TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 15.249

TEST REPORT

For

Pycom Ltd

High Point 9 Sydenham Road, Guildford Surrey GU1 3RX, Surrey, United Kingdom

FCC ID: 2AJMTFIPY01R

Report Type:	**Product Type:**
Original Report	FiPy Module

Test Engineer:	Max Min
Report Number:	RSHA180108012-00F
Report Date:	2018-08-17
Reviewed By:	Oscar Ye RF Leader
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road,Kunshan,Jiangsu province,China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	Pycom Ltd
Tested Model	Fipy 1.0
Product Type	FiPy Module
Dimension	55mm (L)* 20 mm (W)*3.5 mm(H)
Power Supply	DC 3.4-5.5V

**All measurement and test data in this report was gathered from production sample serial number: 20180108012. (Assigned by the BACL. The EUT supplied by the applicant was received on 2018-01-08)*

Objective

This type approval report is prepared on behalf of Pycom Ltd in accordance with Part 2-Subpart J, and Part 15-Subparts A and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.249 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS, Part 15.247 DSS and Part 27 TNB submissions with FCC ID: 2AJMTFIPY01R.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Lab Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19 dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0℃
Humidity		6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Justification

The frequencies is F(MHz)=902.3+0.2*n (0<=n<=63). The lowest, middle, highest channel numbers of the EUT used and tested in this report are below.

Channel	Frequency (MHz)
0	902.3
32	908.7
63	914.9

EUT Exercise Software

RF test tool: putty

Power Level: 5

Support Equipment List and Details

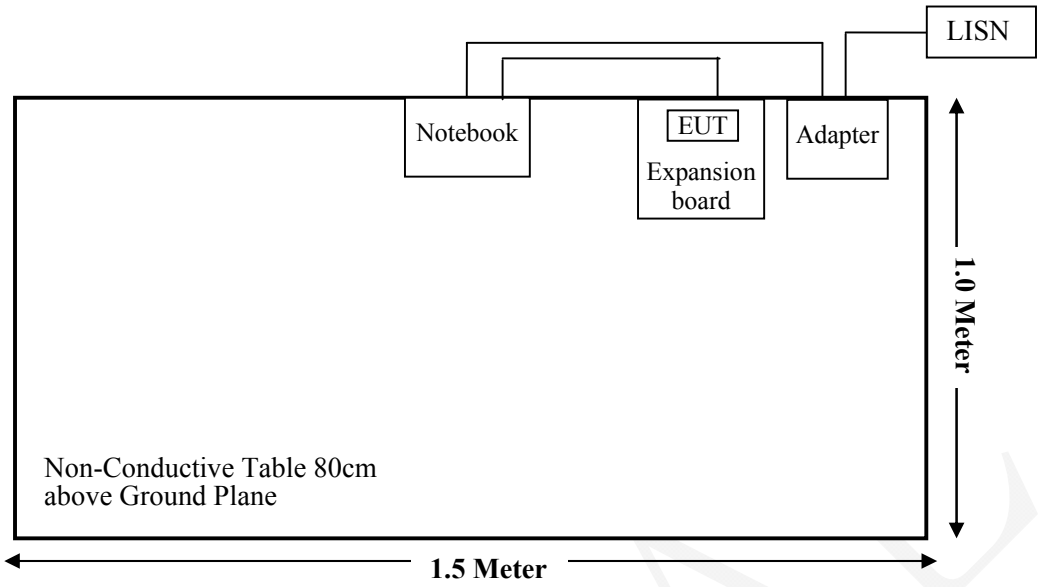
Manufacturer	Description	Model	Serial Number
DELL	Notebook	GX620	D65874152
DELL	Adapter	LA65NS0-00	DF263
Pycom Ltd	Expansion board	V2.1A	1630000932

External I/O Cable

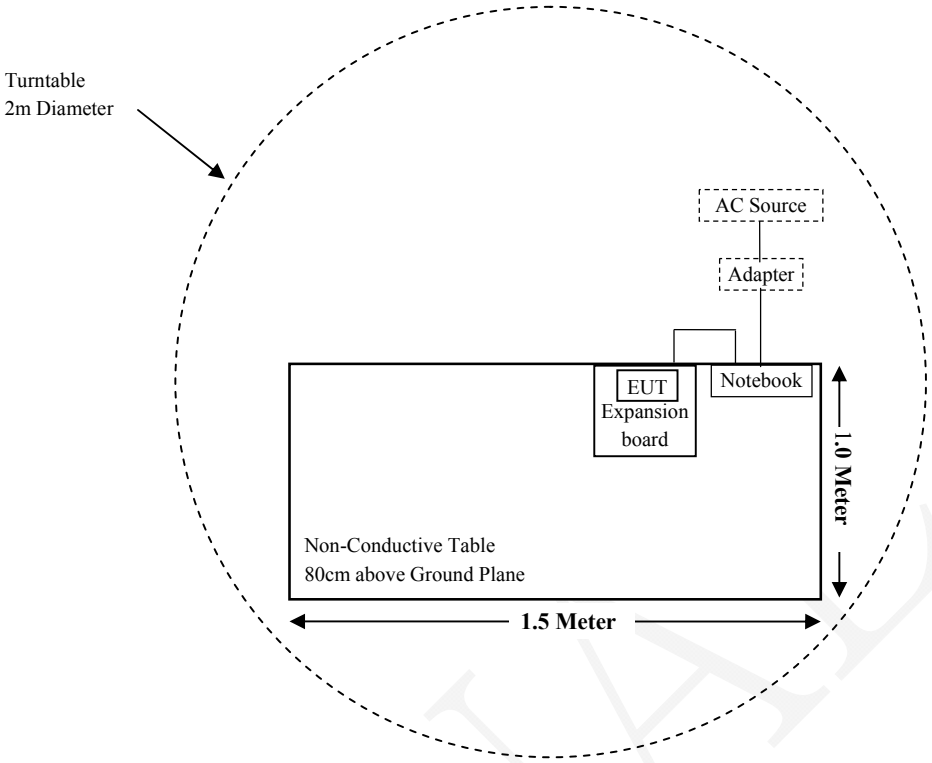
Cable Description	Length (m)	From Port	To
USB Cable	0.8	Expansion board	Notebook

Block Diagram of Test Setup

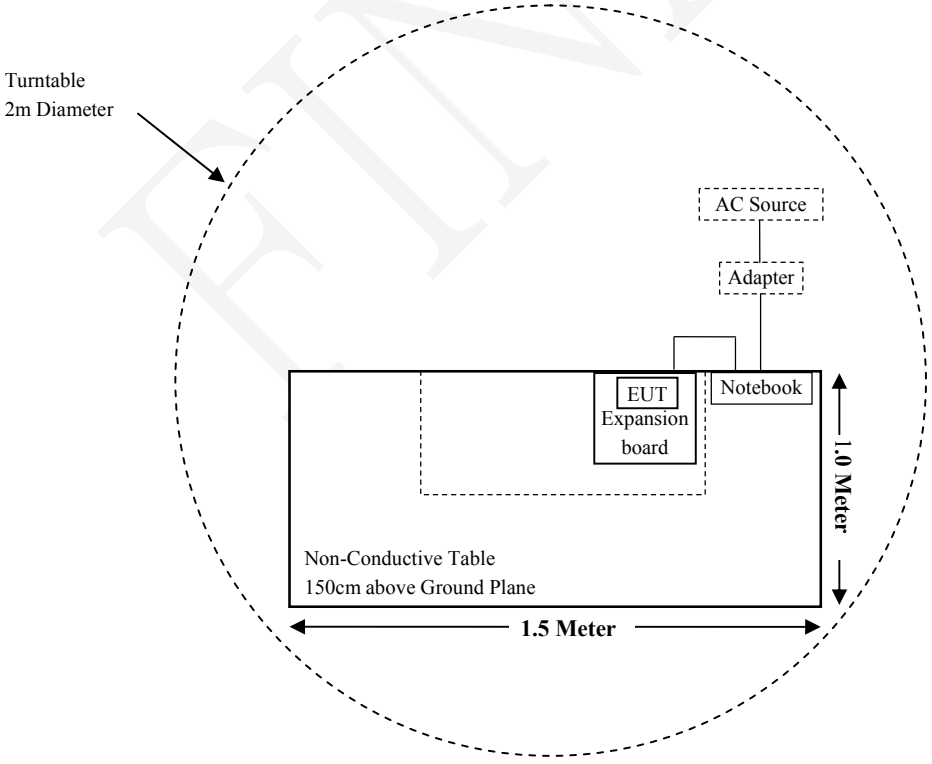
For Conducted Emissions:



