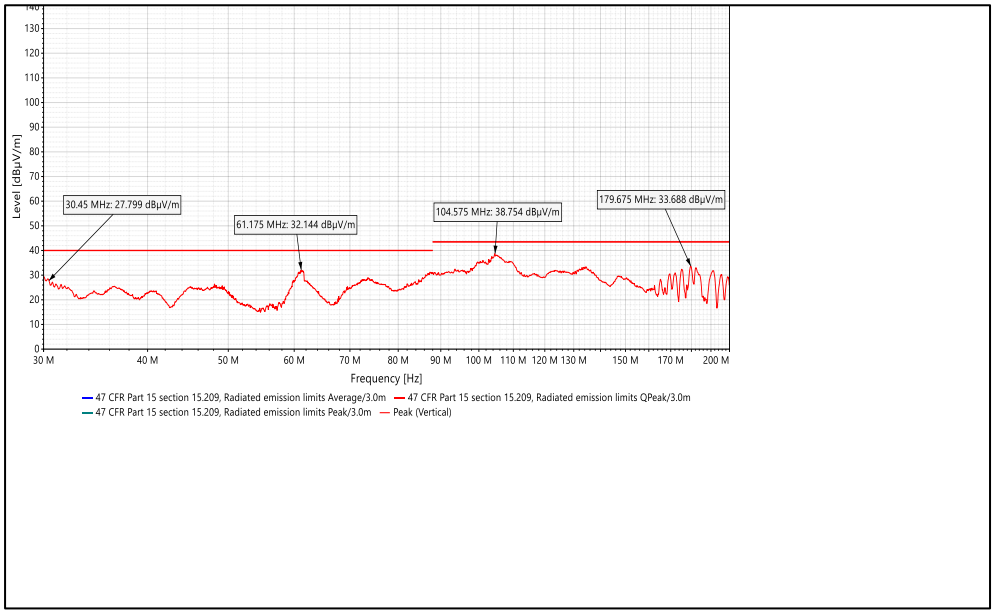
No emissions found in frequency range 9 kHz to 30 MHz, and measured levels are below 20dB from the limit line, hence not reported.

Table 6: Test results for frequency range 30MHz – 200MHz

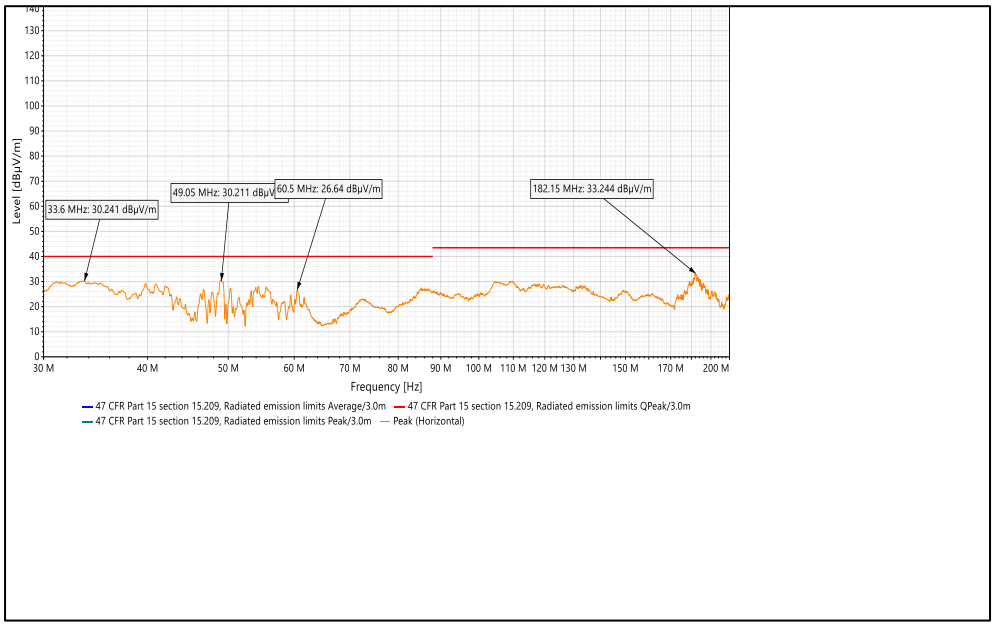
Mode of Operation	Data Rate	Channel frequency (MHz)	Antenna Orientation	Measured Frequency (MHz)	Measured emission value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	MCS0	904	Vertical	30.45	27.79	40.00	-12.21
				61.17	32.14	40.00	-7.86
				104.57	38.75	43.50	-4.75
				179.65	33.68	43.50	-9.82
			Horizontal	33.60	30.24	40.00	-9.76
				49.05	30.21	40.00	-9.79
				60.50	26.64	40.00	-13.36
				182.15	33.24	43.50	-10.26
				104.95	29.16	43.50	-14.34
				181.40	23.85	43.50	-19.65
		914.8	Vertical	61.55	28.50	40.00	-11.50
				104.80	38.03	43.50	-5.47
				162.52	35.87	43.50	-7.63
				191.07	33.36	43.50	-10.14
			Horizontal	61.10	21.00	40.00	-19.00
				85.75	27.60	40.00	-12.40
				109.32	29.94	43.50	-13.56
				181.75	31.77	43.50	-11.73
		926.8	Vertical	36.87	24.87	40.00	-15.13
				61.60	27.65	40.00	-12.35
				104.75	37.01	43.50	-6.49
				176.65	24.75	43.50	-18.75
			Horizontal	72.75	23.97	40.00	-16.03
				85.65	25.43	40.00	-14.57
				104.95	29.16	43.50	-14.34
				181.40	23.85	43.50	-19.65

Test Plots:

Channel frequency: 904.0MHz



Frequency range: 30MHz – 200MHz **Polarization: Vertical**



Frequency range: 30MHz – 200MHz **Polarization: Horizontal**

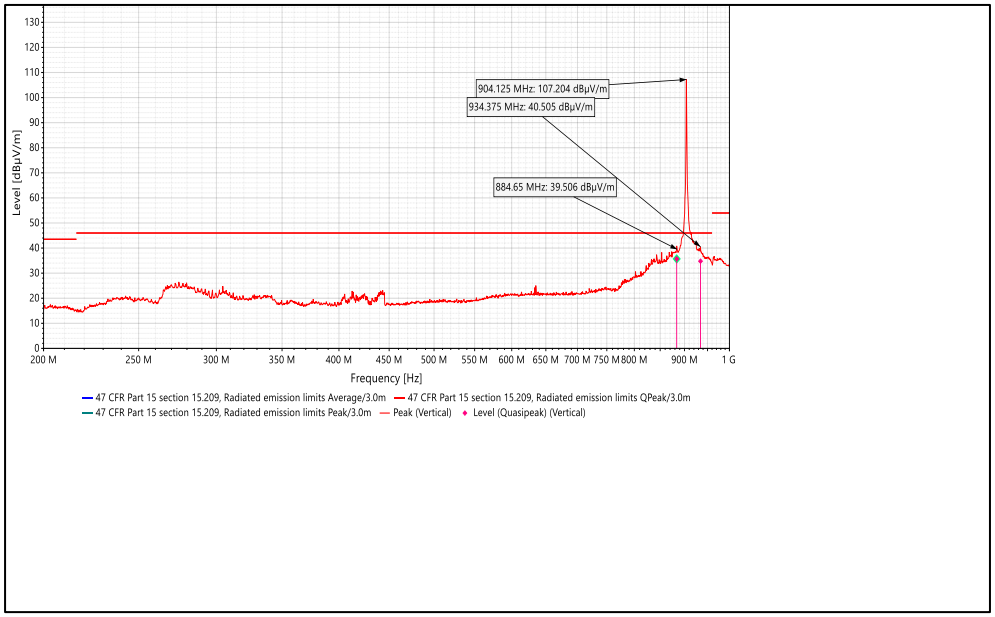
Table 7: Test results for frequency range 200MHz – 1GHz