For Radiated Emissions(Below 1GHz):



For Radiated Emissions(Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conduction Emissions	Compliant
15.205, §15.209, §15.249	Radiated Emissions& Out of Band Emission	Compliant
§15.215 (c)	20 dB Bandwidth	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test（Chamber 1#）					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2017-11-12	2018-11-11
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2016-12-26	2019-12-25
Sonoma Instrunent	Pre-amplifier	310N	171205	2018-08-15	2019-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-8	008	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2018-08-15	2019-08-14
Radiated Emission Test（Chamber 2#）					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2017-08-27	2018-08-26
ETS-LINDGREN	Horn Antenna	3115	6229	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
MICRO-TRONICS	Notch filter	BRM50702	/	2018-08-05	2019-08-04
Narda	Pre-amplifier	AFS42-00101800	2001270	2017-12-12	2018-12-11
Quinstar	Amplifier	QLW-18405536-J0	15964001009	2017-12-12	2018-12-11
Narda	Attenuator/10dB	10dB	/	2018-08-15	2019-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2018-08-15	2019-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	2018-08-15	2019-08-14
RF Conducted Test					
Rohde & Schwarz	Signal Analyzer	FSV40	101116	2018-07-23	2019-07-22
Narda	Attenuator/10dB	10dB	/	2018-08-10	2019-08-09
Pycom Ltd	RF Cable	/	/	Each Time	/
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	834115/007	2017-11-12	2018-11-11
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2017-11-12	2018-11-11
Rohde & Schwarz	LISN	ENV216	3560655016	2017-11-12	2018-11-11
BACL	Auto test Software	BACL-EMC	CE001	/	/
Narda	Attenuator/6dB	10690812-2	26850-6	2018-01-10	2019-01-09
MICRO-COAX	Coaxial Cable	Cable-15	015	2018-08-15	2019-08-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used.

Antenna Connector Construction

The EUT has an external antenna LoRa, which the antenna gain is 0.87 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

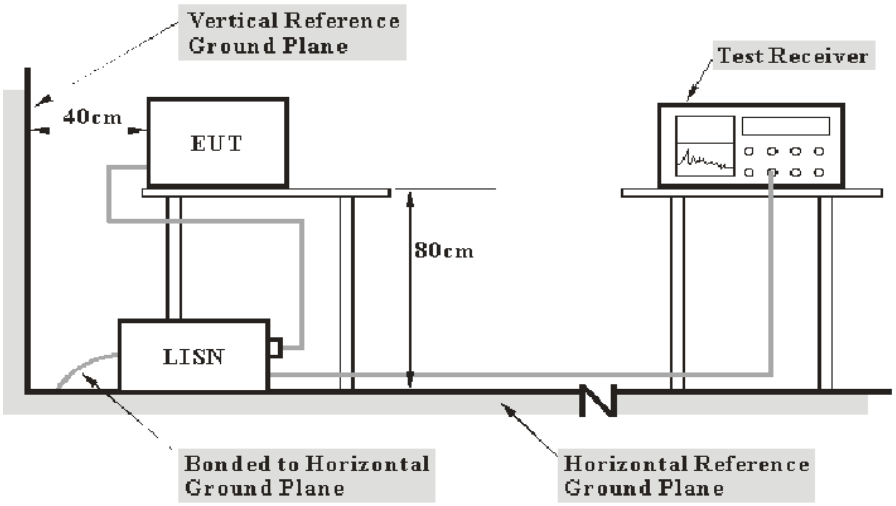
Result: Compliant.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Corrected Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dBμV) – Corrected Amplitude (dBμV)

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

Environmental Conditions

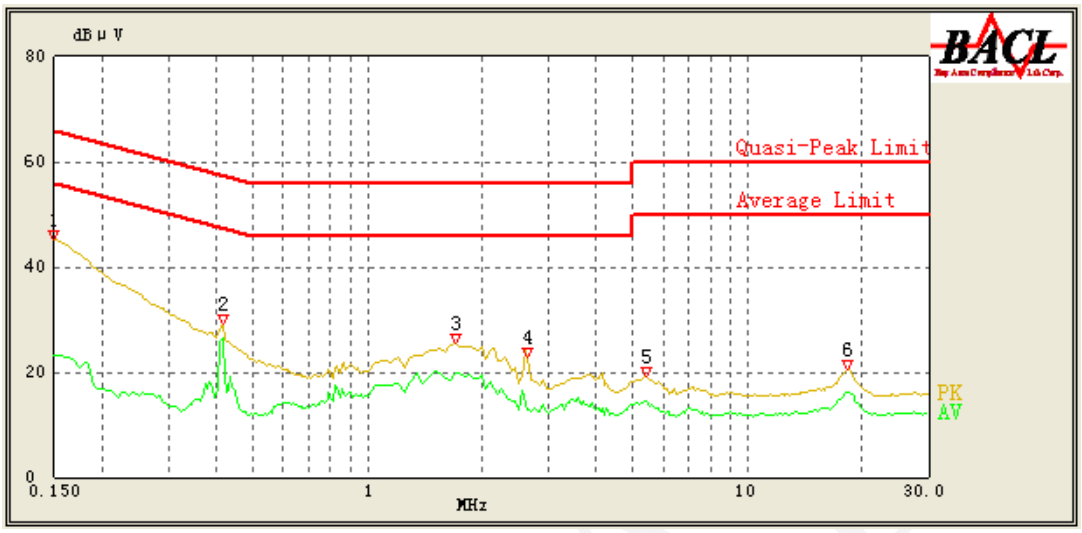
Temperature:	24.2°C
Relative Humidity:	51%
ATM Pressure:	101.2 kPa

The testing was performed by Max Min on 2018-08-17.

EUT operation mode: Transmitting in low channel (worst case)

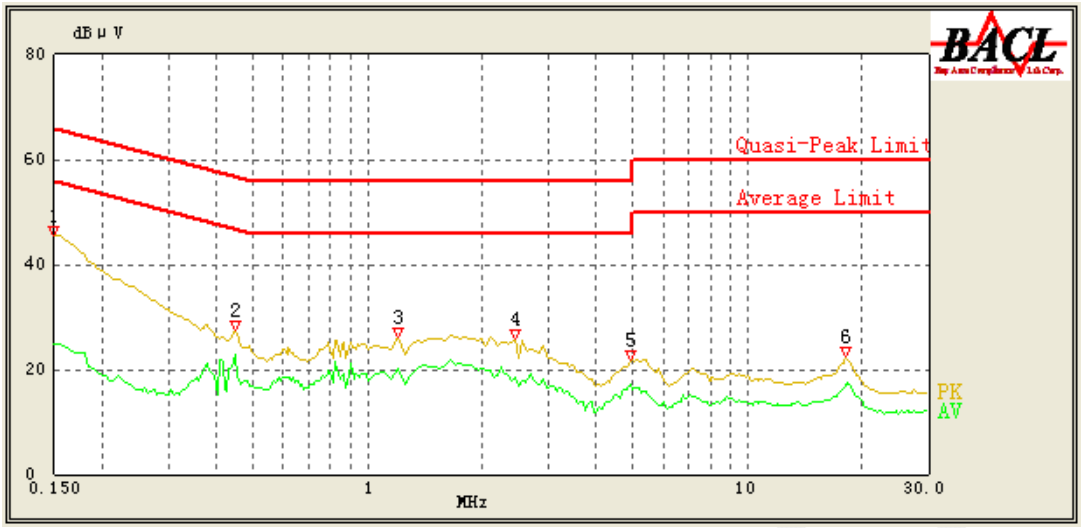
For 125kHz

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Detector (PK/AV/QP)	Bandwidth (kHz)	Line	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Comment
0.150	45.20	QP	9.000	L1	16.06	66.00	20.80	Compliant
0.150	23.14	AV	9.000	L1	16.06	56.00	32.86	Compliant
0.415	29.28	QP	9.000	L1	16.06	58.43	29.15	Compliant
0.415	26.47	AV	9.000	L1	16.06	48.43	21.96	Compliant
1.700	25.55	QP	9.000	L1	15.86	56.00	30.45	Compliant
1.700	19.91	AV	9.000	L1	15.86	46.00	26.09	Compliant
2.650	22.99	QP	9.000	L1	15.85	56.00	33.01	Compliant
2.650	12.99	AV	9.000	L1	15.85	46.00	33.01	Compliant
5.400	19.19	QP	9.000	L1	15.88	60.00	40.81	Compliant
5.400	14.35	AV	9.000	L1	15.88	50.00	35.65	Compliant
18.500	20.47	QP	9.000	L1	16.37	60.00	39.53	Compliant
18.500	16.13	AV	9.000	L1	16.37	50.00	33.87	Compliant

AC 120V/60 Hz, Neutral

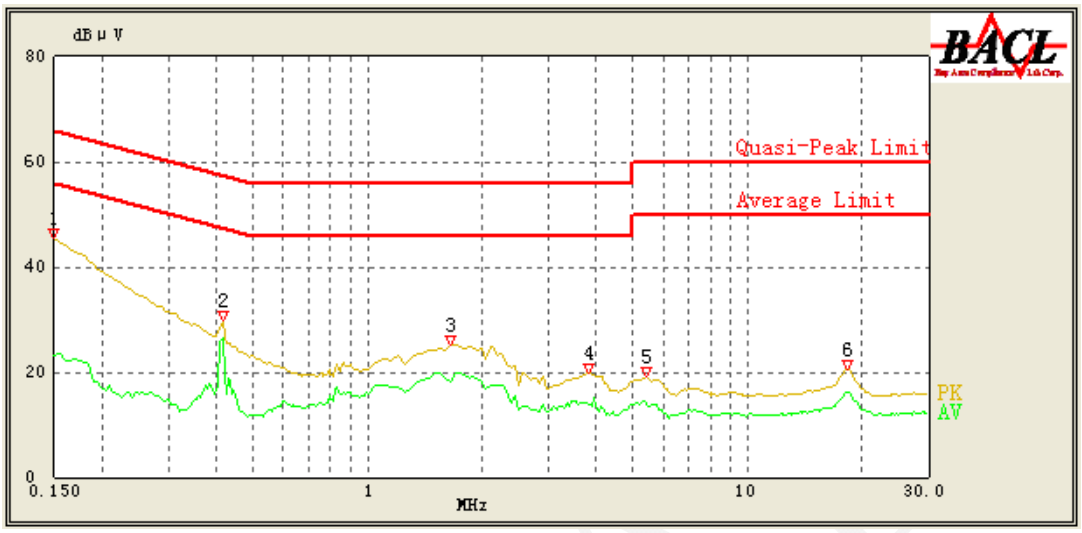


Frequency (MHz)	Corrected Amplitude (dBµV)	Detector (PK/AV/QP)	Bandwidth (kHz)	Line	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Comment
0.150	45.59	QP	9.000	N	16.06	66.00	20.41	Compliant
0.150	24.73	AV	9.000	N	16.06	56.00	31.27	Compliant
0.450	27.48	QP	9.000	N	16.10	57.43	29.95	Compliant
0.450	22.81	AV	9.000	N	16.10	47.43	24.62	Compliant
1.200	26.09	QP	9.000	N	15.93	56.00	29.91	Compliant
1.200	20.16	AV	9.000	N	15.93	46.00	25.84	Compliant
2.450	25.67	QP	9.000	N	15.90	56.00	30.33	Compliant
2.450	18.44	AV	9.000	N	15.90	46.00	27.56	Compliant
4.950	22.00	QP	9.000	N	15.87	56.00	34.00	Compliant
4.950	17.04	AV	9.000	N	15.87	46.00	28.96	Compliant
18.100	22.40	QP	9.000	N	16.10	60.00	37.60	Compliant
18.100	16.89	AV	9.000	N	16.10	50.00	33.11	Compliant

Note:
1) Corrected Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
2) Margin (dB) = Limit (dBµV) – Corrected Amplitude (dBµV)

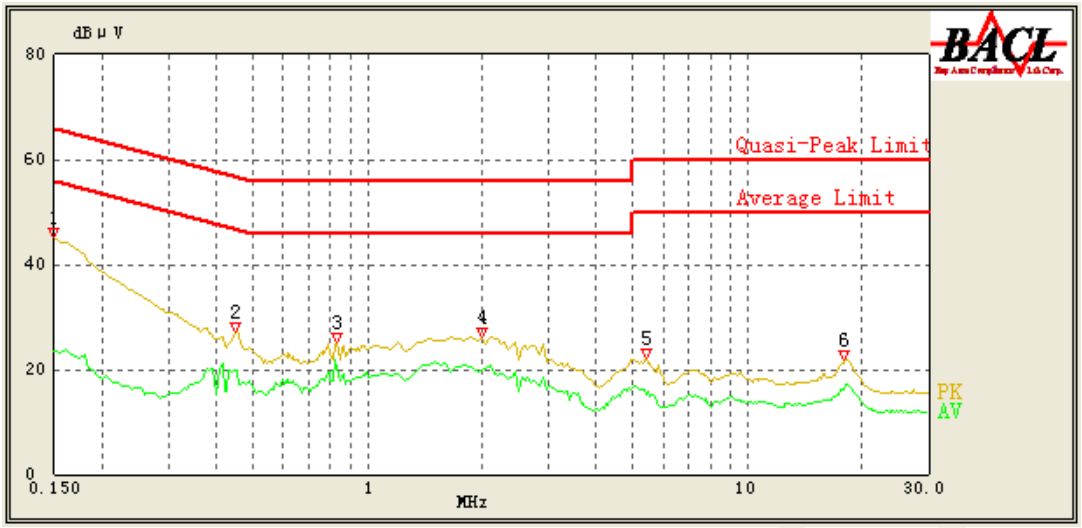
For 250kHz

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Detector (PK/AV/QP)	Bandwidth (kHz)	Line	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Comment
0.150	45.50	QP	9.000	L1	16.06	66.00	20.50	Compliant
0.150	23.33	AV	9.000	L1	16.06	56.00	32.67	Compliant
0.415	29.78	QP	9.000	L1	16.06	58.43	28.65	Compliant
0.415	26.63	AV	9.000	L1	16.06	48.43	21.80	Compliant
1.650	25.19	QP	9.000	L1	15.86	56.00	30.81	Compliant
1.650	18.26	AV	9.000	L1	15.86	46.00	27.74	Compliant
3.800	20.00	QP	9.000	L1	15.85	56.00	36.00	Compliant
3.800	13.97	AV	9.000	L1	15.85	46.00	32.03	Compliant
5.400	19.05	QP	9.000	L1	15.88	60.00	40.95	Compliant
5.400	14.19	AV	9.000	L1	15.88	50.00	35.81	Compliant
18.350	20.60	QP	9.000	L1	16.36	60.00	39.40	Compliant
18.300	16.16	AV	9.000	L1	16.36	50.00	33.84	Compliant