Mode of Operation	Data Rate	Channel frequency (MHz)	Antenna Orientation	Measured Frequency (MHz)	Measured emission value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	MCS0	904.0	Vertical	883.64(QP)	35.68	46.00	-10.32
				904.12(PK)	107.24	*	-
				934.425(QP)	34.78	46.00	-11.22
			Horizontal	822.69(QP)	38.77	46.00	-7.23
				843.005(QP)	41.92	46.00	-4.08
				853.155(QP)	45.94	46.00	-0.06
				863.31(QP)	43.38	46.00	-2.62
				903.87(Pk)	118.06	*	-
				933.03(QP)	42.01	46.00	-3.99
				944.095(QP)	40.79	46.00	-5.21
		914.8	Vertical	853.165(QP)	34.94	46.00	-11.06
				914.92(PK))	106.99	*	-
			Horizontal	615.48(QP)	14.46	46.00	-31.54
				630.93(QP)	14.62	46.00	-31.38
				832.84(QP)	34.50	46.00	-11.50
				853.145(QP)	39.35	46.00	-6.65
				863.31(QP)	37.59	46.00	-8.41
				883.63(QP)	39.73	46.00	-6.27
				897.975(QP)	44.98	46.00	-1.02
				914.67(PK)	117.81	*	-
				934.535(QP)	40.50	46.00	-5.50
		926.8	Vertical	211.4(Pk)	36.29	43.50	-7.21
				331.22(Pk)	31.03	46.00	-14.97
				853.12(Pk)	36.64	46.00	-9.36
				926.37(Pk)	104.24	*	-
			Horizontal	822.69(QP)	34.81	46.00	-11.19
				853.165(QP)	40.33	46.00	-5.67
				873.49(QP)	33.91	46.00	-12.09
				883.62(QP)	38.76	46.00	-7.24
				893.77(QP)	40.14	46.00	-5.86
				926.67(PK)	115.80	*	-
				944.83(QP)	38.00	46.00	-8.00

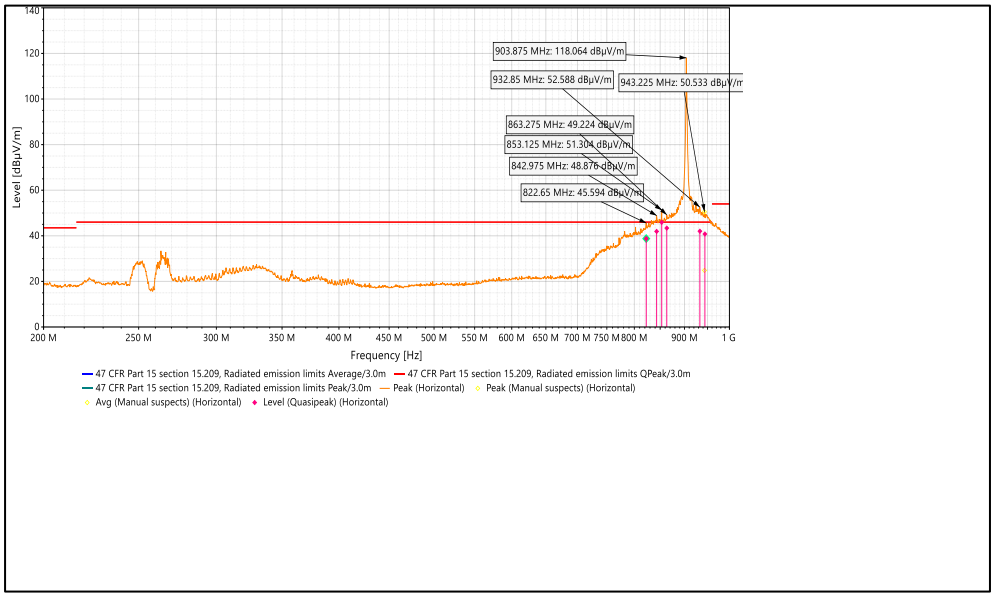
Note: * - indicates the Nominal Frequency of a device

Test Plots:

Channel frequency: 904.0MHz



Frequency range: 200MHz-1GHz **Polarization: Vertical**



Frequency range: 200MHz-1GHz **Polarization: Horizontal**

Table 8: Test results for the frequencies above 1GHz:

Mode of Operation: 1

Data Rate: MCS0

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
904	1808.00(Pk)	Vertical	54.21	74.00	-19.79
	1808.00(Av)		33.75	54.00	-20.25
	2712.00(Pk)		52.32	74.00	-21.68
	2712.00(Av)		35.58	54.00	-18.42
	3616.00(Pk)		58.15	74.00	-15.85
	3616.00(Av)		45.48	54.00	-8.52
	4520.00(Pk)		40.54	74.00	-33.46
	4520.00(Av)		28.43	54.00	-25.57
	5424.00(Pk)		41.52	74.00	-32.48
	5424.00(Av)		29.65	54.00	-24.35
	1808.00(Pk)	Horizontal	61.04	74.00	-12.96
	1808.00(Av)		46.03	54.00	-7.97
	2712.00(Pk)		52.82	74.00	-21.18
	2712.00(Av)		32.44	54.00	-21.56
	3616.00(Pk)		50.79	74.00	-23.21
	3616.00(Av)		38.83	54.00	-15.17
	4520.00(Pk)		41.06	74.00	-32.94
	4520.00(Av)		28.42	54.00	-25.58
	5424.00(Pk)		41.47	74.00	-32.53
	5424.00(Av)		29.07	54.00	-24.93
914.8	1829.60(Pk)	Vertical	54.48	74.00	-19.52
	1829.60(Av)		39.53	54.00	-14.47
	2744.40(Pk)		51.42	74.00	-22.58
	2744.40(Av)		33.47	54.00	-20.53
	3659.20(Pk)		56.99	74.00	-17.01
	3659.20(Av)		45.94	54.00	-8.06
	4574.00(Pk)		41.07	74.00	-32.93
	4574.00(Av)		28.59	54.00	-25.41
	5488.80(Pk)		42.85	74.00	-31.15
	5488.80(Av)		30.44	54.00	-23.56
	1829.60(Pk)	Horizontal	56.48	74.00	-17.52
	1829.60(Av)		39.54	54.00	-14.46
	2744.40(Pk)		52.96	74.00	-21.04
	2744.40(Av)		36.99	54.00	-17.01
	3659.20(Pk)		50.24	74.00	-23.76
	3659.20(Av)		38.62	54.00	-15.38
	4574.00(Pk)		40.68	74.00	-33.32
	4574.00(Av)		28.55	54.00	-25.45
	5488.80(Pk)		41.52	74.00	-32.48
	5488.80(Av)		29.50	54.00	-24.50

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
926.8	1853.60(Pk)	Vertical	55.35	74.00	-18.65
	1853.60(Av)		41.75	54.00	-12.25
	2780.40(Pk)		49.79	74.00	-24.21
	2780.40(Av)		32.06	54.00	-21.94
	3707.20(Pk)		53.95	74.00	-20.05
	3707.20(Av)		38.75	54.00	-15.25
	4634.00(Pk)		41.30	74.00	-32.70
	4634.00(Av)		28.70	54.00	-25.30
	5560.80(Pk)		41.19	74.00	-32.81
	5560.80(Av)		29.51	54.00	-24.49
	1853.60(Pk)	Horizontal	58.43	74.00	-15.57
	1853.60(Av)		36.70	54.00	-17.30
	2780.40(Pk)		49.61	74.00	-24.39
	2780.40(Av)		32.56	54.00	-21.44
	3707.20(Pk)		44.70	74.00	-29.30
	3707.20(Av)		29.62	54.00	-24.38
	4634.00(Pk)		41.65	74.00	-32.35
	4634.00(Av)		28.69	54.00	-25.31
	5560.80(Pk)		41.64	74.00	-32.36
	5560.80(Av)		29.00	54.00	-25.00