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Detector (PK/AV/QP)	Bandwidth (kHz)	Line	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Comment
0.150	45.09	QP	9.000	N	16.06	66.00	20.91	Compliant
0.150	23.46	AV	9.000	N	16.06	56.00	32.54	Compliant
0.450	27.08	QP	9.000	N	16.10	57.43	30.35	Compliant
0.450	19.82	AV	9.000	N	16.10	47.57	27.75	Compliant
0.830	25.22	QP	9.000	N	15.97	56.00	30.78	Compliant
0.830	20.19	AV	9.000	N	15.97	46.00	25.81	Compliant
2.000	26.09	QP	9.000	N	15.91	56.00	29.91	Compliant
2.000	19.86	AV	9.000	N	15.91	46.00	26.14	Compliant
5.400	22.07	QP	9.000	N	15.88	60.00	37.93	Compliant
5.400	15.30	AV	9.000	N	15.88	50.00	34.70	Compliant
17.900	21.90	QP	9.000	N	16.10	60.00	38.10	Compliant
17.900	17.05	AV	9.000	N	16.10	50.00	32.95	Compliant

Note:
1) Corrected Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
2) Margin (dB) = Limit (dBµV) – Corrected Amplitude (dBµV)

FCC§15.205, §15.209&§15.249- RADIATED EMISSIONS& OUT OF BAND EMISSION

Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

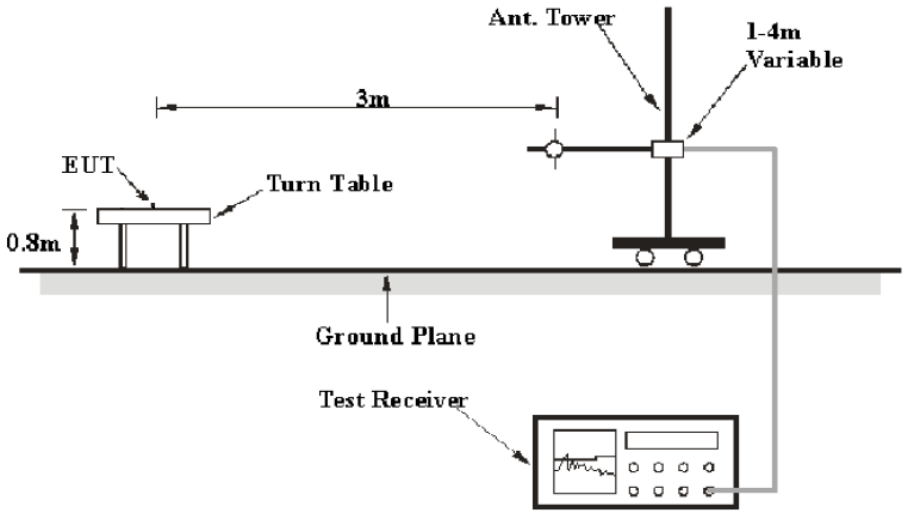
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

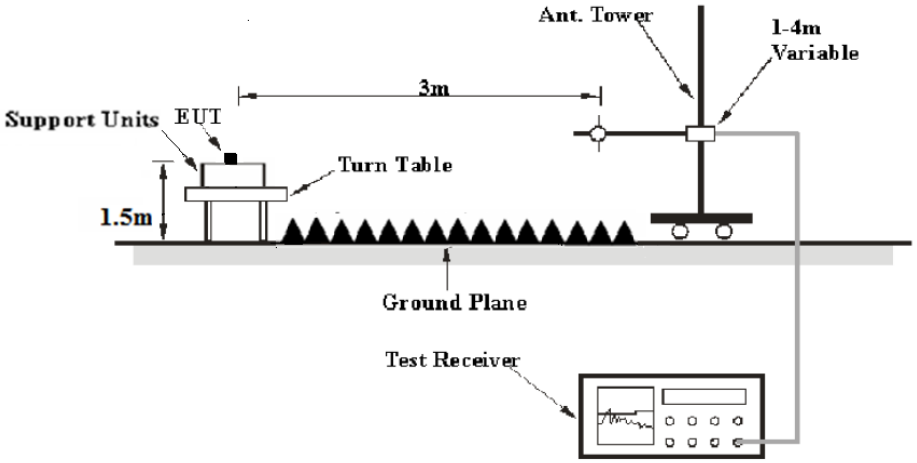
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission and out of band emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209/15.205 and FCC 15.249 limits.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

Test Equipment Setup

The system was investigated from 30 MHz to 10 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1GHz	1MHz	3 MHz	/	PK
	1MHz	3 MHz	/	Ave

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode from 30MHz to 1GHz, Peak and average detection mode above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit –Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209 &15.205 & 15.249.

Test Data

Environmental Conditions

Temperature:	24.6°C
Relative Humidity:	52%
ATM Pressure:	101.2 kPa

The testing was performed by Max Min from2018-08-15 to 2018-08-17.

Test Mode: Transmitting (Scan with X-Axis, Y-Axis and Z-Axis position, the worst case X-Axis was recorded)

Spurious Emission Test:

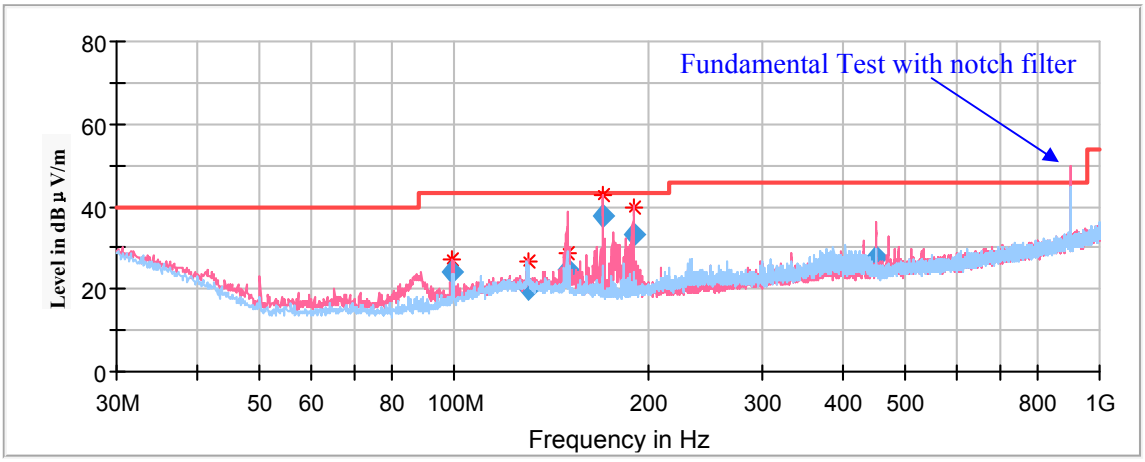
For 125kHz:

30MHz-1GHz

*(Pre-scan with low, middle and high channels of operation in the X,Y and Z axes of orientation, the worst case **low channel of operation in X-axis of orientation** was recorded)*

Note:

1. This test was performed with the 902-928MHz notch filter.



Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	Quasi-peak (dBµV/m)	Height (cm)	Polar (H/V)				
99.560550	24.08	101.0	V	184.0	-15.0	43.50	19.42
130.101150	20.10	101.0	V	87.0	-11.6	43.50	23.40
150.000500	24.81	101.0	V	211.0	-12.3	43.50	18.69
170.156300	37.96	101.0	V	257.0	-13.2	43.50	5.54
189.414500	33.08	101.0	V	77.0	-13.0	43.50	10.42
449.897200	27.56	199.0	V	38.0	-7.4	46.00	18.44