Pk: Peak Detector.
Av: Average Detector

Data Rate: MCS6

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
904	1808.00(Pk)	Vertical	54.78	74.00	-19.22
	1808.00(Av)		32.37	54.00	-21.63
	2712.00(Pk)		52.43	74.00	-21.57
	2712.00(Av)		28.96	54.00	-25.04
	3616.00(Pk)		58.41	74.00	-15.59
	3616.00(Av)		36.64	54.00	-17.36
	4520.00(Pk)		40.74	74.00	-33.26
	4520.00(Av)		28.39	54.00	-25.61
	5424.00(Pk)		41.49	74.00	-32.51
	5424.00(Av)		29.20	54.00	-24.80
	1808.00(Pk)	Horizontal	60.17	74.00	-13.83
	1808.00(Av)		36.52	54.00	-17.48
	2712.00(Pk)		55.70	74.00	-18.30
	2712.00(Av)		32.49	54.00	-21.51
	3616.00(Pk)		51.61	74.00	-22.39
	3616.00(Av)		32.56	54.00	-21.44
	4520.00(Pk)		41.41	74.00	-32.59
	4520.00(Av)		28.39	54.00	-25.61
	5424.00(Pk)		41.05	74.00	-32.95
	5424.00(Av)		28.98	54.00	-25.02
914.8	1829.60(Pk)	Vertical	55.04	74.00	-18.96
	1829.60(Av)		33.60	54.00	-20.40
	2744.40(Pk)		52.85	74.00	-21.15
	2744.40(Av)		29.42	54.00	-24.58
	3659.20(Pk)		56.33	74.00	-17.67
	3659.20(Av)		35.82	54.00	-18.18
	4574.00(Pk)		41.19	74.00	-32.81
	4574.00(Av)		28.57	54.00	-25.43
	5488.80(Pk)		42.15	74.00	-31.85
	5488.80(Av)		29.74	54.00	-24.26
	1829.60(Pk)	Horizontal	57.38	74.00	-16.62
	1829.60(Av)		31.50	54.00	-22.50
	2744.40(Pk)		55.25	74.00	-18.75
	2744.40(Av)		31.53	54.00	-22.47
	3659.20(Pk)		51.37	74.00	-22.63
	3659.20(Av)		32.41	54.00	-21.59
	4574.00(Pk)		41.12	74.00	-32.88
	4574.00(Av)		28.56	54.00	-25.44
	5488.80(Pk)		41.60	74.00	-32.40
	5488.80(Av)		29.54	54.00	-24.46

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
926.8	1853.60(Pk)	Vertical	54.82	74.00	-19.18
	1853.60(Av)		32.55	54.00	-21.45
	2780.40(Pk)		47.90	74.00	-26.10
	2780.40(Av)		26.83	54.00	-27.17
	3707.20(Pk)		53.55	74.00	-20.45
	3707.20(Av)		31.15	54.00	-22.85
	4634.00(Pk)		41.29	74.00	-32.71
	4634.00(Av)		28.69	54.00	-25.31
	5560.80(Pk)		42.53	74.00	-31.47
	5560.80(Av)		29.04	54.00	-24.96
	1853.60(Pk)	Horizontal	58.26	74.00	-15.74
	1853.60(Av)		35.33	54.00	-18.67
	2780.40(Pk)		49.25	74.00	-24.75
	2780.40(Av)		27.15	54.00	-26.85
	3707.20(Pk)		46.08	74.00	-27.92
	3707.20(Av)		27.80	54.00	-26.20
	4634.00(Pk)		41.28	74.00	-32.72
	4634.00(Av)		28.68	54.00	-25.32
	5560.80(Pk)		41.57	74.00	-32.43
	5560.80(Av)		29.02	54.00	-24.98

Pk: Peak Detector.
Av: Average Detector

Mode of Operation: 2

Data Rate: MCS5

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
903.2	1806.40(Pk)	Vertical	54.35	74.00	-19.65
	1806.40(Av)		29.80	54.00	-24.20
	2709.60(Pk)		50.27	74.00	-23.73
	2709.60(Av)		26.69	54.00	-27.31
	3612.80(Pk)		58.12	74.00	-15.88
	3612.80(Av)		33.66	54.00	-20.34
	4516.00(Pk)		42.04	74.00	-31.96
	4516.00(Av)		28.59	54.00	-25.41
	5419.20(Pk)		41.82	74.00	-32.18
	5419.20(Av)		29.38	54.00	-24.62
	1806.40(Pk)	Horizontal	58.63	74.00	-15.37
	1806.40(Av)		34.86	54.00	-19.14
	2709.60(Pk)		52.22	74.00	-21.78
	2709.60(Av)		28.03	54.00	-25.97
	3612.80(Pk)		51.20	74.00	-22.80
	3612.80(Av)		28.75	54.00	-25.25
	4516.00(Pk)		41.67	74.00	-32.33
	4516.00(Av)		28.60	54.00	-25.40
	5419.20(Pk)		42.00	74.00	-32.00
	5419.20(Av)		29.23	54.00	-24.77
915.2	1830.40(Pk)	Vertical	59.12	74.00	-14.88
	1830.40(Av)		37.94	54.00	-16.06
	2745.60(Pk)		52.92	74.00	-21.08
	2745.60(Av)		30.65	54.00	-23.35
	3660.80(Pk)		57.57	74.00	-16.43
	3660.80(Av)		39.24	54.00	-14.76
	4576.00(Pk)		41.05	74.00	-32.95
	4576.00(Av)		28.63	54.00	-25.37
	5491.20(Pk)		42.36	74.00	-31.64
	5491.20(Av)		29.82	54.00	-24.18
	1830.40(Pk)	Horizontal	58.91	74.00	-15.09
	1830.40(Av)		39.76	54.00	-14.24
	2745.60(Pk)		56.49	74.00	-17.51
	2745.60(Av)		32.79	54.00	-21.21
	3660.80(Pk)		52.05	74.00	-21.95
	3660.80(Av)		33.64	54.00	-20.36
	4576.00(Pk)		41.98	74.00	-32.02
	4576.00(Av)		28.63	54.00	-25.37
	5491.20(Pk)		41.92	74.00	-32.08
	5491.20(Av)		29.62	54.00	-24.38

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
927.2	1854.40(Pk)	Vertical	48.27	74.00	-25.73
	1854.60(Av)		25.24	54.00	-28.76
	2781.60(Pk)		44.94	74.00	-29.06
	2781.40(Av)		25.91	54.00	-28.09
	3708.80(Pk)		51.51	74.00	-22.49
	3708.80(Av)		28.90	54.00	-25.10
	4636.00(Pk)		41.51	74.00	-32.49
	4636.00(Av)		28.84	54.00	-25.16
	5563.20(Pk)		42.19	74.00	-31.81
	5563.20(Av)		29.43	54.00	-24.57
	1854.40(Pk)	Horizontal	52.06	74.00	-21.94
	1854.60(Av)		28.22	54.00	-25.78
	2781.60(Pk)		48.74	74.00	-25.26
	2781.40(Av)		25.53	54.00	-28.47
	3708.80(Pk)		45.20	74.00	-28.80
	3708.80(Av)		26.90	54.00	-27.10
	4636.00(Pk)		41.61	74.00	-32.39
	4636.00(Av)		28.82	54.00	-25.18
	5563.20(Pk)		42.28	74.00	-31.72
	5563.20(Av)		29.14	54.00	-24.86

Pk: Peak Detector.
Av: Average Detector

Data Rate: MCS6

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
903.2	1806.40(Pk)	Vertical	54.89	74.00	-19.11
	1806.40(Av)		32.30	54.00	-21.70
	2709.60(Pk)		49.08	74.00	-24.92
	2709.60(Av)		26.43	54.00	-27.57
	3612.80(Pk)		57.80	74.00	-16.20
	3612.80(Av)		33.29	54.00	-20.71
	4516.00(Pk)		40.84	74.00	-33.16
	4516.00(Av)		28.57	54.00	-25.43
	5419.20(Pk)		41.90	74.00	-32.10
	5419.20(Av)		29.39	54.00	-24.61
	1806.40(Pk)	Horizontal	58.38	74.00	-15.62
	1806.40(Av)		34.86	54.00	-19.14
	2709.60(Pk)		51.72	74.00	-22.28
	2709.60(Av)		27.10	54.00	-26.90
	3612.80(Pk)		50.56	74.00	-23.44
	3612.80(Av)		28.75	54.00	-25.25
	4516.00(Pk)		40.95	74.00	-33.05
	4516.00(Av)		28.54	54.00	-25.46
	5419.20(Pk)		41.86	74.00	-32.14
	5419.20(Av)		29.20	54.00	-24.80
915.2	1830.40(Pk)	Vertical	58.40	74.00	-15.60
	1830.40(Av)		35.96	54.00	-18.04
	2745.60(Pk)		52.83	74.00	-21.17
	2745.60(Av)		29.72	54.00	-24.28
	3660.80(Pk)		57.36	74.00	-16.64
	3660.80(Av)		37.19	54.00	-16.81
	4576.00(Pk)		41.23	74.00	-32.77
	4576.00(Av)		28.62	54.00	-25.38
	5491.20(Pk)		41.93	74.00	-32.07
	5491.20(Av)		29.73	54.00	-24.27
	1830.40(Pk)	Horizontal	59.71	74.00	-14.29
	1830.40(Av)		37.55	54.00	-16.45
	2745.60(Pk)		56.43	74.00	-17.57
	2745.60(Av)		31.93	54.00	-22.07
	3660.80(Pk)		51.60	74.00	-22.40
	3660.80(Av)		31.88	54.00	-22.12
	4576.00(Pk)		41.08	74.00	-32.92
	4576.00(Av)		28.61	54.00	-25.39
	5491.20(Pk)		42.89	74.00	-31.11
	5491.20(Av)		29.59	54.00	-24.41

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
927.2	1854.40(Pk)	Vertical	47.54	74.00	-26.46
	1854.60(Av)		25.00	54.00	-29.00
	2781.60(Pk)		44.90	74.00	-29.10
	2781.40(Av)		25.37	54.00	-28.63
	3708.80(Pk)		50.01	74.00	-23.99
	3708.80(Av)		28.34	54.00	-25.66
	4636.00(Pk)		42.07	74.00	-31.93
	4636.00(Av)		28.81	54.00	-25.19
	5563.20(Pk)		43.12	74.00	-30.88
	5563.20(Av)		29.34	54.00	-24.66
	1854.40(Pk)	Horizontal	52.91	74.00	-21.09
	1854.60(Av)		27.70	54.00	-26.30
	2781.60(Pk)		48.07	74.00	-25.93
	2781.40(Av)		25.73	54.00	-28.27
	3708.80(Pk)		45.30	74.00	-28.70
	3708.80(Av)		26.75	54.00	-27.25
	4636.00(Pk)		41.57	74.00	-32.43
	4636.00(Av)		28.81	54.00	-25.19
	5563.20(Pk)		42.16	74.00	-31.84
	5563.20(Av)		29.14	54.00	-24.86

Pk: Peak Detector.
Av: Average Detector

Mode of Operation: 3

Data Rate: MCS3

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
902.8	1805.60(Pk)	Vertical	61.94	74.00	-12.06
	1805.60(Av)		45.28	54.00	-8.72
	2708.40(Pk)		54.73	74.00	-19.27
	2708.40(Av)		38.01	54.00	-15.99
	3611.20(Pk)		60.32	74.00	-13.68
	3611.20(Av)		42.67	54.00	-11.33
	4514.00(Pk)		42.03	74.00	-31.97
	4514.00(Av)		28.73	54.00	-25.27
	5416.80(Pk)		41.56	74.00	-32.44
	5416.80(Av)		29.66	54.00	-24.34
	1805.60(Pk)	Horizontal	61.07	74.00	-12.93
	1805.60(Av)		46.72	54.00	-7.28
	2708.40(Pk)		56.94	74.00	-17.06
	2708.40(Av)		28.01	54.00	-25.99
	3611.20(Pk)		52.23	74.00	-21.77
	3611.20(Av)		35.80	54.00	-18.20
	4514.00(Pk)		41.57	74.00	-32.43
	4514.00(Av)		28.65	54.00	-25.35
	5416.80(Pk)		41.87	74.00	-32.13
	5416.80(Av)		29.28	54.00	-24.72
914.8	1829.60(Pk)	Vertical	59.74	74.00	-14.26
	1829.60(Av)		41.06	54.00	-12.94
	2744.40(Pk)		53.65	74.00	-20.35
	2744.40(Av)		36.08	54.00	-17.92
	3659.20(Pk)		57.49	74.00	-16.51
	3659.20(Av)		44.68	54.00	-9.32
	4574.00(Pk)		40.86	74.00	-33.14
	4574.00(Av)		28.69	54.00	-25.31
	5488.80(Pk)		42.87	74.00	-31.13
	5488.80(Av)		30.04	54.00	-23.96
	1829.60(Pk)	Horizontal	59.83	74.00	-14.17
	1829.60(Av)		46.10	54.00	-7.90
	2744.40(Pk)		58.47	74.00	-15.53
	2744.40(Av)		38.65	54.00	-15.35
	3659.20(Pk)		51.54	74.00	-22.46
	3659.20(Av)		32.80	54.00	-21.20
	4574.00(Pk)		41.25	74.00	-32.75
	4574.00(Av)		28.66	54.00	-25.34
	5488.80(Pk)		41.65	74.00	-32.35
	5488.80(Av)		29.70	54.00	-24.30

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
926.8	1853.60(Pk)	Vertical	56.38	74.00	-17.62
	1853.60(Av)		39.26	54.00	-14.74
	2780.40(Pk)		52.15	74.00	-21.85
	2780.40(Av)		30.96	54.00	-23.04
	3707.20(Pk)		54.95	74.00	-19.05
	3707.20(Av)		39.15	54.00	-14.85
	4634.00(Pk)		42.04	74.00	-31.96
	4634.00(Av)		28.95	54.00	-25.05
	5560.80(Pk)		41.81	74.00	-32.19
	5560.80(Av)		29.26	54.00	-24.74
	1853.60(Pk)	Horizontal	58.69	74.00	-15.31
	1853.60(Av)		36.29	54.00	-17.71
	2780.40(Pk)		55.93	74.00	-18.07
	2780.40(Av)		34.08	54.00	-19.92
	3707.20(Pk)		48.17	74.00	-25.83
	3707.20(Av)		33.23	54.00	-20.77
	4634.00(Pk)		42.30	74.00	-31.70
	4634.00(Av)		28.87	54.00	-25.13
	5560.80(Pk)		41.66	74.00	-32.34
	5560.80(Av)		29.13	54.00	-24.87

Pk: Peak Detector.
Av: Average Detector

Data Rate: MCS5

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
902.8	1805.60(Pk)	Vertical	58.14	74.00	-15.86
	1805.60(Av)		39.63	54.00	-14.37
	2708.40(Pk)		55.66	74.00	-18.34
	2708.40(Av)		34.96	54.00	-19.04
	3611.20(Pk)		60.70	74.00	-13.30
	3611.20(Av)		41.25	54.00	-12.75
	4514.00(Pk)		41.28	74.00	-32.72
	4514.00(Av)		28.66	54.00	-25.34
	5416.80(Pk)		42.21	74.00	-31.79
	5416.80(Av)		29.55	54.00	-24.45
	1805.60(Pk)	Horizontal	61.42	74.00	-12.58
	1805.60(Av)		42.42	54.00	-11.58
	2708.40(Pk)		58.25	74.00	-15.75
	2708.40(Av)		35.90	54.00	-18.10
	3611.20(Pk)		53.47	74.00	-20.53
	3611.20(Av)		36.84	54.00	-17.16
	4514.00(Pk)		40.99	74.00	-33.01
	4514.00(Av)		28.60	54.00	-25.40
	5416.80(Pk)		41.96	74.00	-32.04
	5416.80(Av)		29.29	54.00	-24.71
914.8	1829.60(Pk)	Vertical	60.37	74.00	-13.63
	1829.60(Av)		40.40	54.00	-13.60
	2744.40(Pk)		53.92	74.00	-20.08
	2744.40(Av)		32.77	54.00	-21.23
	3659.20(Pk)		57.48	74.00	-16.52
	3659.20(Av)		39.96	54.00	-14.04
	4574.00(Pk)		41.41	74.00	-32.59
	4574.00(Av)		28.69	54.00	-25.31
	5488.80(Pk)		42.08	74.00	-31.92
	5488.80(Av)		30.00	54.00	-24.00
	1829.60(Pk)	Horizontal	59.61	74.00	-14.39
	1829.60(Av)		41.82	54.00	-12.18
	2744.40(Pk)		56.82	74.00	-17.18
	2744.40(Av)		36.42	54.00	-17.58
	3659.20(Pk)		52.63	74.00	-21.37
	3659.20(Av)		36.04	54.00	-17.96
	4574.00(Pk)		41.15	74.00	-32.85
	4574.00(Av)		28.67	54.00	-25.33
	5488.80(Pk)		42.77	74.00	-31.23
	5488.80(Av)		29.72	54.00	-24.28