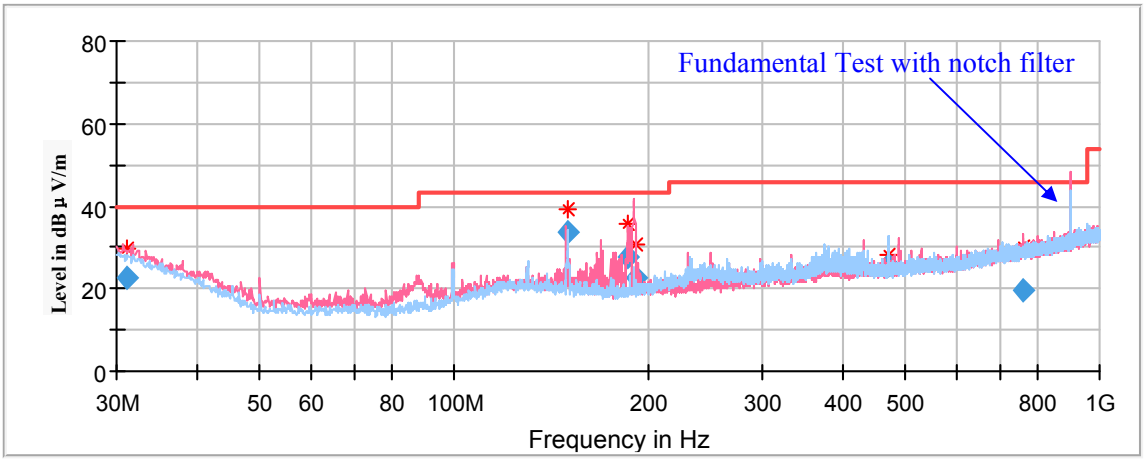
For 250kHz:

30MHz-1GHz

*(Pre-scan with low, middle and high channels of operation in the X,Y and Z axes of orientation, the worst case **low channel of operation in X-axis of orientation** was recorded)*

Note:

1. This test was performed with the 902-928MHz notch filter.



Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	Quasi-peak (dBµV/m)	Height (cm)	Polar (H/V)				
31.155450	22.39	101.0	V	99.0	-4.7	40.00	17.61
149.786400	33.83	101.0	V	342.0	-12.3	43.50	9.67
185.672400	27.92	101.0	V	57.0	-13.2	43.50	15.58
190.982600	22.61	101.0	V	279.0	-12.9	43.50	20.89
469.737050	25.45	101.0	H	179.0	-6.9	46.00	20.55
762.736400	19.75	101.0	V	259.0	-2.3	46.00	26.25

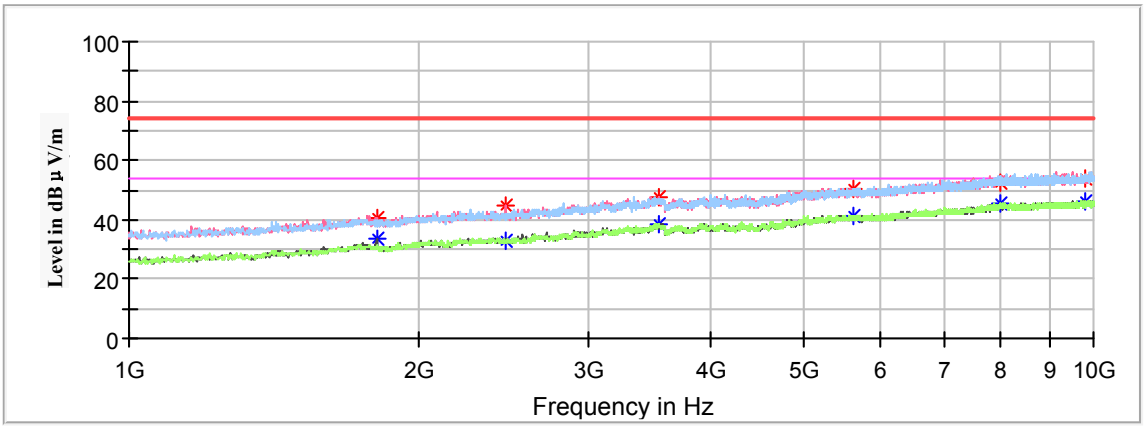
1GHz-10GHz

*(Pre-scan in the X, Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded.)*

For 125kHz

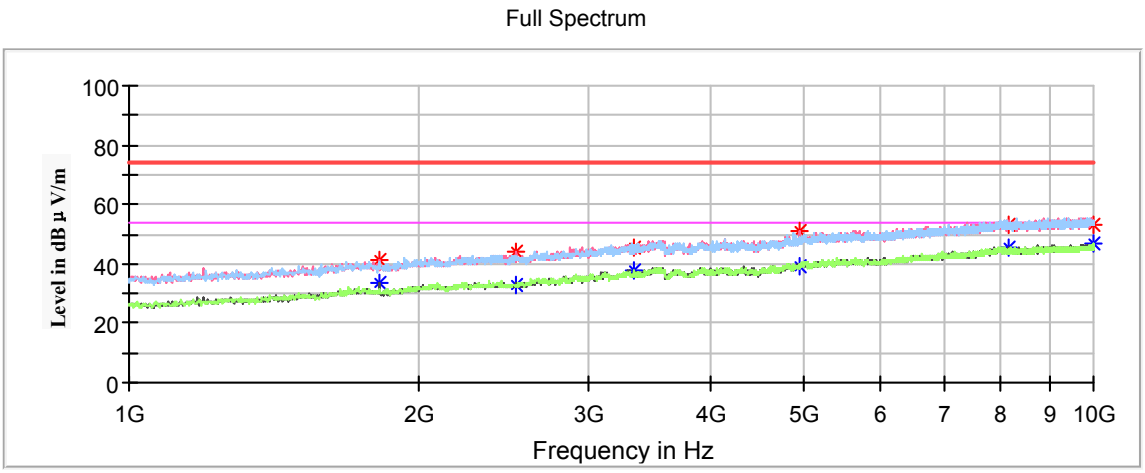
Note:
1. The test was performed with a 10dB Attenuator.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit – Corrected. Amplitude

Low Channel: 902.3MHz



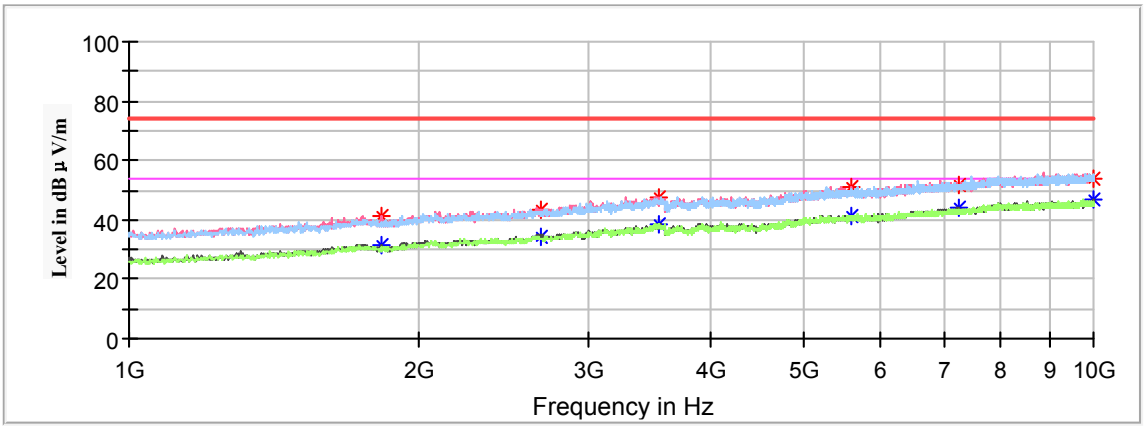
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV /m)	Average (dBµV /m)	Height (cm)	Polar (H/V)				
1804.600000	---	33.43	100.0	V	316.0	0.8	54.00	20.57
1804.600000	40.67	---	100.0	V	316.0	0.8	74.00	33.33
2456.200000	---	32.56	200.0	V	82.0	3.0	54.00	21.44
2456.200000	44.46	---	200.0	V	82.0	3.0	74.00	29.54
3543.400000	---	38.65	200.0	V	297.0	7.4	54.00	15.35
3543.400000	47.56	---	200.0	V	297.0	7.4	74.00	26.44
5626.000000	50.49	---	150.0	V	344.0	12.6	74.00	23.51
5626.000000	---	41.58	150.0	V	344.0	12.6	54.00	12.42
7994.800000	52.54	---	200.0	V	133.0	17.1	74.00	21.46
7994.800000	---	45.56	200.0	V	133.0	17.1	54.00	8.44
9793.000000	53.58	---	200.0	H	189.0	18.1	74.00	20.42
9793.000000	---	46.27	200.0	H	189.0	18.1	54.00	7.73