Channel Frequency (MHz)	Measured Frequency (MHz)	Antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
926.8	1853.60(Pk)	Vertical	55.88	74.00	-18.12
	1853.60(Av)		34.65	54.00	-19.35
	2780.40(Pk)		52.23	74.00	-21.77
	2780.40(Av)		32.40	54.00	-21.60
	3707.20(Pk)		55.06	74.00	-18.94
	3707.20(Av)		38.35	54.00	-15.65
	4634.00(Pk)		42.13	74.00	-31.87
	4634.00(Av)		28.90	54.00	-25.10
	5560.80(Pk)		41.58	74.00	-32.42
	5560.80(Av)		29.26	54.00	-24.74
	1853.60(Pk)	Horizontal	57.12	74.00	-16.88
	1853.60(Av)		38.36	54.00	-15.64
	2780.40(Pk)		55.72	74.00	-18.28
	2780.40(Av)		34.48	54.00	-19.52
	3707.20(Pk)		49.07	74.00	-24.93
	3707.20(Av)		33.32	54.00	-20.68
	4634.00(Pk)		41.49	74.00	-32.51
	4634.00(Av)		28.87	54.00	-25.13
	5560.80(Pk)		41.52	74.00	-32.48
	5560.80(Av)		29.11	54.00	-24.89

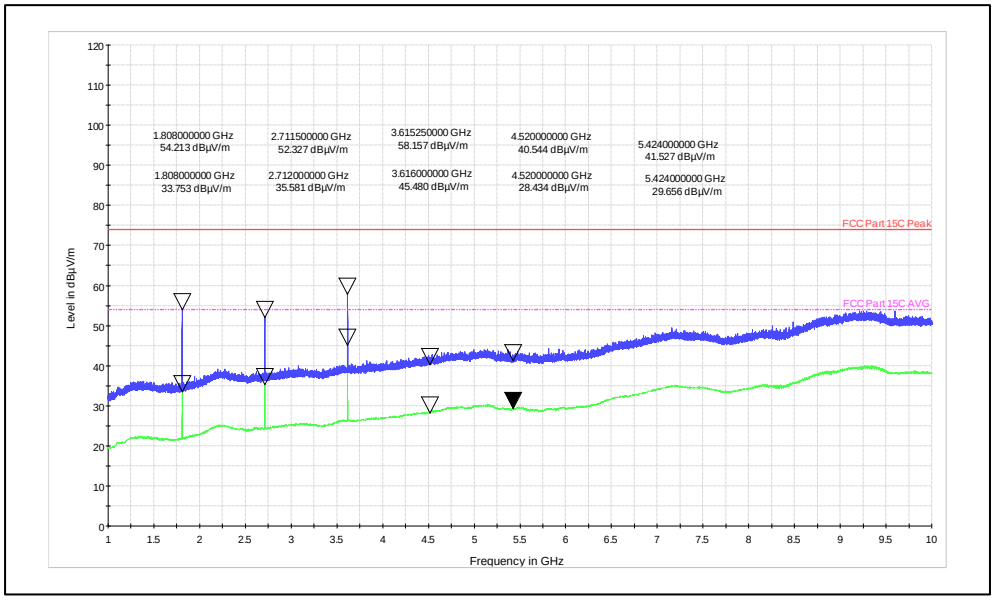
Pk: Peak Detector.
Av: Average Detector

Test Plots:

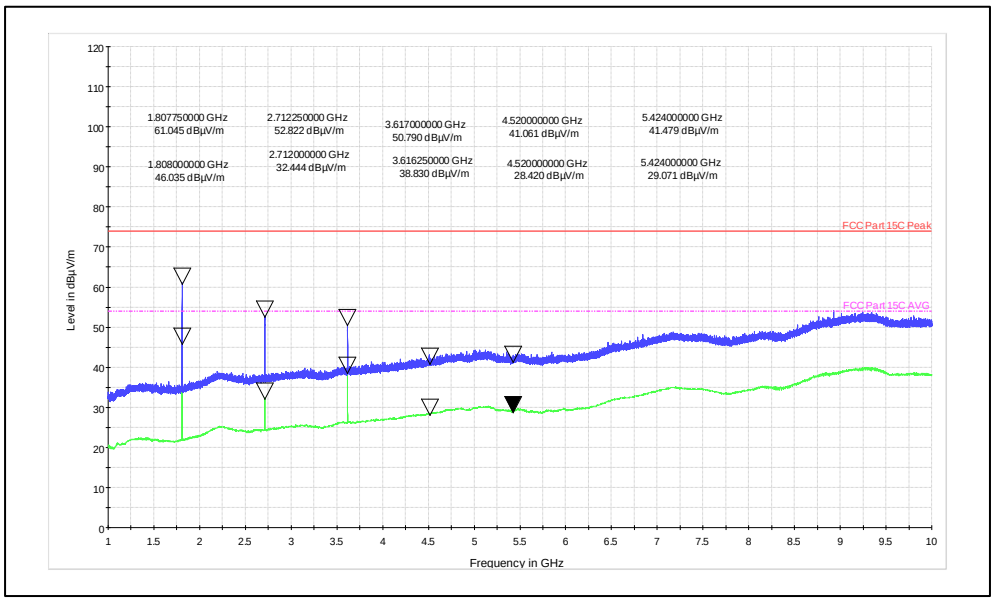
Mode of Opeartion: 1

Data Rate: MCS0

Channel frequency: 904.0MHz

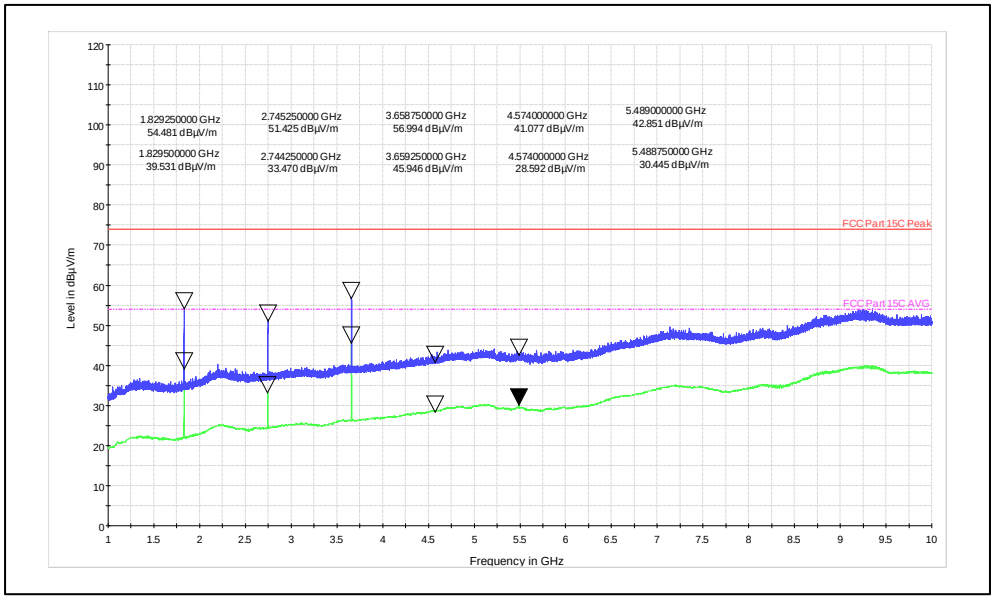


Polarization: Vertical

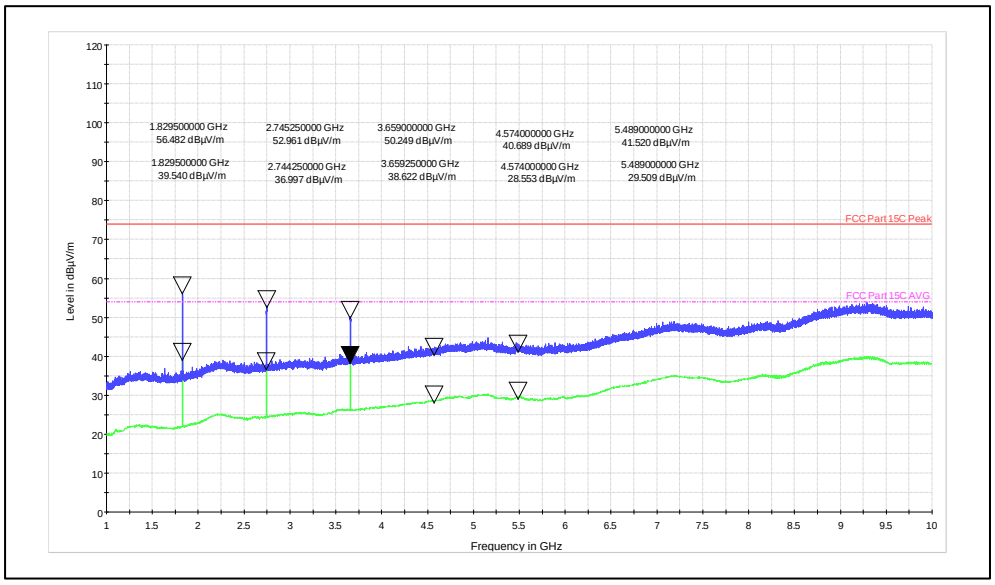


Polarization: Horizontal

Channel frequency: 914.8MHz

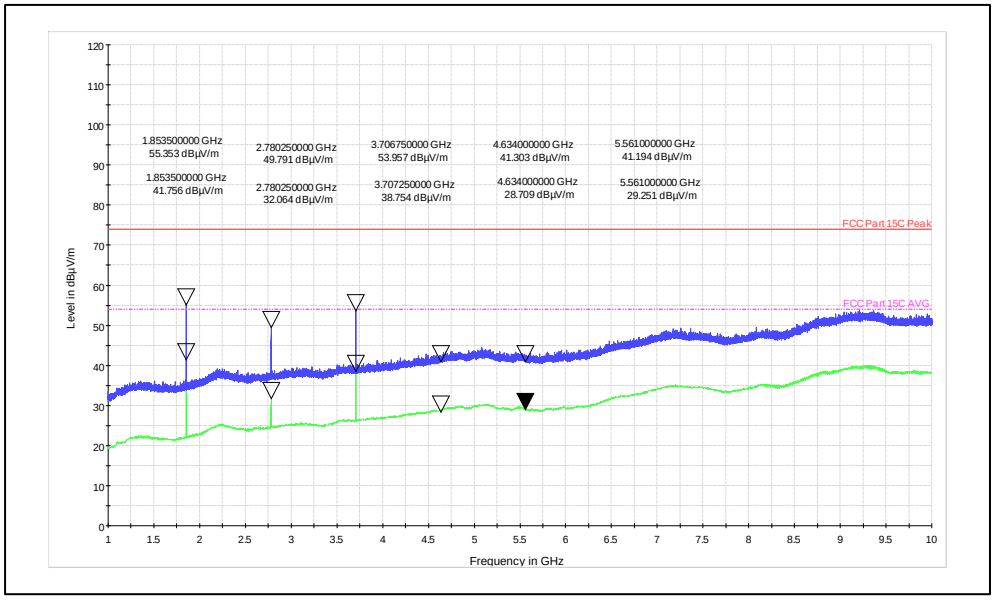


Polarization: Vertical

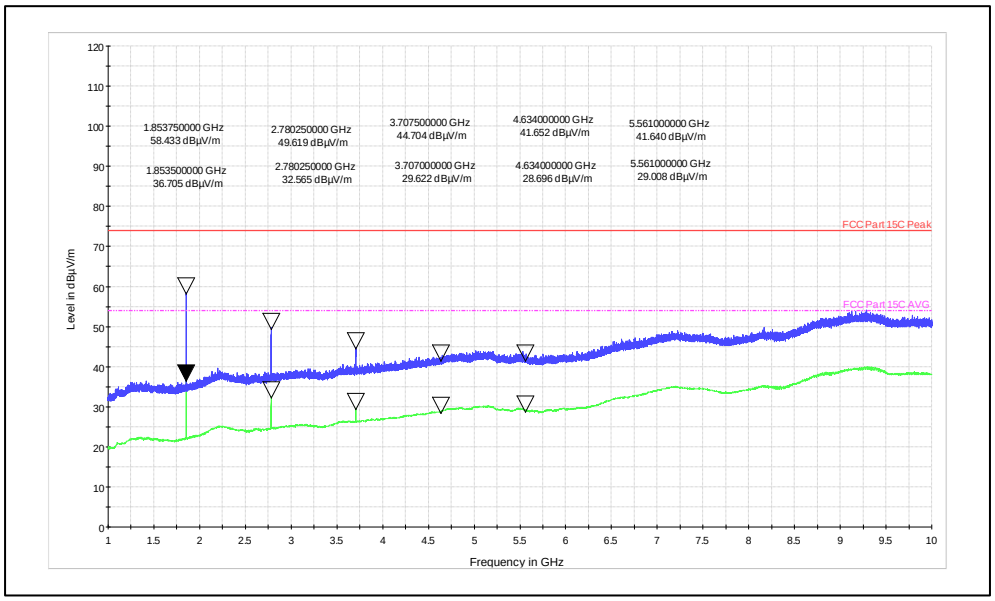


Polarization: Horizontal

Channel frequency: 926.8MHz



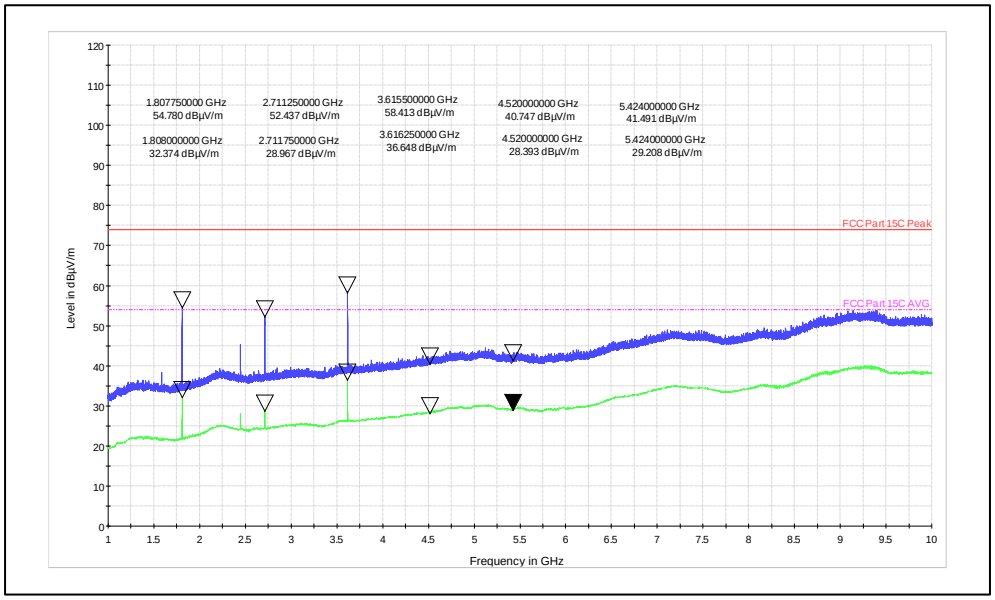
Polarization: Vertical



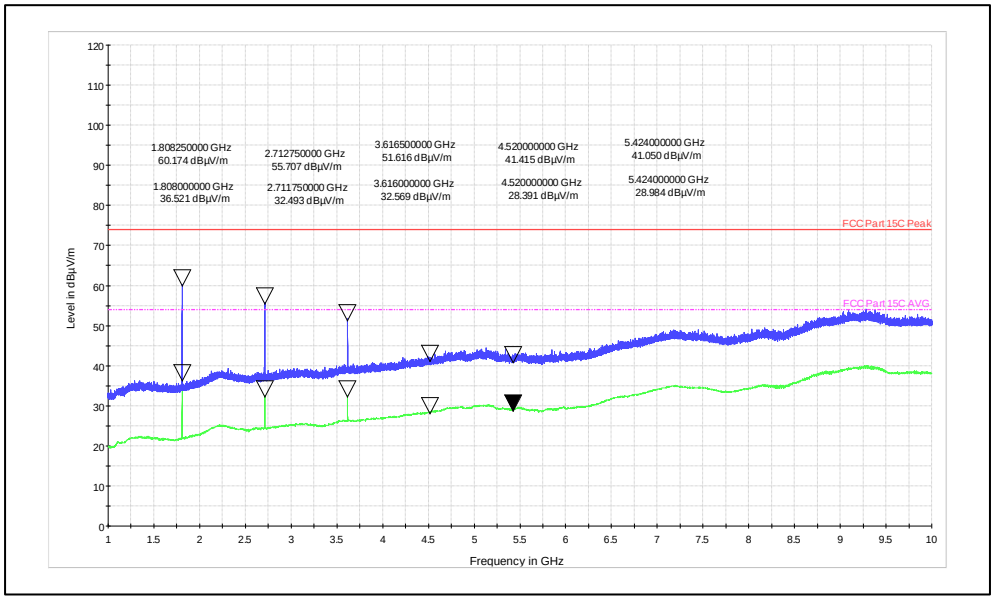
Polarization: Horizontal

Data Rate: MCS6

Channel frequency: 904MHz

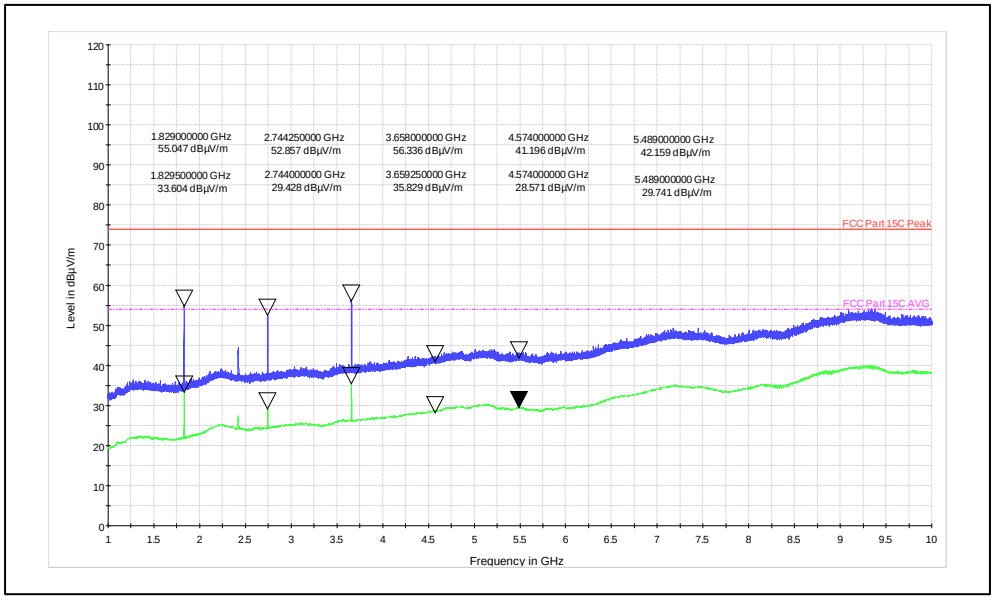