Middle Channel: 908.7MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV /m)	Average (dBµV /m)	Height (cm)	Polar (H/V)				
1817.400000	---	33.48	100.0	V	116.0	0.9	54.00	20.52
1817.400000	41.60	---	100.0	V	116.0	0.9	74.00	32.40
2524.600000	---	33.01	150.0	V	357.0	3.2	54.00	20.99
2524.600000	43.88	---	150.0	V	357.0	3.2	74.00	30.12
3340.000000	---	37.70	100.0	V	0.0	6.9	54.00	16.30
3340.000000	45.29	---	100.0	V	0.0	6.9	74.00	28.71
4960.000000	---	39.34	200.0	V	63.0	11.5	54.00	14.66
4960.000000	51.01	---	200.0	V	63.0	11.5	74.00	22.99
8174.800000	53.01	---	100.0	V	167.0	17.2	74.00	20.99
8174.800000	---	45.67	100.0	V	167.0	17.2	54.00	8.33
9998.200000	53.12	---	200.0	H	274.0	18.3	74.00	20.88
9998.200000	---	46.56	200.0	H	274.0	18.3	54.00	7.44

High Channel: 914.9MHz

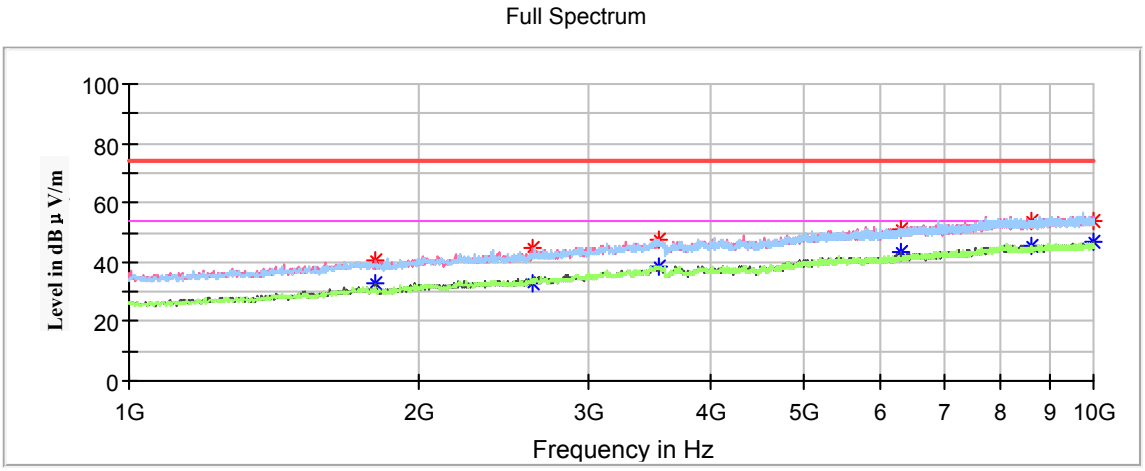


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV /m)	Average (dBµV /m)	Height (cm)	Polar (H/V)				
1829.800000	40.98	---	150.0	V	75.0	1.0	74.00	33.02
1829.800000	---	31.30	150.0	V	75.0	1.0	54.00	22.70
2674.000000	43.42	---	100.0	V	187.0	4.1	74.00	30.58
2674.000000	---	34.11	100.0	V	187.0	4.1	54.00	19.89
3534.400000	47.34	---	200.0	V	14.0	7.4	74.00	26.66
3534.400000	---	38.29	200.0	V	14.0	7.4	54.00	15.71
5611.600000	50.90	---	100.0	V	65.0	12.5	74.00	23.10
5611.600000	---	41.32	100.0	V	65.0	12.5	54.00	12.68
7260.400000	51.88	---	200.0	V	249.0	15.3	74.00	22.12
7260.400000	---	44.13	200.0	V	249.0	15.3	54.00	9.87
9998.200000	53.52	---	150.0	V	94.0	18.3	74.00	20.48
9998.200000	---	46.74	150.0	V	94.0	18.3	54.00	7.26

For 250kHz

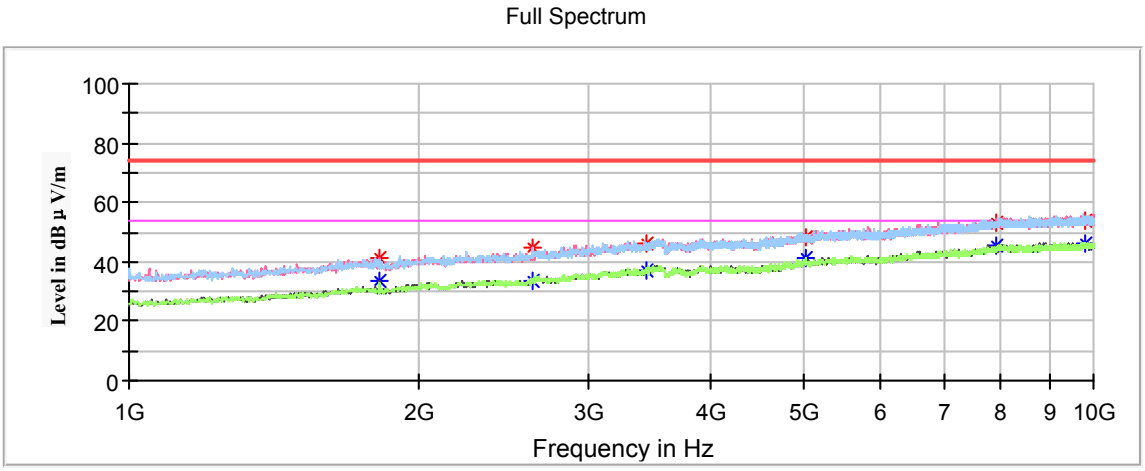
Note:
1. The test was performed with a 10dB Attenuator.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit – Corrected. Amplitude

Low Channel: 902.3MHz



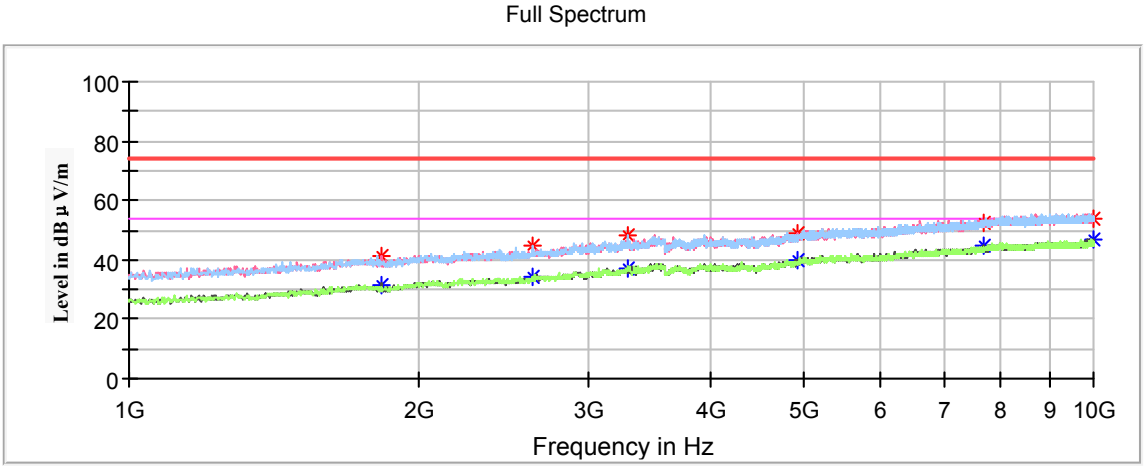
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV /m)	Average (dBµV /m)	Height (cm)	Polar (H/V)				
1804.600000	40.25	---	100.0	V	286.0	0.8	74.00	33.75
1804.600000	---	32.62	100.0	V	286.0	0.8	54.00	21.38
2614.600000	44.56	---	100.0	V	39.0	3.8	74.00	29.44
2614.600000	---	33.20	150.0	V	39.0	3.8	54.00	20.80
3545.200000	47.24	---	150.0	V	295.0	7.4	74.00	26.76
3545.200000	---	38.26	150.0	V	295.0	7.4	54.00	15.74
6320.800000	51.38	---	100.0	V	318.0	13.8	74.00	22.62
6320.800000	---	43.05	100.0	V	318.0	13.8	54.00	10.95
8612.200000	54.06	---	100.0	V	172.0	17.3	74.00	19.94
8612.200000	---	45.46	100.0	V	172.0	17.3	54.00	8.54
9987.400000	53.78	---	200.0	V	183.0	18.3	74.00	20.22
9987.400000	---	46.79	200.0	V	183.0	18.3	54.00	7.21