Polarization: Vertical

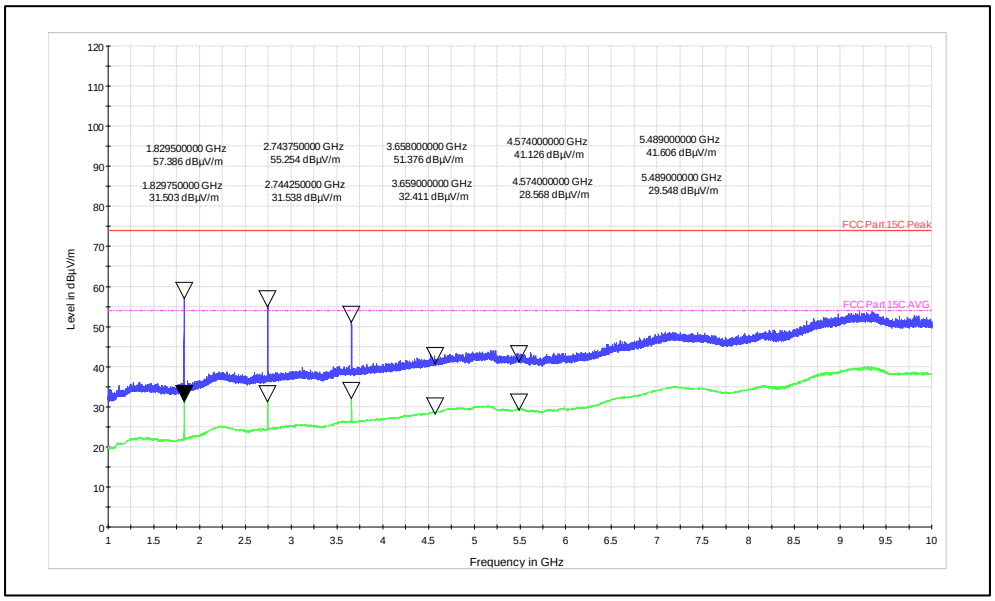


Polarization: Horizontal

Channel frequency: 914.8MHz

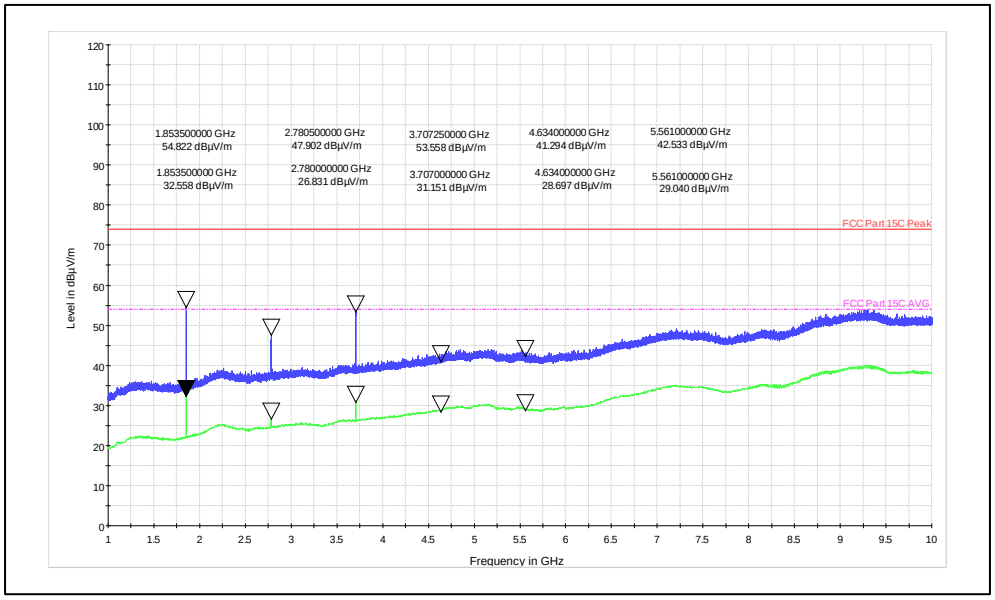


Polarization: Vertical

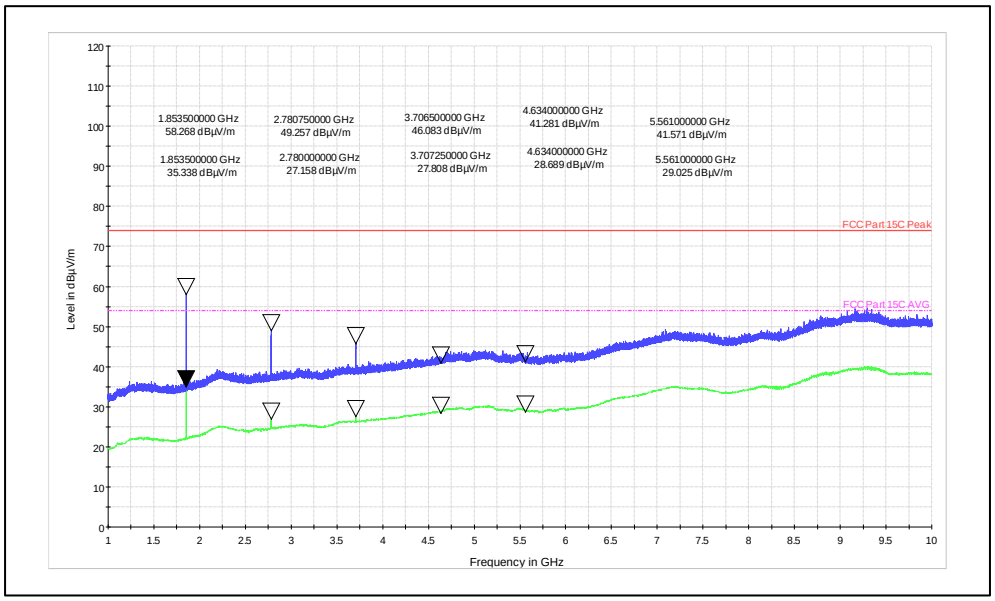


Polarization: Horizontal

Channel frequency: 926.8MHz



Polarization: Vertical



Polarization: Horizontal

7.6 AC Power lines Conducted emissions

Result ***Pass***

Test Specification	:	FCC Part 15 Section 15.207 / RSS Gen Issue 5 Section 8.8
Test Method	:	ANSI C 63.10-2013
Testing Location	:	Screened room
Measurement Bandwidth	:	9kHz
Frequency Range	:	150kHz – 30MHz
Supply Voltage	:	230VAC,50Hz
Test Method	:	Refer TEST METHODOLOGY