Middle Channel: 908.7MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV /m)	Average (dBµV /m)	Height (cm)	Polar (H/V)				
1817.400000	41.25	---	100.0	V	44.0	0.9	74.00	32.75
1817.400000	---	33.47	100.0	V	44.0	0.9	54.00	20.53
2620.000000	44.56	---	200.0	H	250.0	3.8	74.00	29.44
2620.000000	---	33.53	200.0	H	250.0	3.8	54.00	20.47
3440.800000	46.47	---	200.0	V	110.0	7.1	74.00	27.53
3440.800000	---	37.14	200.0	V	110.0	7.1	54.00	16.86
5028.400000	48.52	---	200.0	H	250.0	11.7	74.00	25.48
5028.400000	---	41.36	200.0	H	250.0	11.7	54.00	12.64
7935.400000	53.32	---	200.0	V	38.0	17.0	74.00	20.68
7935.400000	---	45.59	200.0	V	38.0	17.0	54.00	8.41
9785.800000	53.73	---	100.0	V	34.0	18.1	74.00	20.27
9785.800000	---	46.36	100.0	V	34.0	18.1	54.00	7.64

High Channel: 914.9MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV /m)	Average (dBµV /m)	Height (cm)	Polar (H/V)				
1829.800000	41.48	---	100.0	V	291.0	1.0	74.00	32.52
1829.800000	---	31.15	100.0	V	291.0	1.0	54.00	22.85
2627.200000	44.71	---	200.0	H	153.0	3.9	74.00	29.29
2627.200000	---	34.02	200.0	H	153.0	3.9	54.00	19.98
3289.600000	48.06	---	200.0	H	3.0	6.7	74.00	25.94
3289.600000	---	36.88	200.0	H	3.0	6.7	54.00	17.12
4934.800000	48.78	---	200.0	V	284.0	11.4	74.00	25.22
4934.800000	---	39.62	200.0	V	284.0	11.4	54.00	14.38
7694.200000	52.55	---	100.0	V	85.0	16.2	74.00	21.45
7694.200000	---	44.59	100.0	V	85.0	16.2	54.00	9.41
9992.800000	53.91	---	100.0	V	14.0	18.3	74.00	20.09
9992.800000	---	46.76	100.0	V	14.0	18.3	54.00	7.24

Fundamental Test & Restricted Bands Emissions Test:

*(Pre-scan in the X, Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded.)*

For 125kHz

Note:
1. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Frequency (MHz)	Corrected Amplitude (dBμV /m)	Detector (PK/QP/Ave.)	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
			Height (cm)	Polar (H/V)				
902.30MHz								
902.30	99.87	PK	250	V	242	0.22	/	/
902.30	97.26	PK	250	H	242	0.22	/	/
902.00	35.16	QP	200	V	97	0.20	46	10.84
902.00	34.52	QP	200	H	97	0.20	46	11.48
908.70MHz								
908.70	100.02	PK	200	V	46	0.36	/	/
908.70	96.41	PK	200	H	46	0.36	/	/
914.90MHz								
914.90	99.85	PK	150	V	173	0.46	/	/
914.90	97.16	PK	150	H	173	0.46	/	/
928.00	34.63	QP	250	V	192	0.75	46	11.37
928.00	33.27	QP	250	H	192	0.75	46	12.73

For 250kHz

Note:
1. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Frequency (MHz)	Corrected Amplitude (dBμV /m)	Detector (PK/QP/Ave.)	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
			Height (cm)	Polar (H/V)				
902.30MHz								
902.30	99.93	PK	200	V	263	0.22	/	/
902.30	97.79	PK	200	H	263	0.22	/	/
902.00	41.15	QP	250	V	150	0.20	46	4.85
902.00	39.36	QP	250	H	150	0.20	46	6.64
908.70MHz								
908.70	99.47	PK	250	V	74	0.36	/	/
908.70	96.26	PK	250	H	74	0.36	/	/
914.90MHz								
914.90	99.81	PK	200	V	288	0.46	/	/
914.90	97.93	PK	200	H	288	0.46	/	/
928.00	34.28	QP	150	V	146	0.75	46	11.72
928.00	33.67	QP	150	H	146	0.75	46	12.33

FCC §15.215(c) – 20 dB BANDWIDTH TESTING

Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through § 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

Temperature:	24.2°C
Relative Humidity:	50 %
ATM Pressure:	101.3kPa

The testing was performed by Max Min on 2018-08-13.

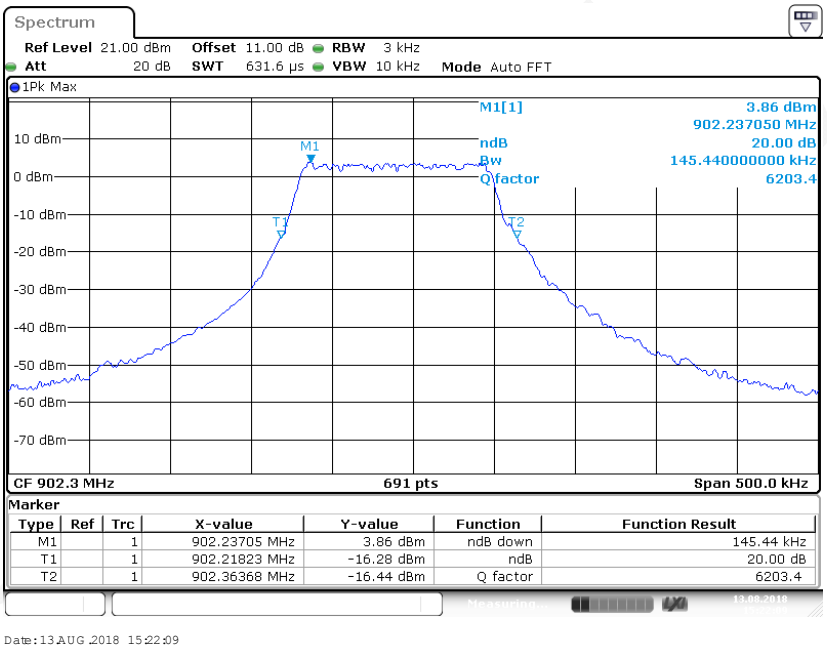
Test Result: Compliant.