Table 9: Limits for Conducted power line emission

Frequency of emission (MHz)	QP Limit (dBµV)	AV Limit (dBµV)
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5	56	46
5 – 30	60	50

* Decreases with the logarithm of the frequency

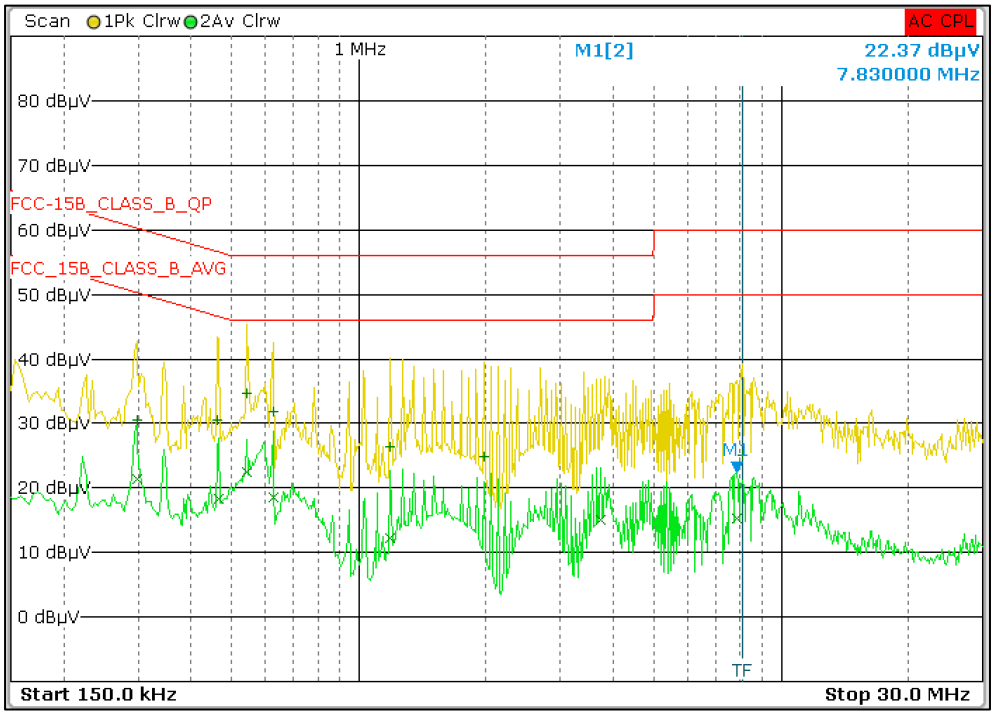
Test Conditions:

Temperature (Norm) = +24 °C Voltage = 230VAC,50Hz (Through Direct supply) Relative humidity: 64%

Test results:

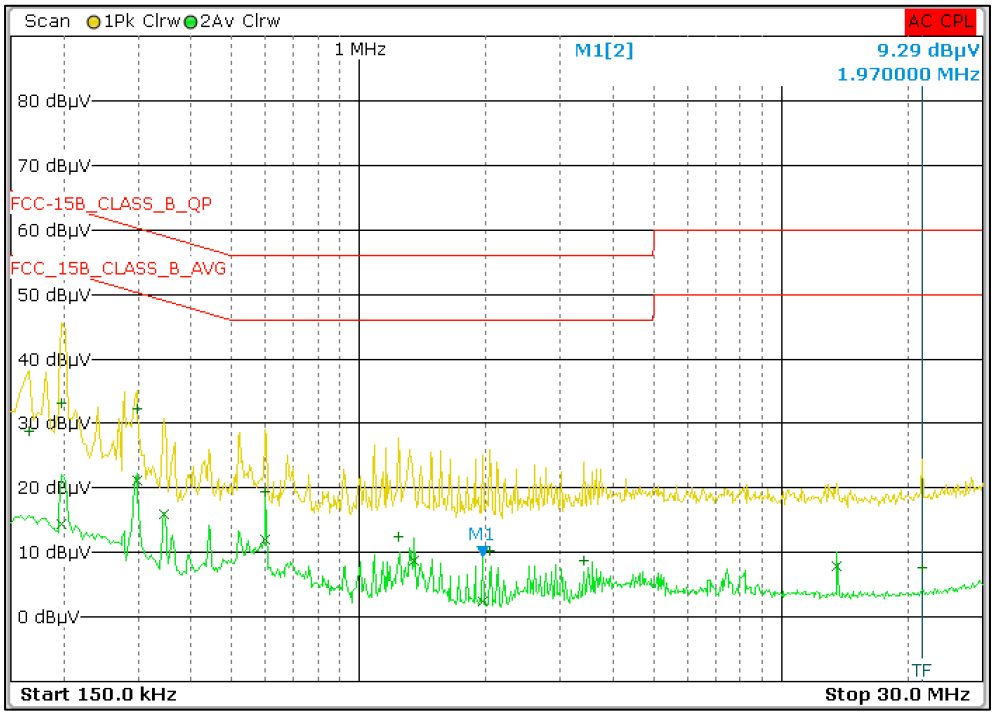
230VAC-50Hz-Line

Trace	Frequency	Level (dBµV)	Phase	Detector	Delta Limit/dB
1	542.000000000 kHz	34.74		Quasi Peak	-21.26
2	542.000000000 kHz	22.53		Average	-23.47
1	626.000000000 kHz	31.83		Quasi Peak	-24.17
1	462.000000000 kHz	30.60		Quasi Peak	-26.06
2	626.000000000 kHz	18.47		Average	-27.53
2	466.000000000 kHz	18.30		Average	-28.28
2	298.000000000 kHz	21.45		Average	-28.85
1	1.190000000 MHz	26.33		Quasi Peak	-29.67
1	298.000000000 kHz	30.43		Quasi Peak	-29.87
2	3.742000000 MHz	15.00		Average	-31.00
1	1.978000000 MHz	24.78		Quasi Peak	-31.22
2	1.190000000 MHz	12.29		Average	-33.71
2	7.830000000 MHz	15.18		Average	-34.82
1	8.070000000 MHz	25.12		Quasi Peak	-34.88



230VAC-50Hz-Neutral:

Trace	Frequency	Level (dBµV)	Phase	Detector	Delta Limit/dB
1	298.000000000 kHz	32.29		Quasi Peak	-28.01
2	298.000000000 kHz	21.12		Average	-29.18
2	298.000000000 kHz	21.08		Average	-29.22
1	198.000000000 kHz	33.20		Quasi Peak	-30.49
2	346.000000000 kHz	15.90		Average	-33.16
2	602.000000000 kHz	11.97		Average	-34.03
1	166.000000000 kHz	28.85		Quasi Peak	-36.31
1	602.000000000 kHz	19.39		Quasi Peak	-36.61
2	1.354000000 MHz	8.66		Average	-37.34
2	198.000000000 kHz	14.40		Average	-39.29
2	13.562000000 MHz	7.86		Average	-42.14
2	1.970000000 MHz	2.39		Average	-43.61
1	1.242000000 MHz	12.38		Quasi Peak	-43.62
1	2.046000000 MHz	10.18		Quasi Peak	-45.82
1	3.414000000 MHz	8.82		Quasi Peak	-47.18
1	21.618000000 MHz	7.61		Quasi Peak	-52.39



8 LIST OF TABLES

9 List of Figures

*****End of test report*****