Test Mode: Transmitting

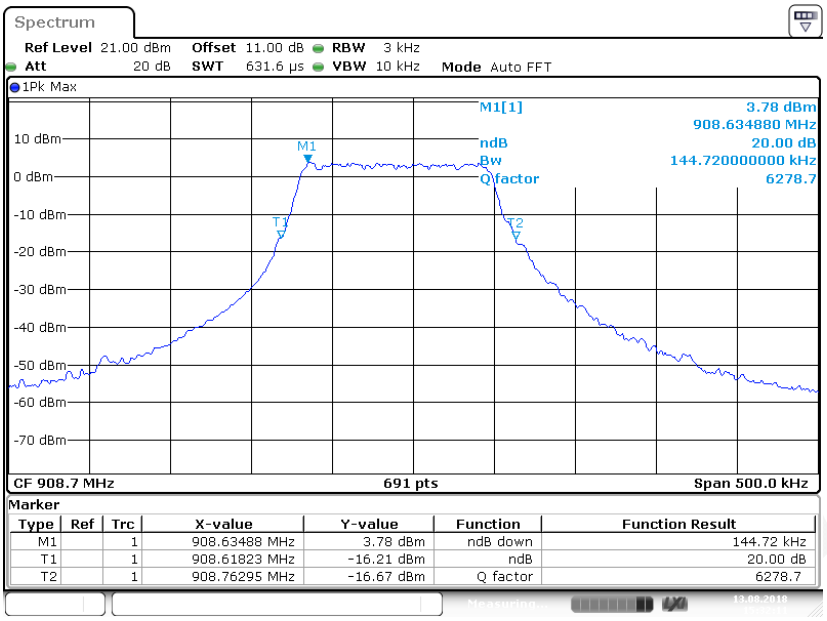
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	
		125kHz	250kHz
Low	902.3	145.44	314.00
Middle	908.7	144.72	309.70
High	914.9	146.16	314.00

For 125kHz

Low Channel

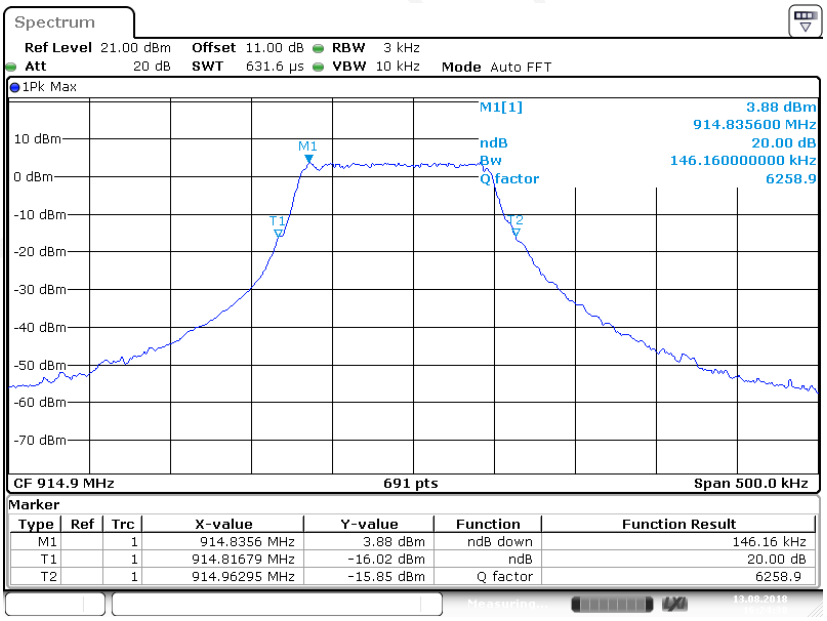


Middle Channel



Date:13.AUG.2018 15:32:11

High Channel



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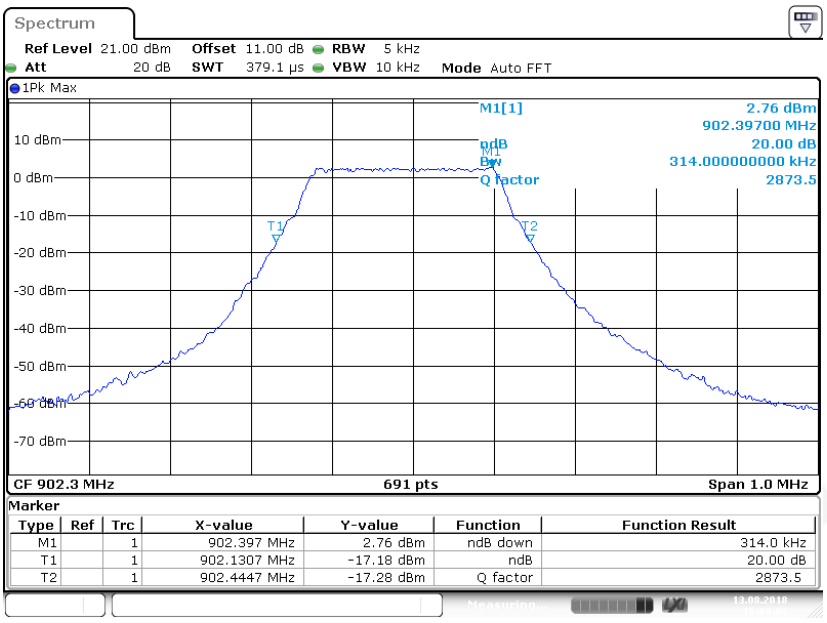
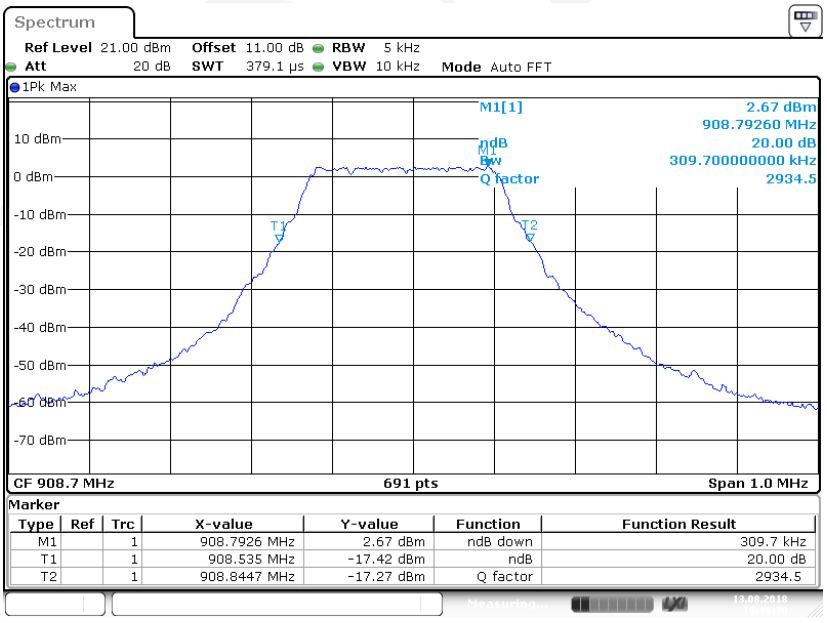
For 250kHz

Low Channel



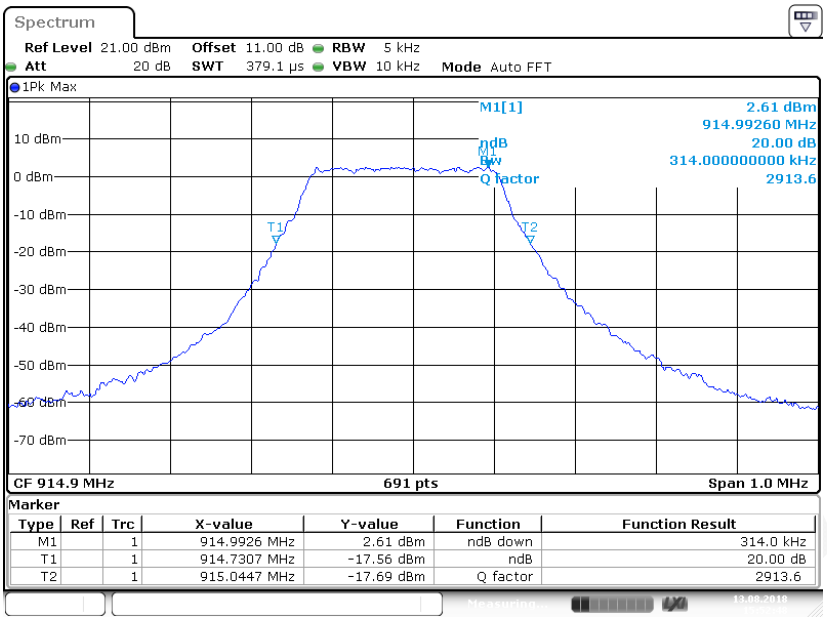
Date: 13.AUG.2018 16:09:03

Middle Channel



Date: 13.AUG.2018 16:16:31

High Channel



******* END OF REPORT *******